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Annales Universitatis Paedagogicae Cracoviensis

Studia Psychologica VI

Special Issue

On Time Perspective

**under honorary auspicies
of Professor Philip G. Zimbardo**

edited by Urszula Tokarska

Contents

Spis treści

Acknowledgment

I am deeply honored by this special gift to me on my 80th birthday from Urszula Tokarska and Joanna Kossewska, and their Human Development Support Unit of the Psychology Department at the Pedagogical University in Krakow, Poland.

They have given me the most precious gift, the gift of time, or more precisely the gift of imaginative and important research on the psychology of time perspective. In this brief volume, readers will be entertained and informed by the writing of 20 authors from 11 different countries, across four continents, in the dozen chapters that appear here for your delight.

I will take a few moments of your time to mention my involvement in this topic.

It all began in my childhood growing up in poverty in the inner city of the South Bronx, New York, from a family with a Sicilian heritage. My father was a brilliant man, although uneducated, whom I felt could do almost anything mechanical or musical, but often did nothing but enjoyed the present hedonistic life style that he created. It was obvious to me that the only way out of poverty was through education, which in part meant through developing a focus on the future, with clear plans for how to get from the terrible present to those positive future goals. With much hard work, but without much family support, I managed to realize that goal of becoming extremely well educated, very future oriented, and financially successful.

However, that personal experience seemed to be not idiosyncratic of me, but typical of many people around the world. How was it that someone developed a temporal focus on the past, or the present, or the future, and once they did, what were the consequences of living in a particular time zone rather than another one?

These generic questions encouraged me to begin a systematic program of research at Stanford University mainly with my student John Boyd, and several others, to discover the causes, and correlates, and consequences of time perspective. Although I am basically a research social psychologist who focuses on the power of situational forces to influence individual behaviour, I realized that it was critical to first develop a valid and reliable scale to measure individual differences in time perspective. After many years of trial and error, we succeeded in realizing that goal and published in 1999 our seminal article on that scale and its associated research. Since then, an enormous amount of research erupted in academic, clinical, and business settings around the world to understand the hows and whys of time perspective.

Our initial scale of 56 items that identified five different time factors, as well as a sixth factor (transcendental future) in an associated scale, has been reduced to 36 items that are universal across two dozen nations, as well as a 15-item short form.

I am also currently in the process of developing another time perspective factor – that of the holistic expanded present – as in Zen mediation.

I now firmly believe that time perspective is a most fundamental aspect of human nature that is fundamental, even foundational to much of our motivations, judgments, decisions and actions – both mundane and grandly significant. It is precious in our personal life and essential in our business life.

The concept of time is one of the most basic, yet rather curious in human thought. We often think about time as if it were a commodity, a thing, and a resource that we say can be saved, can be wasted, can be spent, and can be misused. And of course, in our current time-pressured cultures around the world, time is our most precious asset, which we want more of, can't have enough of, and resent anything that makes us lose some of it – such as the burden of waiting for anything not instantaneously available to us.

In most cultures we have proverbs or sayings in which time is central, such as "a stitch in time will save nine" (saving many later stitches if done correctly and soon enough the first time). We also say "a bird in the hand is worth two in the bush," meaning to take what is available in the present rather than plan for something that might be better in the future. But we also acknowledge "haste makes waste". In addition, there is an endless number of songs that feature basic time themes, such as: As time goes by; Your time is now; I didn't know what time it was; Time after time, and many others. Interesting to me is the discovery that in Bali, Indonesia, the word for time translates into "rubber time," meaning that time is stretched to fit human affairs, is modified to accommodate religious and artistic events. This seems to be the opposite of time concepts in most Western cultures where human affairs are compressed to fit the fleeting time that presses us, that crunches us into an ever more narrow time zone.

I wish to end this brief acknowledgment with the declaration of my new mission life, as a **Time Maker**: Encouraging everyone to learn how to practice making time work for them rather then against them. What time?

making time for family
making time for friends
making time for fun
making time for nature
making time for spirituality
making time for culture
and especially
making time for more romance in our lives.

Philip G. Zimbardo

Preface

A few words about the psychology of time

The time dimension question is presented currently in plenty of scientific enterprises in a direct way or creates the context of investigating other important human functioning issues (see the introductions and references to all the articles in this *Issue*). It is frequently recorded and elaborated on three interconnected levels: biological "body time", cognitive "mental time" and the phenomenological "existential time". The interest in *body time* is centered around experiencing cyclicity and rhythmicity and the strategies of subjective time estimation. Whereas *mental time* researchers study human experience of time duration and passage, the subjective feeling of event continuity and temporal segmentation within attention, perception, memory, speech and movements control as well. The field of their interests also involves reconstruction of human life experiences, coding patterns in a spatial way, and the consequences of linear time experiencing by man functioning within the culture of the West. The *existential time* is connected then with experiencing by man the phase and a "finiteness" of time in the life cycle and the human-specific tendency of *binding* the diverse aspects of individual experience into multi-plot, coherent and personally meaningful entirety. Diversity of human orientation towards particular time dimensions expresses itself, among others, in a dissimilar *attitude* towards one's own past-present-future richness of content of its cognitive representation, depth of retrospective and prospective in time and separation strategies of the whole time *scope.* A diverse level has been named as *consistency* and means the proportion between what in an individual's opinion has happened in his life and what can still happen in the future. There have been conducted many scientific projects around the connections between positive vs. negative temporality in general (or more narrowed separate time dimensions, as for example "future orientation") and such psychological phenomena like decision making, action effectiveness or psychological well-being.

Most researchers of human time experience rules used to emphasize the relation of openness to all temporal dimensions and capabilities to optimally

balance references to particular time dimensions with the optimal development of an individual, and even with his mental health. The concept of "optimally balanced temporal perspective" in this scope have been defined by Ph. Zimbardo & others as an ability to move smoothly and flexibly among diverse time perspectives, depending on the need following from a given task situation, situation circumstances and personal resources. In a specific situation, fixation on a definite time dimension, unrelated to others, is considered as non-adaptive. Some authors attribute an extremely vital pro-developmental role to the ability of harmonizing particular time dimensions, simply taking the position that it is one of the conditions of complete realization of human potential. Others develop a thesis that temporal balance enables man to maintain continuity in change and development processes, and indicates a close relation between reaching a dynamic balance within orientation at particular time dimensions and finding the sense of life. The dimension of *time competence/time incompetence* (apart from *internal/external locus of control*) has been recognized as important indicator of adequate functioning of an individual. The possibility to freely "move" among all the time dimensions without feeling the pressure or tension of any of them is stressed. Stimulating and enriching such cognitive-emotional access to particular time areas of one's own biography and the ability of their personally meaningful integration (with the language as the main psychological tool – "the time architect") underlie on the depth of raising up, education and therapy.

What we should keep in our minds is that time dimensions used to be described currently not only as the past, present and future, but are completed by the more extended context of the transcendent dimension of time flow. Free from denial or rejection mechanisms memory of the past, conscious and complete participation in the present, trusting and active anticipation of the future is enriched of the broader context then. There had been elaborated diverse solutions in the scope of daily life *time management* (hierarchy of goals, setting priorities for undertaken activities). But currently we observe the strong tendency of taking into account a broader perspective of "the time of life", when we talk not as much about "time management" but rather about "managing self in time" (in the form of *biographical competence*, *self-related wisdom* and other cognitive-emotional psychological skills). Such an attitude supports the internationally postulated general shift from the "economy of time" only to the "ecology of time". Realizing the deeper idea of „sustainable development of our human society" (as it had been described by United Nations Agenda 21) allows searching for the "complete & reach theoretical picture" of the subject. Following this notion is a kind of protection from losing really important dimension in the research activity and applicative psychological enterprises as well. Looking for investigative answers for particular time psychology questions we should never forget about "the essence" of the topic, remembering that even we identify ourselves as scientists – previously we stay the humans and "these hours are our life…".

A brief history about the idea of *Annales Universitatis Paedagogicae Cracoviensis On Time Perspective Special Issue*

The idea to compose the Special Issue of *Annales Universitatis Paedagogicae Cracoviensis. Studia Psychologica VI* conducted by the Department of Psychology inside the Pedagogical University in Krakow which would be devoted to the psychology of time was rooted in the 1st International Conference: *Time Perspective. Converging Paths in Psychology Time Theory and Research*, which was held on 5–8 of September 2012 in Portugal. We have kept in our minds the really interesting and fruitful debates inside the beautiful buildings of the old Coimbra University. They were conducted in a diversity of topics under the professional and friendly "wings" of emeritus Professor of Stanford University – Philip Zimbardo. The real contact with Professor Zimbardo leaded two of participants from Poland: Urszula Tokarska and Joanna Kossewska to the idea of inviting this unquestionable international authority of the psychology of time to play the honorary auspices under *Human Development Support Psychology Unit.* Professor Philip Zimbardo gave us his acceptation and our small Psychological Unit have started a new phase of activity – focusing all the efforts around the time psychology.

The second idea was the simple consequence of the first one, leading us to a vision of collecting selected texts of time psychology conference speeches, which were not published in places suggested by conference organizers. In our opinion they could provide a valuable corpus of articles thematically related by the "time psychology" context that would be edited and standardized in the Special Issue of *Annales Universitatis Paedagogicae Cracoviensis. Studia Psychologica* by experts within the given domain. Thus, the effort of active Time Perspective conference participants would be more highly appreciated and rended useful. We had gained Professor's friendly acceptation once again and disseminated the invitation announcement to the participants of the 1st International Conference on Time Perspective and other authors interested in the topic. The process of collecting and elaborating received articles run for several months and now we have the pleasure to enjoy together the fruits of our common work...

Our (inter-continential) authors

Finally, after the internal selection and external double-blind reviewing process the *Special Issue* is composed of 12 articles written by 20 authors representing 11 countries from 4 continents. They came from 4 European countries (Portugal, Poland, Germany, Hungary), South America (Urugway), Asia (Israel, Iran, Taiwan, Nepal, Japan) and Australia. The diversity of authors met on Time Perspective Conference at Coimbra. A few of them joined the writing process just after. One of them, influenced by the expressive „after conference Portugal stories" has decided to conduct and describe her original psychology of time research regardless of the conference enterprise.

Thematic content of the articles collected in this *Special Issue*

The multi-plot character of all the collected articles enables to assign them to the single narrow separate sub-categories. Even though, in the aim of giving the readers the possibly clear vision, we decided to group them into a few thematic groups.

PART I METHODOLOGICAL ISSUES

1. **Studies of psychometric properties of the Zimbardo's *Time Perspective Inventory* in other countries.** Bernd Reuschenbach, Joachim Funke, Annika M. Drevensek & Nadine Ziegler in their article "*Testing a German Version of the Zimbardo Time Perspective Inventory (ZTPI)*" indicate that the German version of the ZTPI proves to be internal consistent and reliable in retest, except the Future Scale. Correlations with conceptually related tests indicated a fair degree of construct validity within the framework of classical test theory, but the fit to a Rasch model was not successful.

2. **Relations between the results and the tools measuring the time orientation**. Nurit Carmi in "*Different Measures of Future Orientation May Yield Opposite Predictions of Environmental Attitudes and Behaviour*" presents the study compared between two primary measures of Future Orientation: *Zimbardo Future Time Perspective (F-ZTP)* and *Consideration of Future Consequences Scale (CFC)* in the environmental context. The comparison between the different predictions gained by different measures suggests that future orientation is multi-dimensional and different constructs capture different dimensions of it. When temporal conflicts involve social conflicts, as in most environmental conflicts, an inconsistency between the predictabilities of the constructs may emerge, revealing a conflict between the "futures" people are orienting at.

PART II REGULATIVE FUNCTIONS OF THE GIVEN TIME PERSPECTIVE

3. **Regularity in the emotional functioning of a human in specific time.** Daily and weekly variability of mood experience is the subject of Agnieszka Wilczyńska's research "*Variability of the Relationship Between Mood and Social Zeitgeber*". The article describes how daily mood changes can be determined by cycles characterised by psycho-physiological and social changes. The objective of the research was to establish whether the population subjected to the research-related tests experienced daily and weekly mood variability and, if this relation has been confirmed, describe the latter. The result obtained in the tests indicated the existence of daily differences of positive affect as well as weekly differences in relation to positive and negative affect.

4. **The relationship between time changes in using emotional regulation strategies and emotional well-being.** In the study of Yu-Jing Gao's "*Interindividual Differences and Intraindividual Variability in Emotional Well-being: an Examination of Gender, Time Perspective and Emotion Regulation*" there were examined trajectories of emotional well-being, positive affect, and negative

affect with time passing. The effect of differences in gender and time perspective profiles on intraindividual variability of weekly affect and associations between time trends of affects and use of two emotional regulation strategies: reappraisal and suppression, were investigated. The habitual use of reappraisal was related to the increase of emotional well-being and positive affect and related to the decline of negative affect. By contrast, habitually using suppression was related to an increase of negative affect over time. The main findings also indicated that individuals with balanced time perspective had higher levels of emotional well-being compared to those without balanced time perspective at the baseline of the study.

5. **The well-being consequences of using the beneficial time perspectives**. Elizabeth C. Temple in her "*Associations between Psychological Well-being and the Development of Beneficial Time Perspectives*" shows that even a growing body of research suggests that some time perspective orientations are more beneficial than others with regard to wellbeing, however, little is known about the factors affecting the development of these time perspectives. This gap in the research was addressed through her studies from which she developed two models of the associations between attachment orientation, basic psychological need satisfaction and Past Positive (PP) and Past Negative Time Perspective (PN) as measured by the *Zimbardo Time Perspective Inventory* (ZTPI). While anxious and avoidant attachment orientation were associated with both PP and PN, the three basic psychological needs were differentially associated. The findings of these studies suggested the importance of early childhood care to the development of beneficial time perspectives.

6. **The connections between time perspective and preferred values of university students.** In Alina Kałużna-Wielobób's study "*Student Time Perspective in the Context of Their Preferred Values*" positive correlation was found between the *Zimbardo Time Perspective Inventory* hedonistic present scale and following values measured by *Schwartz's Portraits Value Questionnaire*: hedonism, stimulation and self-direction, and negative correlation with benevolence and tradition. The future perspective was positively associated with conformity, tradition, achievements, self-direction and universalism, and negatively with hedonism. Positive past is positively connected with conformity and tradition. Negative past – positively with power and negatively with stimulation and self-direction.

7. **Time Perspective's association with Self-Esteem**. Victor E. C. Ortuño & Alejandro Vasquez Echeverría in their "*Time Perspective and Self-Esteem: Negative Temporality Affects the Way We Judge Ourselves*" explore (enriching previous correlational models usually used in this topic) a structural equation model of Time Perspective's association with Self-Esteem. They show that negative effects of time dimensions (rather than positive ones) are more related to Self-Esteem.

8. **Career indecision status in the context of preferred time perspective** is the aim of Fruzsina Lukács and Gábor Orosz's research described in "*Career Indecision from the Perspective of Time Orientation*" article. Previous works mainly

investigated the relationship between career indecision and future orientation, neglecting attitudes towards other time perspective dimensions. To overcome this hiatus – the *Zimbardo Time Perspective Inventory* (ZTPI) and *Career Factor Inventory* (Chartrand, Robbins, Morrill & Boggs) were used. By considering variable-centered and person-centered analyses, results suggest that scores on TP factors are closely associated with the career indecision type. This patterns can be classified into: "Path Seeker" & "Ready to Decide" (subjects with a balanced time perspective); "Chronically Indecisive" (dominated by the past negative factor and less future oriented) and "Choice Anxious" (with scores lower on all TP factors except Past-Negative TP than any other group).

PART III THE TIME PERSPECTIVE CONTEXT OF PERSONS WITH SPECIAL NEEDS

9. **Deaf people functioning in the time perspective context** is the aim of Joanna Kossewska's "*Time in the Context of Deafness*" research. Hearing impairment is here treated as the important factor influencing individual experience and development. The paper analyses the three levels of psychological time in the context of contemporary research. The results are discussed in the frame of such crucial conditions as communication, language and culture. Temporal perspective is described here in the context of world representation understood as a system of knowledge comprising an individual's information and beliefs developing as the individual gains experience, which plays a regulative role in making choices, building attitudes towards the real world and solving problems. Deaf adolescents concentrate on present more than their hearing peers.

10. **Comparing time perspective between representatives of different diseases.** In this field of investigation Masoumeh Nozari, Ghasem Janbabai & Yarali Dousti the authors of "*Time Perspective in Healthy Individuals and Patients Suffering from Cancer and Diabetes*" paper, aims to compare time perspective between diabetic and cancerous patients and healthy people, which showed as three groups different time perspectives and different ranking in time orientation. Findings show that the disease and its type can significantly impact time orientation of the patients. Therefore, to prevent potential subsequent outcomes, the patients' time perspectives towards disease should be improved especially under disease conditions. The author claims that the type of time orientation can significantly improve health-related prevention behaviours and influence disease outcomes through boosting health-oriented behaviours.

PART IV TIME PERSPECTIVE IN PSYCHOLOGICAL APPLICATIONS

11. **Assessing the effects of psychotherapy.** Shinichi Sakuma, Bijay Gyawali, Takiko Kimura, Chiaki Nishikawa, Junko Watanabe & Teruchika Katsumata in their common work "*Changes in Time Perspective Resulting from Psychotherapy*" based on the concept of the feedback and feedforward systems in "cybernetic-psychology" assess how effective psychotherapy is. The Time Perspective Scale (TPS) was administered to three clients (diagnosed as *hikikomori* and PTSD suffered) in order to assess the effects of psychotherapy. Results indicated that at the end of the intervention, clients' thoughts were positively focused on the present and the future. In comparison to their negative thoughts

concerning the present and the future during the pre-intervention period, two clients displayed positive feedback regarding the past, and all clients displayed positive thoughts about the present as well as positive feedforward thoughts for the future. The clients had more positive and more constructive cognitions after the intervention. Therefore, the time perspective measurement is a useful tool for assessing the therapeutic efficacy of the time perspective.

12. **The existential and narrative dimension of "the applied psychology of time"**. Urszula Tokarska in her article "*In Eighty Stories Around the Human Life. The Psychological Time Binding Strategies in The Narrative (auto) BIOGRAPHICAL GAME*" considers the necessity of the meaningful integration of all the "time rooted plots" into individual *life stories* in the deep education conducting. Searching for the sense of continuity, distinction and coherence of one-'s own story are usual ways of work within the narrative approach in psychology. In this field *the psychology of time* meets the existentially oriented *narrative psychology* in the potentially meaningful cooperation, leading to the relatively new field of "the applied psychology of time". The article presents the original psychological tool of practicing the skills of "biographical competence", rooted in binding "the time of life" with "the daily time" in the form of narrative board game with the dice and *Hypertextual Life Story Map*. The game exercises examples are attached.

<div align="center">

Now it comes "a time" for the best acknowledgments:
First of all – for Professor Philip Zimbardo, for all inspiration given
to us and for his on-going well-wishing acceptance of the idea:
Dear Professor,
please accept this Issue as our gift to you for your 80th birthday!

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A lot of praise for our Authors – for their research, linguistic and patient elaborating efforts. Waiting for something is not an easy process... Our Authors had the unquestionable possibility of practicing two different "time exercises": to manage the pressure of time at the early beginning and the prolonged period of waiting for final elaboration. They achieved it perfectly...

Many acknowledgments **for all the Reviewers** and for the *Annales* **Editorial Team** – for their systematic and engaged beneficial work.

At the end of this introduction please let me quote the (well known) results of statistic research counting the ways of distribution of "life time" of an average west countries citizen. Adopting 75 years as the average biological time of our life we should notice that 25 years of this we devote to sleep, 17 years for work & school activities and 7... for eating. Adding to this, approximately, 6 years usually allocated for watching TV, 5 for medical proceedings, 2 for visits, 2,5 for driving, 1,5 for toilet and the other 1,5 for waiting for something, 1 for dressing – we still have in our disposal 6 years for "other activities"... I hope that the potential reader is going to designate some of his precious time to become acquainted with our *On Time Perspective Special Issue* content.

On behalf of the Editorial Team please feel invited to the current and future collaboration.

Urszula Tokarska

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Testing a German Version
of the Zimbardo Time Perspective Inventory (ZTPI)

Abstract

The present study assesses the psychometric properties of the Zimbardo Time Perspective Inventory (ZTPI) in a German sample of N = 160 individuals. The five subscales (Past-Negative, Present-Hedonistic, Future, Past-Positive, and Present-Fatalistic) measure different dimensions of the Time Perspective. The German version of the ZTPI proves to be internally consistent and reliable in retests, except for the Future Scale. Retest reliability for a sub-sample (N = 25) indicates a stable measurement of the scales. The Zimbardo and Boyd's (1999) factor structure could not be replicated satisfactory. Correlations with conceptually related tests (IPC, HAKEMP, and HEIPI) indicate a fair degree of construct validity within the framework of classical test theory. The fit according to a Rasch model was not successful.

Keywords: Zimbardo Time Perspective Inventory (ZTPI), German translation, validation, diagnostic instrument

Testowanie niemieckiej wersji Kwestionariusza Postrzegania Czasu Zimbardo (ZTPI)

Streszczenie

W niniejszym badaniu oceniono psychometryczne właściwości ZTPI na niemieckiej próbie N = 160 osób. Do pomiaru różnych rodzajów perspektywy czasu wykorzystano pięć skal: Przeszłość-Negatywna, Teraźniejszość-Hedonistyczna, Przyszłość, Przeszłość-Pozytywna oraz Teraźniejszość-Fatalistyczna. W oparciu o wyniki badań powtórzonych, za wyjątkiem skali badającej orientację przyszłościową, niemiecka wersja kwestionariusza ZTPI okazała się wewnętrznie spójna i rzetelna. Rzetelność ponownego badania dla podpróby (N = 25) wskazuje na stabilny pomiar skal. Nie udało się w sposób zadowalający replikować struktury czynnikowej opracowanej przez Zimbardo i Boyda (1999). Korelacje z wynikami konceptualnie powiązanych testów (IPC, HAKEMP i HEIPI) pokazują znaczny stopień trafności

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konstruktu w ramach klasycznej teorii testów. Nie powiodło się jednak dopasowanie wyników do modelu Rascha.

Słowa kluczowe: Kwestionariusz Postrzegania Czasu Zimbardo (ZTPI), trafność, niemieckie tłumaczenie, narzędzie diagnostyczne

Introduction

In recent years the conception of "Time Perspectives" (TP) as a general temporal orientation towards past, present, or future has been subject to intensive research. So far, most studies and theories focused on a Future or Present TP (e.g., Carstensen, Isaacowitz & Charles, 1999; Nurmi, 1994; Trommsdorff, 1994; Wohlford, 1966), but there are integrative views (e.g. Nuttin, 1985) as well. According to Lewin (1951), TP is part of an individual's orientation of psychological past and future existing at a given time. The conception of TP, as adopted by Zimbardo and Boyd (1999), is based on Lewin's model and describes TP as "the often non-conscious process whereby the continual flows of personal and social experiences are assigned to temporal categories, or time frames, that help to give order, coherence, and meaning to those events." These cognitive frames may be organized as cyclical, repetitive temporal patterns or unique, non-recurring linear events. The empirically centered representation of the present is embedded between the rather abstract reconstructions of past and anticipated future events.

Temporal orientations affect people's lives by subtly influencing their appraisals, choices, and actions. If one time dimension is over-emphasized, a person is said to have a temporal bias towards the past, present, or future orientation. According to Boniwell and Zimbardo (2003), TP is one of the most powerful factors affecting human behaviour in general and quality of life in particular. It is seen as a multidimensional construct that constitutes personal TP profiles.

Every TP is associated with different attributes, behavioural patterns, and attitudes. A general future orientation is interrelated with greater academic success and health behaviour, whereas a bias towards the present is often linked to health problems and delinquency. Correlates with a negative past-orientation were often found associated to anxiety or depression.

Western individualistic cultures demand future and goal orientation, but this bears the threat of neglecting values as sense of family, community or nationality (Boniwell & Zimbardo, 2003). Thus, a balanced temporal orientation, implying a flexible shift between TPs according to the demands of the situation, is desirable. Even though this notion is intuitively plausible, there exists no consistent evidence which indicates that people with balanced TPs are happier.

Time itself can be measured precisely, but assessment of the subjective experiencing of time is more difficult. It is easily biased with attitudes and moral concepts. In the 1950s and 1960s, time used to be conceptualized as a criterion to predict a person's temporal focus. Researchers used projective measurement instruments including the TAT (Thematic Apperception Test), to test a person's temporal focus.

Their participants were shown ambiguous pictures and asked to tell a story about them. Other approaches in these decades included the "Circles Test" (Cottle, 1976), "time lines" (Rappaport, 1990), and motivational induction methods (Nuttin, 1985). Deception is less likely in such procedures, because participants do not detect which data is being measured. Conversely, projective measurement instruments do not reach satisfactory psychometric qualities and they are hard to analyse.

Another possible way to measure temporal orientation is via self report in a standardized questionnaire (e.g. DeVolder & Lens, 1982; O'Donnell, Schwab-Stone & Muyeed, 2002; Strathman, Gleicher, Boninger & Edwards, 1994). Zimbardo and Boyd (1999) criticized the existing TP-research for lacking coherence, as well as an adequate theory and a reliable and valid standard measurement procedure. Furthermore, most tests assessed only one time dimension (e.g. "Consideration of Future Consequences", CFC, from Strathman et al., 1994; "Sensation-Seeking Scale", from Zuckerman, 1994). The past orientation in all of these tests did not receive sufficient attention. Thus, Zimbardo and Boyd's (1999) goal was to establish a questionnaire which measures every dimension of time, is easy to handle, and reliable to analyse. Their questionnaire is based on theoretical considerations and offers a clear and replicable factor structure, sustainable reliability of subscales, and high validity.

Theoretical background

The ZPTI consists of 56 statements corresponding to five different time dimensions: Past-Negative, Present-Hedonistic, Future, Past-Positive, and Present-Fatalistic. The first factor, Past-Negative, reflects a generally negative and aversive view of the past. It is associated with regret, trauma and pain (e.g. "Even when I am enjoying the present, I am drawn back to comparisons with similar past experiences."). The second factor: Present-Hedonistic, corresponds to a hedonistic, risk-taking, and carefree attitude towards time and life (e.g. "It is more important for me to enjoy life's journey than to focus only on the destination."). The third factor, Future, reflects a general future orientation to become manifest in delayed gratification and planning (e.g. "I am able to resist temptations when I know that there is work to be done."). Past-Positive refers to a warm, sentimental attitude towards the past (e.g. "I enjoy stories about how things used to be in the «good old times».") and is therefore very different from Past-Negative. The fifth and final factor, Present-Fatalistic, corresponds to a fatalistic, helpless and hopeless view of future and life (e.g. "Since whatever will be will be, it doesn't really matter what I do.").

Methods

Participants

ZPTI questionnaires were administered to a German sample of $N = 160$ (44 males and 116 females; age range: 15–85 years, M = 30 years, SD = 14.1 years). The participants were European, where 96% were of German nationality. The

educational standard among the participants was particularly high, where 84% of the group had a high-school, university or postgraduate degree (see Tab. 1).

Tab. 1. Descriptive variables (status, gender, age in years, education and nationality) of the two German samples used

Variable	Sample	
	Test (N = 160)	Re-Test (N = 25)
status	57 employed	10 employed
	103 not employed (mostly students)	15 not employed (pupils and students)
gender	116 females	15 females
	44 males	10 males
age in years	M = 30	M = 28.1
	SD = 14.1	SD = 11.2
education	84 % high school	68 % high school
nationality	96 % German	96 % German

After six months, N = 25 individuals were re-tested (10 males and 15 females; age range 16–55, M = 28, SD = 11.2 years). Again, 96% were of German nationality and 68% had a higher educational degree.

Instruments

Funke, Reuschenbach, Pfann, Roch and Ziegler developed a German version of the ZTPI in 2003 (ZTPI-DF, 2003). This version was based on the translation of Morgenroth (ZTPI-DM, n.d.). A couple of items were revised and reformulated; four items were allocated to other scales compared to Zimbardo and Boyd (1999), according to their content and connotation. A total of N = 160 participants completed this adapted version of the ZTPI along with the IPC ("Fragebogen zu Kontrollüberzeugungen", locus of control; Krampen, 1981), HAKEMP ("Handlungskontrollfragebogen", action-control scale; Kuhl, 1994) and HeiPi ("Heidelberger Planungsinventar", Heidelberg Planning Inventory – an inventory constructed by ourselves).

The intention was to compare the psychometric qualities of the ZTPI-DF to those of the original questionnaire. Besides the major quality criteria of the classical test theory (objectivity, reliability, validity, and standardization), the validity of the ZTPI is controlled by the use of the Rasch-models, which determine whether or not the ZTPI satisfies the strict assumptions of the probabilistic test theory. The three main research questions which are asked are the following:

(1) Is the ZTPI-DF, as applied to a German sample, as reliable and valid as was shown in the American samples? Previous findings (Apostolidis & Fieulaine, 2004; Kolesovs, 2002, 2005; Zimbardo & Boyd, 1999), suggest that the ZTPI-DF yields reliable and valid data.

(2) Is it possible to replicate the five-factor structure as assumed by Zimbardo and Boyd? Thus far, it has only been proven possible to replicate the five-factor-

-structure in eliminating certain items or allocating items to different factors (Apostodilis & Fieulaine, 2004). Otherwise the sequence of factors, according to their contribution in explaining the total variance, could not be replicated (Kolesovs, 2002). Also, results from Ryack (2012) suggest that the factor structure depends on characteristics of the sample. Based on these results, it is unlikely that the published structure will be found in the German sample.

(3) Is the ZTPI-DF Rasch scalable? The ZTPI has been constructed on the basis of the classical test theory, which makes certain assumptions without necessarily guaranteeing them. Several of these assumptions can be tested using the Rasch-analysis. It is unlikely that the ZTPI suffices the stricter criteria of probabilistic test theory, and furthermore, analyses with different scales have raised problems concerning the five-stage response format (Rost, Carstensen & von Davier, 1999).

Statistical analyses

A linear correlation analysis was performed as a means to determine the influence that age played throughout the tests. To measure the effect of the education level (high-school, university, or postgraduates vs. lower graduation) and gender, two-sided t-tests for independent samples were used. Internal consistency was specified with the Cronbach Alpha, which indicates the retest-reliability by correlating between scores of the five factors in test and retest conditions. The validity of the results was evaluated with Pearson correlations between the scales of the ZTPI-DF, the HAKEMP, and several items of the HeiPi.

Furthermore, explorative and confirmatory factorial analyses (EFA and CFA, respectively) were performed, where the EFA was conducted as a principle component using varimax rotation. The missing values were replaced by the mean values from the available data. The number of extracted factors used for these tests were determined by theoretical consideration as well as by means of a scree test. The scree test revealed five substantive factors and an alternative factorial structure of the ZTPI-DF in the German sample, which was compared to the one found by Zimbardo and Boyd (1999) in the CFA. The model-fit was evaluated using a χ^2-test, where model-fit-indices were taken into account, as well as the alternative method relating χ^2 with the degrees of freedom (χ^2/df), as used by Zimbardo and Boyd (1999). A global Rasch-model test and a mixed-model test were administered for a more in-depth investigation of the ZTPI-DF. The criteria for the Rasch-scalability are the Bootstrap-test (χ^2, Cressie Read), BIC, CAIC, as well as Q-indices.

Results

The lowest mean in the German sample (see Tab. 2) was for Present-Fatalistic ($M = 2.33$), the highest mean for Past-Positive ($M = 3.53$). Past-Negative had a mean of $M = 2.90$, Present-Hedonistic $M = 3.25$ and Future $M = 3.49$, indicating that the average German is positively past-orientated and a little fatalistic. The order of means is identical for the German and the American sample.

A t-test for gender and the five subscales reveals statistical significance for the Future scale ($t(159) = 2.40$, $p < .05$). It is found that women have a higher mean

(M = 3.54, SD = 0.04) than men (M = 3.37, SD = 0.06) in the Future scale and can therefore be said to possess a stronger Future-orientation. The difference between the means seems rather small (0.17), but the power suggests that there is an 80% chance that the difference in this sample could be discovered in future tests as well (see Tab. 2).

Tab. 2. Descriptive data (mean, variance) of males and females for the five ZTPI scales and t-statistics with p-value for the gender effect (N = 160)

scale	males (N = 44)		females (N = 116)		t	p
	mean	var	mean	var		
1. Past-Negative	2.89	0.66	2.90	0.59	0.08	.933
2. Present-Hedonistic	3.21	0.54	3.27	0.41	0.61	.539
3. Future	3.37	0.39	3.54	0.39	2.40	.018*
4. Past-Positive	3.43	0.61	3.56	0.47	1.41	.159
5. Present-Fatalistic	2.36	0.56	2.31	0.47	0.49	.624

* $p < 0.05$

The correlation between age and the ZTPI-Factors provides only one significant value: The scores on the present hedonistic scale were negative associated with age (r = -.255, p < .001).

Finally, there is an effect of education on the results, as well. The group with lower education produced significantly higher scores on the Present-Fatalistic scale (M = 2.88, SD = 0.51) as compared to the group with higher education (M = 2.64, SD = 0.51). The difference between the two groups is significant (t(157) = 2.21, p < .05.).

There are several significant correlations between the ZTPI-DF subscales in the German sample. The correlations between Present-Hedonistic and Future are the highest (r = -.40, p < .05), followed by Present-Fatalistic and Past-Negative (r = .38, p <.05), Future and Present-Fatalistic (r = -.29, p <.05), Present-Hedonistic and Present-Fatalistic (r = .24, p < .05), Past-Negative and Present-Hedonistic (r = .23, p < .05) and Past-Negative and Past-Positive (r = .22, p < .05). Correlations between the other subscales did not reach any significant values (see Tab. 3).

The reliability of these results is assessed by using Cronbach's Alpha and a test-retest correlation. The values calculated for Cronbach's Alpha in this test do not reach those reported by Zimbardo and Boyd (1999), but exceed α = .70 (except that for the Future scale, where α = .68). Allocation of several to other scales, according to their content and connotation, noticeably increases the internal validity of the Present-Fatalistic scale. The test-retest correlations for the five subscales all reach significant values at the 1%-level and exceed $r_{tt} =$ .70 (except for the Future scale, where r_{tt} = .65). For Past-Negative, Present-Hedonistic, and Present-Fatalistic the outcomes outrange those as reported by Zimbardo and Boyd (1999). In regards to the Future scale, it is found that the American sample provides higher values (r_{tt} = .80).

Tab. 3. Correlations between the five ZTPI scales from three different samples
(G = German ZTPI-DF from this study, with N = 160; A = American version from Zimbardo & Boyd, 1999, with N = 606; F = French version from Apostolidis & Fieulaine, 2004, with N = 419)

		1. Past-N	2. Pres-H	3. Future	4. Past-P
2. Pres-H	G	.23*			
	A	.16*			
	F	-.01			
3. Future	G	-.07	-.40*		
	A	-.13*	-.29*		
	F	-.10	-.36*		
4. Past-P	G	-.22*	.30	-.02	
	A	-.24*	.18*	.12*	
	F	-.55*	.13*	.19*	
5. Pres-F	G	.38*	.24*	-.29*	.00
	A	.38*	.32*	-.26*	-.09*
	F	.37*	.32*	-.33*	-.22*

* $p < .05$

The scree test, in the context of the EFA, exhibits an ever decreasing eigenvalue between the fifth and sixth factor, as was similarly found by Zimbardo and Boyd (1999) and Apostolidis and Fieulaine (2004). Thus, the emerging five-factor model explains 36% of the total variance, where the first factor (Past-Negative) explains 12%, the second (Present-Hedonistic) 9%, the third (Past-Positive) 6%, the forth (Present-Fatalistic) 5%, and the final, fifth factor (Future), 4%. Zimbardo and Boyd (1999) found that the Future factor explained the third largest part of the variance in their tests, as followed by Past-Positive and Present-Fatalistic. This sequence, however, is altered in the German sample. Table 4 presents the factor-loadings sorted for the five-factor solution.

Confirmative factor analyses were thereafter performed, where Model 1 (item allocation according to Zimbardo and Boyd (1999)) and Model 2 (modified item allocation according to their content and connotation) were compared. The χ^2-Test was significant ($p < .001$) for both models, where Model 1 provided a $\chi^2(1484) = 2715.73$ for $N = 158$ and Model 2, a $\chi^2(1484) = 2649.76$ for $N = 158$. The results for the χ^2/df ratio, however, were not adequate and most of the model-fit indices (CFI, SRMR) suggest rejecting both models. The models hardly differ in their BIC-values (Model 1: $BIC = 23139.08$ vs. Model 2: $BIC = 23139.54$), thus making it unreasonable to qualify one model over the other one.

Finally, a Rasch-model test was performed to see if item difficulty and person ability can be identified separately. The global bootstrap-test suggests rejecting the Rasch-Model, as all the Cressie Read and Pearsons χ^2 terms reach significant values. The BIC- and CAIC-values infer that person homogeneity can be assumed,

and because the Q-indices are insignificant, Rasch-homogenity is applied (except in regard to item 52). Threshold inconsistencies (between different threshold values) suggest response tendencies. The "neutral" category does not represent a middle score, but rather the relevancy of a certain item for a certain person. Furthermore, there may be certain response sets which indicate a tendency for social desirability for several items.

Tab. 4. Item text, factor loadings and item statistics (Q = fit statistic; r_{it} = item-scale correlation) for the 56 German items of the ZTPI. Reverse item coding is indicated by square brackets

No	Text	Past-Neg	Pres-Hed	Future	Past-Pos	Pres-Fat	Q	r_{it}
50	Ich denke oft über die schlechten Dinge nach, die mir in der Vergangenheit passiert sind.	.74					.11	.65
4	Ich denke oft darüber nach, was ich in meinem Leben hätte anders machen können.	.65					.14	.59
34	Es fällt mir schwer, unerfreuliche Dinge aus meiner Jugend zu vergessen.	.65					.18	.49
16	Schmerzhafte Erfahrungen in der Vergangenheit gehen mir nicht mehr aus dem Kopf.	.62					.15	.55
27	Ich habe in der Vergangenheit Fehler gemacht, die ich gerne rückgängig machen würde.	.60					.14	.55
25	In meiner Vergangenheit gibt es zu viele unerfreuliche Erinnerungen, über die ich lieber nicht nachdenke. [reverse code]	-.58					.31	.15
22	Ich habe in der Vergangenheit genug Missbrauch und Ablehnung erlebt.	.54					.23	.33
54	Ich denke über die schönen Dinge nach, die ich in meinem Leben verpasst habe.	.54					.18	.45
33*	Die Dinge fügen sich selten so wie ich erwartet habe.	.45					.22	.40
36	Selbst wenn ich gerade die Gegenwart genieße, vergleiche ich sie doch immer wieder mit ähnlichen Erfahrungen in der Vergangenheit.	.43					.25	.34
9	Wenn etwas nicht rechtzeitig fertig ist, mache ich mir darüber keine Sorgen.	.32					.31	.17
44	Ich höre mehr auf meinen Bauch als auf meinen Verstand.		.61				.22	.42

48	Ich mag lieber Freunde, die spontan sind, als solche, die alles im Voraus planen.		.57				.22	.45
8	Ich handele impulsiv.		.54				.25	.34
28	Für mich ist es wichtiger zu genießen was man gerade tut als seine Arbeit rechtzeitig zu erledigen.		.52				.15	.55
31	Ein Leben ohne jedes Risiko ist mir zu langweilig.		.50				.19	.47
23	Entscheidungen fälle ich spontan, ohne viel zu überlegen.		.50				.31	.24
26	Für mich ist es wichtig, ein aufregendes Leben zu führen.		.46				.12	.61
42	Ich gehe Risiken ein, damit Aufregung in mein Leben kommt.		.43				.21	.43
21	Ich komme meinen Verpflichtungen gegenüber Freunden und Behörden pünktlich nach. [reverse code]		-.43				.19	.39
18	Ich ärgere mich, wenn ich zu Verabredungen zu spät komme. [reverse code]		-.40				.27	.22
52*	Mit dem Geld, das ich verdiene, will ich lieber jetzt etwas genießen, als es für schlechte Zeiten zurückzulegen.		.40				.18	.46
32	Es ist mir wichtiger, das Leben zu genießen, als mich nur auf meine Ziele zu konzentrieren.		.36				.22	.40
30	Bevor ich eine Entscheidung treffe, wiege ich Kosten und Nutzen gegeneinander ab. [reverse code]		-.32				.31	.15
12	Wenn ich meine Lieblingsmusik höre, vergesse ich die Zeit.		.32				.28	.26
2	Vertraute Bilder, Geräusche und Gerüche aus meiner Kindheit wecken in mir eine Vielzahl von wunderbaren Erinnerungen.			.62			.14	.51
15	Ich mag Geschichten über die „guten alten Zeiten".			.62			.14	.49
11	Alles in allem habe ich deutlich mehr positive als negative Erinnerungen an Erlebnisse aus meiner Vergangenheit.			.59			.12	.55
20	Erfreuliche Erfahrungen aus der Vergangenheit kommen mir leicht in den Sinn.			.56			.13	.53

41	Ich ertappe mich selbst dabei, wie ich mich ausklinke, wenn sich andere Familienmitglieder über vergangene Zeiten unterhalten.			.50			.16	.50
7	Ich denke gerne über meine Vergangenheit nach.			.50			.19	.38
49	Ich mag Familienfeste und Traditionen, die regelmäßig wiederholt werden.			.46			.22	.32
1	Das Zusammensein mit Freunden ist ein wichtiger Aspekt in meinem Leben.			.39			.33	.16
19	Wenn ich könnte, würde ich jeden Tag so leben, als wäre er mein letzter.			.38			.19	.43
5*	Meine Entscheidungen sind meistens von den Menschen und Dingen um mich herum beeinflusst.			.38			.28	.26
55	Ich mag es, wenn meine engen Beziehungen leidenschaftlich sind.			.36			.28	.27
46	Ich ertappe mich häufig selbst dabei, wie ich von der Aufregung des Augenblicks mitgerissen werde.			.35			.24	.36
29	Wenn ich an meine Kindheit zurückdenke, werde ich wehmütig.			.33			.26	.18
39	Ich halte es für sinnlos, sich über die Zukunft Sorgen zu machen, da ich ohnehin nichts daran ändern kann.				.72		.15	.50
14	Da ohnehin alles kommt wie es soll, ist es egal was ich tue.				.68		.15	.46
3	Vieles in meinem Leben hängt vom Schicksal ab.				.60		.21	.37
38	Mein Lebensweg wird von Kräften bestimmt, die ich nicht beeinflussen kann.				.59		.14	.53
37	Man kann die Zukunft nicht planen, weil sich die Dinge oft ändern.				.53		.15	.50
53	Mit Glück erreicht man oft mehr als mit harter Arbeit.				.49		.18	.46
56*	Es wird immer genug Zeit sein, meine versäumte Arbeit nachzuholen. [reverse code]				-.41		.32	.14
47	Das Leben heutzutage ist zu kompliziert; das einfachere Leben in der Vergangenheit gefiele mir besser.				.27		.24	.27

10	Wenn ich etwas erreichen will, setze ich mir Ziele und überlege genau, wie ich diese erreichen kann.					.63	.24	.31
45	Ich kann Versuchungen widerstehen, wenn ich weiß, dass es noch Arbeit zu erledigen gibt.					.62	.13	.55
40	Ich erledige Vorhaben termingerecht, da ich konsequent daran arbeite.					.53	.15	.50
51	Ich halte auch bei einer schwierigen, uninteressanten Arbeit durch, wenn es mich weiter bringt.					.53	.29	.22
13	Termine einhalten und andere notwendige Arbeiten erledigen hat Vorrang vor der Party heute Abend.					.50	.19	.43
35	Es verdirbt mir die Freude an meinem Schaffensprozess, wenn ich mir über Ziele und Resultate meiner Tätigkeiten Gedanken machen muss. [reverse code]					-.46	.22	.37
24	Ich nehme jeden Tag wie er kommt, ohne viel zu verplanen.					.45	.16	.51
6	Ich glaube, man sollte jeden Morgen den Tagesablauf im Voraus planen.					.39	.24	.31
43	Ich mache mir Listen, was ich alles zu tun habe.					.35	.30	.15
17	Ich versuche, mein Leben so ausgefüllt wie möglich zu leben, an jedem Tag aufs Neue.					.33	.31	.23

* items have been allocated to other scales due to their content and connotation

Discussion

As a part of our discussion, we would like to present the answers to the three main research questions proposed at the beginning of this paper.

(1) Does the ZTPI-DF, as applied to a German sample, prove to be as reliable and valid as the ZTPI used in the American samples? According to the classical test theory, the ZTPI-DF proves to be reliable. It shows internal consistency and stability over time (except for the Future factor) and seems to be a valid indicator for time orientation. Nevertheless, the results of the Rasch-analysis suggest that this test lacks construct validity.

(2) Is it possible to replicate the five-factor-structure as assumed by Zimbardo and Boyd? It is possible to replicate the five-factor structure in an explorative factor

analysis. The sequence of factors, according to their contribution to explaining the total variance, was slightly different in comparison to the outcomes as found by Zimbardo and Boyd (1999). Several of our factor-loadings differed from their findings and some could not be interpreted with regard to content. An alternative model which allocated several items to different scales (Model 2), could not out-perform Zimbardo and Boyd's (1999) Model 1. In fact, it was shown that both models should be rejected.

(3) Is the ZTPI-DF Rasch scalable? The global Bootstrap-Test suggests rejecting the Rasch-model. The reason for this invalidity cannot be seen in lacking person homogeneity, as the mixed Rasch-model does not apply. It is likely that the problem lies within the construct or within the items; in fact, the scales seem to be multi-dimensional. Although the Q-indices suggest model conformity, the Rasch-model might simply be too insensitive for model-deviations. Thus, more sensitive fit-indices are desirable in future research.

In general, the ZTPI is an impressive test, through its easy handling and inter-pretation. It has a theoretical foundation and takes into account multi-dimensional aspects of time perspective, i.e. past, present, and future. Furthermore, the measur-ing instrument has remained an object of interest for decades of research, where there is an ever-continuing effort to improve it.

The quality criteria, according to the classical test theory, are satisfying in both the American and German samples. Each sample provides reasonable values in reliability, construct and criteria validity. The only exception was the Future factor in the German sample, which lacked internal consistency and stability over time. However, this may be the result of a diverse sample. Students, as well as retired persons, participated in this study, and according to previous studies, a person's time perspective changes as they age. The future factor is found to be affected by the amount and type of activities the older people partake in. This assumption can be supported by results from a sample of older people from a Belgian study (Desmyter & de Raedt, 2012). The authors of this study also report low values in terms of internal consistency (i.e. Future factor, α = .53).

The differences between the American and German samples, in regards to the Future factor, may be due to the heterogeneity of the samples. Although Zimbardo and Boyd (1999) had larger sample sizes, the German sample provides a larger range in respect to age, education, and profession. It is intuitionally plausible that students and trainees show a stronger future-orientation than employees or annuitants. Furthermore, it must be considered that cultural differences in the construct of TP (for a review, see Sirkova et al., 2007) might cause problems in replicating the factorial structure of the ZTPI (Apostolidis & Fieulaine, 2004). A recent replication in Lithuania of the ZTPI factor structure (Liniauskaitė & Kairys, 2009) based on 1529 participants was successful in terms of goodness-of-fit indices, except for the values of CFI and TLI. Also, the Swedish version from Carelli, Wiberg & Wiberg (2011) as well as the Greek version (Anagnostopoulos & Griva, 2012) showed acceptable values in terms of the reliability of the ZTPI scales.

There is, however, a general problem concerning the five-staged response categories of the ZTPI. That is to say, the range of possible answers for several items is not used to its full capacity. Furthermore, threshold inconsistencies indicate that the "neutral" category is chosen less often as is anticipated by the distribution of person characteristics. This result suggests that this test does not measure a middle score, but rather personal relevancy. This is a common problem with five-staged response categories, and it could easily be solved by replacing it with a four-staged one. Nevertheless, the ever existing problem of response tendencies concerning social desirability remains.

Finally, as a result of the fit indices, which were used for this test, the Rasch-model is found to be inappropriate for the ZTPI-DF. That being said, if more sensitive fit indices were used on the results, and these indices also indicate that the scales are multidimensional, then the validity of the test has failed and new constructs should be formulated. As the Rasch-model does not apply to the results, the total score can be seen as an inadequate statistic for assessing the true score. Further research on a larger, homogenous sample could provide more clarity into the theoretical foundation of the ZTPI.

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Different Measures of Future Orientation May Yield Opposite Predictions of Environmental Attitudes and Behaviour

Abstract

Future orientation (FO) expresses interpersonal differences affecting the creation of attitudes and behaviour in many life areas. FO is a prerequisite of sustainability, which requires considering environmental consequences for future generations. This study compared two primary measures of FO; Zimbardo's Future Time Perspective (F-ZTP) and the Consideration of Future Consequences Scale (CFC), in the environmental context. While higher values of CFC predicted significantly higher levels of environmental variables, higher values of F-ZTP did *not* predict higher levels, and in some cases even predicted significantly *lower* levels of environmental variables. We suggest that FO is multidimensional, that different constructs capture different dimensions of FO and when temporal conflicts involve social conflicts, as in most environmental conflicts, an inconsistency between the predictabilities of the constructs may emerge, revealing a conflict between the "futures" people are orienting at.

Keywords: future orientation, Zimbardo Time Perspective, consideration of future consequences, environmental attitudes, environmental behaviour

Różne pomiary orientacji przyszłościowej mogą implikować odmienne przewidywania środowiskowych postaw i zachowań

Streszczenie

Orientacja przyszłościowa (FO) wyraża interpersonalne różnice wpływające na powstawanie postaw i zachowań w wielu dziedzinach życia. FO jest zasadniczym warunkiem zrównoważonego rozwoju, który wymaga uwzględnienia konsekwencji środowiskowych dla przyszłych pokoleń. W badaniu wykorzystano dwie metody pomiaru FO: Skalę Przyszłościowej Perspektywy Czasu Zimbardo (F-ZTP) oraz Skalę Przewidywania Przyszłych Konsekwencji (CFC) w kontekście środowiska. O ile wyższe wartości CFC prognozowały znacznie wyższe poziomy zmiennych środowiskowych, o tyle wyższe wartości F-ZTP *nie* prognozowały wyższych poziomów tych zmiennych, a w niektórych przypadkach prognozowały nawet znacznie *niższe* poziomy zmiennych środowiskowych. Wykazano zatem, że orientacja przyszłościowa

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(FO) ma charakter wielowymiarowy, a różne konstrukty oddają jej różne wymiary. Ustalono, iż kiedy konflikty temporalne obejmują konflikty społeczne, co ma miejsce w większości konfliktów środowiskowych, może pojawić się niezgodność między przewidywanymi kierunkami zależności, odsłaniając konflikt między „przyszłościami", ku którym zwracają się ludzie.

Słowa kluczowe: orientacja przyszłościowa, orientacja czasu Zimbardo, przewidywanie przyszłych konsekwencji, postawy środowiskowe, zachowania środowiskowe

Introduction

The ability to foresee and anticipate, to make plans, and to organize future options is one of the most prominent human traits (Gjesme, 1983; Suddendorf & Corballis, 2007). The tendency to plan for, to achieve future goals, and to consider the future implications of one's actions, referred to as *future orientation* (FO), also serves as an individual-differences variable (Strathman, Gleicher, Boninger & Edwards, 1994; Zimbardo & Boyd, 1999). FO has a pervasive and powerful influence on many psychological and behavioural characteristics (Zimbardo & Boyd, 2008). The FO of people in a society considerably affects their personal and social order of priorities and directly influences both personal and national life quality (for review see Seginer, 2009; Strathman & Joireman, 2005). Over the years, FO has been studied at length in psychology literature, and the two primary tools that have been used in contemporary research are Zimbardo's Time Perspective Inventory (ZTPI) (Zimbardo & Boyd, 1999) and the Consideration of Future Consequences (CFC) Scale (Strathman et al., 1994).

Zimbardo and Boyd's Future Time Perspective (F-ZTP)

Zimbardo and Boyd (1999) studied time perspective as a multidimensional variable that incorporates perception of the past, present, and future to create the Zimbardo Time Perspective Inventory. In this research, only one time dimension was used: future time perspective. According to Zimbardo and Boyd, F-ZTP describes the tendency to plan for and to achieve future goals and rewards. High scores in F-ZTP were found as related to low levels of novelty and sensation seeking, and low engagement in behaviours that might jeopardize future goals, such as aggression, ego control, impulsivity and risk taking. F-ZTP has been found to correlate with a wide variety of behavioural phenomena such as smoking, alcohol consumption and drug use (Apostolidis, Fieulaine & Soule, 2006; Keough, Zimbardo & Boyd, 1999; Klingemann, 2001; Kovac & Rise, 2007), reckless driving (Zimbardo, Keough & Boyd, 1997), education, employment and general health (Crockett, Weinman, Hankins & Marteau, 2009; Guthrie, Butler & Ward, 2009; Hamilton, Kives, Micevski & Grace, 2003; Hensen, Carey & Maisto, 2006), well-being and life quality (Drake, Duncan, Abernethy & Henry, 2008), academic success (Adelabu, 2007; Mello & Worrel, 2006; Horstmanshoff & Zimitat, 2007; Worrel & Mello, 2007), procrastination (Diaz-Morales, Ferrari & Cohen, 2008; Ferrari & Diaz-Morales, 2007), fulfilment of commitments (Harber, Zimbardo & Boyd, 2003),

anti-social behaviour (Kruger, Reischl & Zimmerman, 2008), political inclination (Thornhill & Fincher, 2007), and environmental attitudes (preservation vs. utilization) (Milfont & Gouveia, 2006). For a broader review of international research on ZTPI, see www.timeperspective.com.

Consideration of Future Consequences (CFC)

Strathman et al. (1994) proposed an instrument called *consideration of future consequences* (CFC), to represent an individual-difference variable that assesses "the extent to which individuals consider the potential distant outcomes of their current behaviours and the extent to which they are influenced by these potential outcomes" (Strathman et al., 1994, p. 743). The name CFC succinctly describes it. It measures people's tendency to seriously consider the future. The CFC was found to be relatively stable over a single year (Toepoel, 2010). It was also found to be relevant to the creation of attitudes and behavioural decision making in many contexts such as health (Adams & Nettle, 2009; Crockett & Weinman, 2009; Kovac & Rise, 2007; Orbell, Perugini & Rakow, 2004), finances (Adams & Nettle, 2009), environment (Corral-Verdugo, Bonnes, Tapia-Fonllem, Fraijo-Sing, Frias-Armenta & Carrus, 2009; Ebreo & Vining, 2001; Joireman, Van Lange & Van Vugt, 2004; Joireman, Lasane, Bennett, Richards, Solaimani & Joireman, 2001; Lindsay & Strathman, 1997; McElwee & Brittain, 2009) and more (Kortenkamp & Moore, 2006; Strathman et al., 1994; Toepoel, 2010. For a review see Joireman, 2005).

To sum up, all of the reviewed examples, representing diverse contexts in which FO was found to influence attitudes and behaviours, share a common characteristic: they all arouse a temporal conflict between short-term and long-term interests and consequences. In each of the above contexts, future-oriented people prioritized long-term interests over short-term ones, and behaved accordingly.

F-ZTPI versus CFC in prior studies

Most studies previously mentioned have used *either* CFC *or* F-ZTPI as a measure for FO. Few have used *both* constructs simultaneously to measure the relationship between them, as well as the differences in patterns of relationships of each construct with other variables. For example, Adams and Nettle (2009) studied various personality traits, smoking, and other health-related variables along with CFC and F-ZTP. They reported that the correlation between these two constructs was $r = .45$, but only CFC was associated with some of the health-related behaviour. Crocket, Weinman, Hankins, and Marteau (2009) measured health-related behaviour as a function of CFC and F-ZTP (a shortened version of F-ZTPI), and reported that $r = .38$ between the two constructs, and that the constructs predicted health-related behaviours differently. These findings show that both constructs share common characteristics, yet there are differences which should be considered.

FO in the environmental context

FO is an inseparable component of the skills required by an individual or by society to protect nature, to recognize and take responsibility for the state of the

environment for future generations, and to be committed to a sustainable way of life (Joireman, 2005). The very term "sustainability" intimates focusing on future developments and implications. Considering its importance for environmental education and communication, great interest has been aroused in the study of FO in its environmental context (Ebreo & Vining, 2001; for a review see Joireman, 2005).

To date, no study has yet investigated FO simultaneously with CFC and F-ZTP on the same issue in the environmental realm. The present study aims at comparing the patterns with which the two instruments predict various environmental variables. Such a comparison is important for two reasons. The first reason relates to a general methodological aspect of measuring FO. Only a few studies (in health related variables) concurrently examined several measures supposedly describing the same construct. In light of the inconsistency between the two FO measures, hinted by the two studies, the question is: what aspects of FO do they actually capture? An analysis of inconsistency between the two constructs, if revealed, may contribute to every study that uses either of these constructs as measures of FO, and may help to choose the appropriate construct. The second reason relates to the specific studied context; the environmental realm. If the development of FO is a key factor in promoting environmental attitudes and behaviour, it is especially important to be well acquainted with the tool(s) for measuring FO. Different predictions of FO constructs may expose different aspects of the predicted variable and help to better understand the complexity of FO relation to the specific research subject (in this case, the environment).

Method

Participants

The study was based on an internet convenience sample (Qualtrics Research, Suite 2011, www.qualtrics.com) distributed by email and by Facebook. It included 361 respondents; 251 (69.5%) females and 110 males (30.5%). Ages ranged between 20 and 74, with a mean of 32.2 years and a standard deviation of 12.06 years. Each respondent was asked to complete CFC, F-ZTP, and environmental questionnaires (see details in the following sections).

Measures of future orientation

F-ZTP. The scale consisted of 13 items. Items typical of this construct are: "I can resist temptations when I know that there is work to be done" or "It upsets me to be late for appointments". CFC. The scale consisted of 12 items. Examples of items include: "I only act to satisfy immediate concerns, thinking the future will take care of itself" or "I think it is important to take warnings about negative outcomes seriously even if the negative outcome doesn't occur for many years".

Environmental variables

Among the most commonly used predictors of environmental behaviour are: environmental attitudes, perceived severity of environmental problems, environ-

mental efficacy, and willingness to sacrifice for the sake of the environment. We adopted the questionnaire already developed and validated by Peer, Goldman & Yavetz (2007) to be used on an Israeli student population.

Environmental attitudes reflect an individual's general and relatively stable assessment – positive or negative – regarding issues of environmental preservation, and may serve as a reliable predictor of behaviour (Ajzen & Fishbein, 1980). Six items (Cronbach's Alpha = .73) were used. Sample items are: "In my opinion, it is important to save water in Israel" or "When I go out into nature, it is important for me to leave it clean and to make sure not to leave any trash behind". Each item was presented as a statement and respondents were asked to indicate their level of agreement on a scale ranging from one (totally disagree) to five (very much agree).

Perceived severity of environmental problems (PSEP) describes the extent to which a person is concerned over ecological issues and is considered as an important prerequisite for the modification of environmental behaviours (Maloney & Ward, 1973). PSEP has been termed in many ways and has received many definitions and operationalizations (for review see Bamberg, 2003). PSEP was measured as follows: On a scale of 1 (not at all troubled) to 5 (greatly troubled) people were asked to rate how severely they relate to harming the quality of the environment (air pollution, water quality, trash and others) and to global warming.

Environmental efficacy is adapted from Bandura's (1994) definition as "the confidence people have in their capability to plan and execute a course of action and to accomplish a task or solve a problem". In the environmental context, it refers to people's belief that their actions have an impact on environmental problems. It is often used synonymously with perceived personal control or efficacy representing the extent to which people feel they can make a difference to the environment (Axelrod & Lehman, 1993). Perceived control, or individuals' belief that their actions can benefit the environment, is an important predictor of pro-environmental behaviour (Axelrod & Lehman, 1993; Hines, Hungerford & Tomera, 1986; Manzo & Weinstein, 1987). Environmental efficacy was measured with 6 items (Cronbach's Alpha = .752). Examples are: "I have the power to affect the quality of the environment by wise consumption" or "Even if I personally save water, that will not have any effect on the existing shortage of water in the state" (reverse coding).

Willingness to sacrifice for the sake of the environment (WTS) represents "the extent to which individuals' decisions will consider the well-being of the environment even at the expense of immediate self-interest, effort, or costs, when confronted with day-to-day environmental dilemmas" (Davis, Le & Coy, 2011). WTS is one of the proxies of environmental behaviour in various models and theories (Ajzen, 1991). According to Davis et al. (2011), WTS may be especially important in decisions regarding environmental action because it encompasses the psychological tension of acting in one's immediate best interests versus considering one's FO towards the greater good of the environment. WTS was measured with seven items (Cronbach's Alpha = .79). Examples are: "I am willing to save water at home, even

if it is not always convenient", "I am willing to give up car trips in order to save on energy consumption".

Environmental behaviour is defined as "actions which contribute towards environmental preservation and/or conservation" (Axelrod & Lehman, 1993, p. 153). Environmental behaviour is not a single cohesive entity, but a complex phenomenon sometimes exhibiting internal contradictions (Lindsay & Strathman, 1997). Previous studies have made a distinction between environmental behaviours with personal benefit and behaviours that lack personal benefit, a distinction reflected in the frequency with which these behaviours are performed; behaviours "with personal benefit" are performed much more frequently than those "without personal benefit" (Goldman, Yavetz & Peer, 2006). Environmental behaviour was assessed with 6 items: two items for engagement in environmental behaviours that have **personal benefit** (Cronbach's Alpha = .57): "I save electricity by turning off lights and electrical appliances when not in use" or "I save water at home (for example, I shut the tap while I am brushing my teeth or washing dishes)"; four items assessed behaviours **not involving personal benefit** (Cronbach's Alpha = .66): "When I go out into nature and I see trash that others have thrown away, I pick it up and put it into a bag" or "I make sure to gather newspapers and used papers and bring them to the bins for paper recycling".

Statistical analyses were done with SPSS 19.0 and Amos 19.0 (Arbuckle, 2011). The regression coefficients of F-ZTPI and CFC on each of the environmental variables were calculated separately using a structural equation model (SEM). In the model each measure was treated as a latent variable consisting of all of its original items as indicators. Each of the environmental variables was also treated as a latent variable consisting of its items as indicators (as described in the previous sections). Figure 1 shows the general model used to assess the standardized regression coefficients and the correlation between the two constructs.
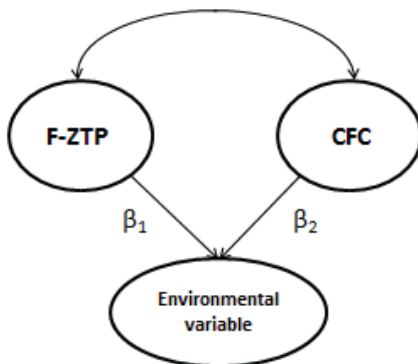
Fig. 1. General SEM model of the effects of FO, measured by CFC vs. F-ZTP, on the environmental variable

*β_1 and β_2 are regression coefficients of F-ZTP and CFC, respectively

Results

CFC was found to be positively correlated with F-ZTPI; $r = .34$ ($p < .001$). Table 1 presents the regression coefficients of F-ZTPI (β_1) and CFC (β_2) on each of the six environmental variables, along with the model fit results. All models fit the data reasonably well.

Tab. 1. Standardized regression coefficient of CFC and F-ZTPI on environmental variables

Environmental variables	Measures of FO		Model fit statistics			
	F-ZTPI (β_1)	CFC (β_2)	χ^2/df	CFI	NFI	RMSEA
Attitudes	.02 ns	.25***	1.658	.911	.806	.043
Perceived severity	-.13*	.29***	1.717	.924	.838	.045
Efficacy	.01 ns	.30***	1.579	.922	.817	.040
Willingness to sacrifice	-.18*	.39***	1.708	.904	.800	.044
Behaviour (with personal benefit)	.16*	.15*	1.746	.913	.822	.046
Behaviour (without benefit)	-.12 ns	.36***	1.694	.902	.795	.044

*$p < .05$, ** $p < .01$, *** $p < .001$

F-ZTPI scores significantly and *negatively* predicted perceived severity of environmental problems, and WTS, and negatively but not significantly – behaviour without personal benefit. Higher F-ZTPI scores did *not* result in significantly higher scores in environmental attitudes and environmental efficacy. The only variable that showed significant higher levels with higher F-ZTP was behaviour with personal benefit.

On the contrary, CFC scores significantly and *positively* predicted **all** of the environmental variables. The highest positive effect was on WTS and on behaviours without personal benefits. Simple bivariate correlational analyses yielded similar results.

Discussion

In addition to the significant differences in the predictive patterns of both constructs for the environmental variables, a positive and significant correlation was found ($r = 0.34$) between them. This finding is not new. In this case, how can the differences between these two instruments be explained? The statistical interpretation of this finding is that even though the two constructs provide 10% of the shared variance, it is quite possible that the remaining 90% of variance, stemming from other sources representing other dimensions, will refer to other qualities in a different and even opposite way.

The first implication of the findings is that "future orientation" is not a simple univalent entity, but may represent different and not necessarily coherent contents; the items of the F-ZTP describe skills of time management, delay of gratification,

and sticking to a time schedule. In certain contexts (personal-private), these skills may be critical for ensuring future developments which will benefit the *individual*, such as avoiding behaviours which harm health (smoking, drinking, drugs, reckless driving), and reasonable occupational or economic conduct (see review). However, unlike the above mentioned (personal) contexts, the environmental context is characterized by a unique constraint: in addition to the temporal conflict, it also arouses a *social conflict*. In other words, in the environmental context, temporal and social conflicts are inherently interwoven because short-term benefits are often personal while long-term consequences are often general and borne by many socially distant individuals. This means that having FO skills, according to F-ZTPI, is not necessarily relevant in the environmental context. In comparison, all of the CFC items deal with quantifying the relative weight granted by the individual in the present to future implications *in general*, and are not necessarily specific to the individual him-/herself. That might explain why higher CFC scores predict greater WTS and higher F-ZTP scores predict significantly *lower* WTS. It appears that individuals scoring high on F-ZTP do not view the future of the environment as a value which is worth a present sacrifice, or they do not view environmental development as a scenario which is likely to affect their personal future.

The second implication of this study is that different FO constructs capture different dimensions of FO. According to its general definition (see Introduction), FO involves mental, planning and self-regulation skills as well as tendencies and motivations to consider future implications of present actions (Gjesme, 1983; Strathman et al., 1994; Suddendorf & Corballis, 2007; Zimbardo & Boyd, 1999). No construct captures all of the above traits; while CFC captures the tendency to consider general consequences, F-ZTP captures FO skills that may be relevant to the future of the individual. These findings raise the question of which "future" is measured by the two constructs. Many behaviours, with future implications, as for example, in the health or finance realms, are predicted by F-ZTP and CFC in a similar pattern (see Introduction). Considering the type of behaviours which are referred to, these can be roughly generalized as behaviours concerning the *personal future* of the individual. Indeed, in this study, the only variable that was predicted by the two constructs in a similar pattern was the behaviour with *personal* benefit. Perhaps only when FO is measured in private contexts is there greater consistency in the predictive patterns of the two constructs. In Zimbardo and Boyd (1999), a hint of this distinction can be found in the description of the "prototype" of the future oriented individuals (according to F-ZTP):

> (…) They were highly organized, ambitious goal seekers who felt pressed for time but were willing to sacrifice present enjoyment to achieve their career objectives. (…) Another aspect of their eye on living for tomorrow and their self-centeredness was evident in reports about wanting to live to be older, preferring nutrition over taste in selecting foods and planning to have fewer children. But a significant cost that is packaged with this ambitious goal seeking for future oriented individuals is the social deficit (…) created by having no time to "waste" hanging out with friends or even making

them in the first place (...) having no time to "waste" hanging out with friends or even making them in the first place (...)" (Zimbardo and Boyd, ibidem, p. 1281).

These qualities do not necessarily contribute to the development of concern and pro-environmental behaviour, and perhaps **even** the opposite may be true. Perhaps the ambitions and the self-centeredness characterizing those who scored high on ZTPI, combined with the ability to sacrifice comfort for future interests, are intended primarily to benefit their own private future. The social cost which they are willing to pay, or the social deficit (according to the previous description of Zimbardo), should actually hint at lower social concern. This reinforces previous findings that ZTPI successfully predicted attitudes and behaviours directed to future results in the personal realm (studies, health) but not in the environmental area, which is not solely personal (authors' own). The distinction between personal and general FO could also explain the differences found regarding WTS and environmental behaviours themselves. Behaviours without personal benefit are better predicted by CFC, indicating that CFC reflects long-term considerations which refer to the future in general, not only the future of the individual him-/herself. To sum up, the third implication of this study is that inconsistency between the predictabilities of the two constructs is context dependent and may expose conflicting interests between the "futures" people are orienting to.

Finally, this research has demonstrated that FO is a significant predictor of attitudes and behaviour in temporal conflict situations. The studied instruments may offer equivalent predictions in areas in which personal and non-personal futures are not at odds. But when temporal conflicts involve social conflicts, as in the environmental context, the two measures of FO may have different and even opposing effects on attitudes and behaviours. Further research, *using both instruments* along with various psychological variables and in additional contexts, is warranted to understand the differences and to better adapt the instrument to the studied realm.

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Variability of the Relationship Between Mood and Social Zeitgeber

Abstract

Regularity in the emotional functioning of a human in specific time can be determined by cycles characterised by psycho-physiological and social changes. The objective of the research was to establish whether the population subjected to the research-related tests experienced daily and weekly mood variability and, if this relation has been confirmed, describe the latter. Mood was tested by means of the Positive and Negative Affect Schedule (Watson, Clark & Tellegen, 1988). Subjects judged their mood by means of two indicators (PA and NA) for one week, on a daily basis, and at 3-hour intervals. Daily and weekly variability was assessed by comparing averaged results obtained from all measurements carried out at specific times of the day and days of the week. The assessment of internal group differences was performed with repeated measures analysis of variance. The result obtained in the tests indicated the existence of daily differences of positive affect as well as weekly differences in relation to positive and negative affect.

Keywords: negative affect, positive affect, mood variability

Zmienność relacji pomiędzy nastrojem a społecznym Zeitgeber

Streszczenie

Regularność emocjonalnego funkcjonowania człowieka w określonym czasie może być determinowana przez cykle charakteryzujące się zmianami psychofizycznymi i społecznymi. Celem badania było ustalenie, czy populacja poddana testom towarzyszącym badaniu doświadczała codziennych lub tygodniowych zmian nastrojów oraz, jeśli taki związek został potwierdzony, opisanie go. Nastrój badany był za pomocą Listy Pozytywnego i Negatywnego Afektu (ang. *Positive and Negative Affect Schedule*, Watson, Clark & Tellegen, 1988). Badani oceniali swój nastrój według dwóch wskaźników (PA i NA) przez tydzień, codziennie, z odstępami co 3 godziny. Zmienność codzienna i tygodniowa oceniana była przez porównanie średnich wyników uzyskanych ze wszystkich pomiarów dokonywanych w określonych porach dnia i dni tygodnia. Oceny wewnętrznych różnic w grupie dokonano za pomocą powtarzalnej

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analizy pomiarów zmienności. Otrzymane wyniki wskazują na istnienie codziennych różnic afektu pozytywnego, jak również tygodniowych różnic w odniesieniu do afektu pozytywnego i negatywnego.

Słowa kluczowe: afekt negatywny, afekt pozytywny, zróżnicowanie nastroju

Introduction

Regularity of an individual's psychosocial functioning is determined by cycles characterised by social and psycho-physiological changes of different origin and diverse frequency. Due to recurrence one can distinguish the following cycles: circadian, circaseptan, monthly and annual (Clark et al., 1989; Cornelissen et al., 2005; Mitsutake et al., 2001; Murray et al., 2002, 2009).

The relation of changes in the intensification of positive and negative affect as well as cognitive efficacy in circadian and circaseptan rhythms has been studied before. It was already in the 30s of the 20th century that Otto Graf presented as a result of his research 'a physiological labour curve' ('physiologische Leistungskurve') showing changes in a man's efficiency at certain times of the day. The research conducted by Bo Bjerner and collaborators (1955) showed that a psychological and physical efficiency of most people reaches its lowest point at 12-hour intervals, i.e. around 3 a.m. and 3 p.m.

A discipline of science dealing with the analysis and description of repetitive life phenomena as well as identification of biological rhythms has been named chronobiology, whereas the science using such knowledge to boost health and life quality has been called chronomics (Halberg et al., 2009). Psychological aspects of the rhythms are dealt with by chronopsychology (Sędek & Bedyńska, 2010). Grandin and collaborators (2006) reviewed the Social Zeitgeber Theory and preliminary evidence supporting the thesis about the influence of social zeitgebers on circadian rhythm. An external trigger may first modulate or disrupt circadian rhythm, and second determine the weekly, monthly, and annual rhythms (Stephen et al., 2012). However, it is necessary to gain further evidence for both hypotheses. Affectivity is one of the most essential aspects of human functioning, yet the least explored. Researchers find it difficult to define affect (Forgas, 2007; Murphy & Zajonc, 1993); however, they agreed on the issue that affectivity may be considered as a positive and negative type of arousal within two orthogonal dimensions having their own physiological correlates (Watson et al., 1988).

The course of most psycho-physiological rhythms has been encoded in human cells and is controlled by the nervous structure, popularly referred to as the 'biological clock'. This structure is the suprachiasmatic nucleus located in the anterior part of the hypothalamus. The biological clock manages the rhythm regulating, among other things, the increase of the sympathetic nervous system tension during the day and its decrease at night. It also regulates the secretion of hormones such as cortisol, melatonin, serotonin, and testosterone at certain times of the day. It modulates body temperature as well as changes mood and cognitive efficacy in an

individual way in each human being (Furlan et al., 1990; Halberg et al., 2000, 2009). Individual differences in the course of circadian rhythms have been reflected also in the description of a chronotype which orients an individual to have a more effective evening affectivity ('owls') or morning affectivity ('larks') (Horne & Ostberg, 1976; Matthews, 1988).

Among a lot of research emphasising the importance of circadian rhythms for an individual's functioning there are also analyses of mood changes dependent on the time of the day (Clark et al, 1989; Cornelissen, 2005; Murray et al., 2009).

Various factors contribute to the adaptation of an individual to their life environment. These factors influence the biological clock and are called synchronisers or time markers. Circaseptan rhythms are synchronised mainly by social and cultural factors, among which the most important is the organisation of social life, working hours of schools and institutions, opening hours of shops, etc. (Terelak, 2008). For the social synchronisers (also called social nonphotic cues, zeitgebers) to be considered the source of the exogenous rhythms in the human body they need to be characterised by their own, relatively stable, rhythm and occur regularly with a certain frequency. The circaseptan rhythm is the only rhythm reflecting almost exclusively the influence of social synchronisers. Circaseptan rhythms similarly to circadian rhythms, may be registered by means of recording psycho-physiological functions of the body, such as fluctuation of heart parameters, temperature and hormones (Halberg, 2000).

The temporal aspect of human functioning has been highlighted by Lawrence A. Pervin's definition (2002). According to Pervin, personality consists of structures and processes which reflect not only a mutual operation of genes and environment, but also encompass a temporal aspect of human functioning, including 'memories of the past, mental representations of the present, and conceptions and expectations concerning the future' (Pervin, 2002).

Nico H. Frijda (1986) shares this cognitive approach by defining affect as a basic pleasant or unpleasant feeling aroused by cognitive interpretation and attribution of significance to a stimulus situation. Evaluation of a situation is made by an individual on the basis of criteria such as pleasantness, predicted easiness or difficulty of achieving a goal, possibility of controlling a situation, human agency, certainty of the outcome or predictability of consequences. Frijda's concept emphasizes the functional aspect of emotions and their adaptive functions. The level of adaptation and the vision of the future constitute a frame of reference for generated emotions.

Watson and collaborators (1999) use the term "dispositional affect" in order to differentiate the notion of affect from the notion of mood. Researchers describe affect as a relatively permanent disposition of personality regulating our reactions. Positive affect (PA) is distinguished irrespective of negative affect (NA). The type of an occurring emotion or mood may depend on the preceding affect (Frijda, 1986; Lazarus, 1991). Many papers emphasize the influence the affect has on cognitive and motivational processes in human behaviour.

The research of the changeability of positive and negative affect in a circaseptan rhythm conducted by Germaine Cornelissen and collaborators (2005) showed the regularity of affective cycles both within 24 hours (day and night) and within a week.

Assessing the endogenous circadian component of the mood variable, such as self-reporting of mood, provides methodological difficulties (e.g. sleep) and complicates data collection across the complete circadian cycle. Scott A. Golder and Michael W. Macy (2011), by data used from millions of public Twitter messages, described the collective variability mood of an entire population in cultures across the 84 countries in local time. Those measures (collective vs. individual) are different, however. First, the shapes of the mood rhythms were nearly identical across days of the week for both PA and NA. PA had two peaks (acrophase at 8 a.m. and 9 p.m.). Second, this relationship between mood peaks across days of the week (on weekend peaks occur 2 hours later than on the weekdays) was the same for each subject country (also in United Arab Emirates where the traditional work week runs Sunday to Thursday). This confirmed the influence of Social Zeitgeber on the weekly mood variability.

A high intensity of positive affect is connected with the smaller secretion of stress hormones (such as adrenaline, noradrenaline and cortisol). The researchers explain that this effect concerns people who are characterised by psychological flexibility and more often use their positive resources when confronted with stress-generating situations.

The objective of the research was to establish whether the population subjected to the research-related tests experienced daily and weekly mood variability and, if this relation has been confirmed, describe the latter. The goal of this study was to compare, or confirm the findings received in the American population.

Method

The differences between positive and negative affect were tested by means of PANAS (Positive & Negative Affect Schedule) developed by David Watson, Lee Anna Clark and Auke Tellegen (1988). The scale can be applied in various aspects of subjectively perceived time. By means of this tool, the subjects may specify how they feel at the moment, how they felt in a specific situation, or how they tend to feel (Crawford & Henry, 2004).

The scale makes it possible to test positive and negative affect in the context of a specific situation or to test the affectivity as a personality characteristic (Crawford & Henry, 2004). The subscales (PA and NA) are negatively correlated with each other on the level $r \approx -.3$ and individual test items within their scale are positively correlated with each other on the levels $r \approx .7/.8$, which confirms the accuracy of the scale (PANAS). The negative correlation between PA and NA scales may indicate that these affects are relatively independent from each other. In addition, this tool is characterised by good psychometric properties. The reliability of PA and NA of the PANAS test assessed using Crobach's Alpha amounts to .89 (95% *CI* = [.88, .9])

for the PA scale and .85 (95% *CI* = [.84, .87]) for the NA scale respectively. The scale contains 20 various affect-related states (20 test items). Ten of the test items are indications used to measure positive affect (PA scale), whereas the remaining items are used to measure negative affect (NA scale). Low, average and high results are determined on the standardisation basis. The minimum raw result in a given scale is 10 points, whereas the maximum raw result amounts to 50 points. Based on the standard tests carried by John R. Crawford and Julie D. Henry (2004), separate standards for PA and NA scales were developed; in doing so the percentile scale was applied. Filling out a questionnaire takes only a few minutes.

Participants and procedure

The tests engaged 117 participants (52.1% males, *M* = 23.5) students aged between 21 and 23. The subjects assessed their mood by means of the two aforementioned indicators (NA and PA) 6 times a day, seven days a week. The first measurement took place directly after waking up, with successive measurements timed every 3 hours, i.e. 3h, 6h, 9h, 12h and 15 hours after waking up. The entire study lasted three months.

Method of data analysis

Circadian rhythms refer to a cycle within an individual that is self-sustained and fluctuates roughly on a daily/24-hour cycle (Dautovuch, 2010, p. 15). Mood data was collected after waking up at fixed 3h intervals (with an expected loss of data due to sleep). Consequently, changeability which was assessed by comparing averaged results obtained on each day of the week, at specified times of the day, will be referred to as daily mood variability. Similarly changeability which was assessed by comparing averaged results obtained from all measurements carried out on a given day will be referred to as weekly mood variability. As averaged measurements on successive days and averaged measurements at specified times of the day collected from one group are obviously interdependent (correlated), the intergroup differences were subjected to repeated-measures analysis of variances. Two backgrounds were developed for each affect sign. In the first background, the factor of analysis was the day of the week; the factor had 7 levels. In the second background, the factor of analysis was the time of the day; this factor had 6 levels.

Results

Weekly variability of positive affect.

Presented in Figure 1 below are the results of repeated-measures analysis of variances for the variable of positive affect.

Table 1 presents the results of the tests of intra-object effects, revealing that various days are statistically significantly different to one another with reference to positive affect intensity of the same test participants. One should note, however, that the value of η^2 is very low, which means that the dependence is rather weak.

Fig. 1. Level of positive affect averaged on successive days of the week

Tab. 1. Results of tests of intra-object effects of positive affect – day of the week

	Source	Sum of squares	df	Average square	F	Sig.	Partial η²
Day	Assumed sphericity	362.025	6	60.337	3.547	.002	.030
	Greenhouse-Geisser	**362.025**	**4.484**	**80.731**	**3.547**	**.005**	**.030**
	Huynh-Feldt	362.025	4.689	77.211	3.547	.005	.030
	Lower-bound	362.025	1.000	362.025	3.547	.062	.030
Error	Assumed sphericity	11738.817	690	17.013			
	Greenhouse-Geisser	11738.817	515.701	22.763			
	Huynh-Feldt	11738.817	539.212	21.770			
	Lower-bound	11738.817	115.000	102.077			

In order to assess which days differ in positive affect, the former were compared in pairs. The results, presented in Table 2, reveal that on Thursday the intensity of positive affect is significantly higher than on the other days, whereas on Sunday it is lower than on the other days – on the level of significance or at least on the level of a statistical trend. The remaining days do not differ from one another.

Tab. 2. Comparisons of pairs of successive days of the week in relation to positive affect

(I) day	(J) day	Average difference (I-J)	Standard difference error	Sig.	95% range of difference confidence	
					Lower limit	Upper limit
Monday	Tuesday	.022	.430	**.960**	-.831	.874
	Wednesday	-.129	.473	**.785**	-1.066	.808
	Thursday	-1.576*	.573	**.007**	-2.712	-.441
	Friday	-.014	.594	**.981**	-1.192	1.163
	Saturday	-.050	.477	**.916**	-.994	.894
	Sunday	.855*	.391	**.031**	.080	1.629
Tuesday	Wednesday	-.151	.428	**.725**	-.999	.697
	Thursday	-1.598*	.530	**.003**	-2.647	-.548
	Friday	-.036	.678	**.958**	-1.378	1.306
	Saturday	-.072	.524	**.891**	-1.111	.967
	Sunday	.833	.503	**.100**	-.163	1.829
Wednesday	Thursday	-1.447*	.493	**.004**	-2.423	-.470
	Friday	.115	.629	**.855**	-1.131	1.360
	Saturday	.079	.527	**.881**	-.966	1.124
	Sunday	.984	.511	**.057**	-.028	1.996
Thursday	Friday	1.562*	.719	**.032**	.137	2.987
	Saturday	1.526*	.594	**.012**	.348	2.703
	Sunday	2.431*	.633	**.000**	1.177	3.685
Friday	Saturday	-.036	.536	**.947**	-1.097	1.025
	Sunday	.869	.567	**.128**	-.254	1.993
Saturday	Sunday	.905*	.424	**.035**	.065	1.745

Weekly variability of negative affect

Presented below in Figure 2 are the results of repeated-measures analysis of variances for the variable of negative affect.

Table 3 presents the results of the tests of intra-object effects related to the weekly variability of negative affect. The results reveal that on various days of the week, the intensity of negative affect is statistically and significantly different among the same test participants. One should note, however, that again the value of η^2 is very low, which means that the dependence is rather weak.
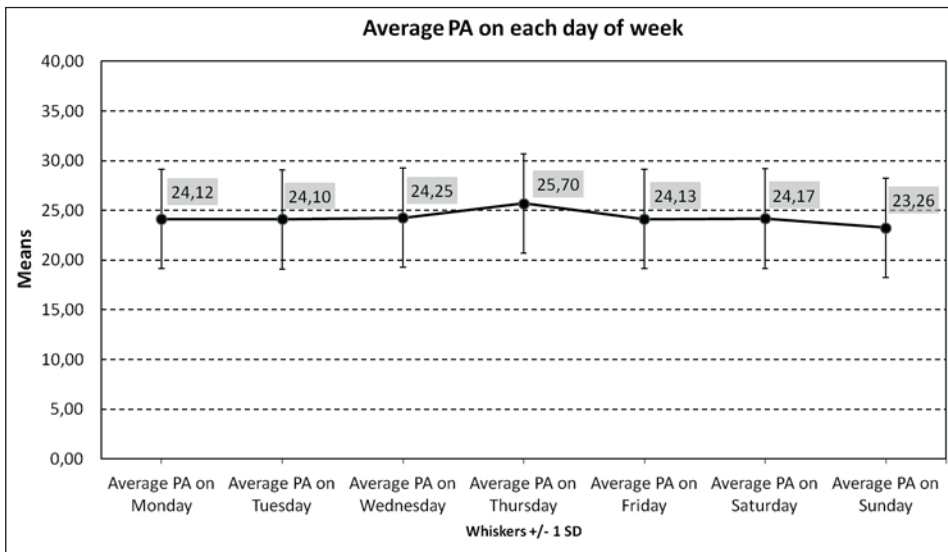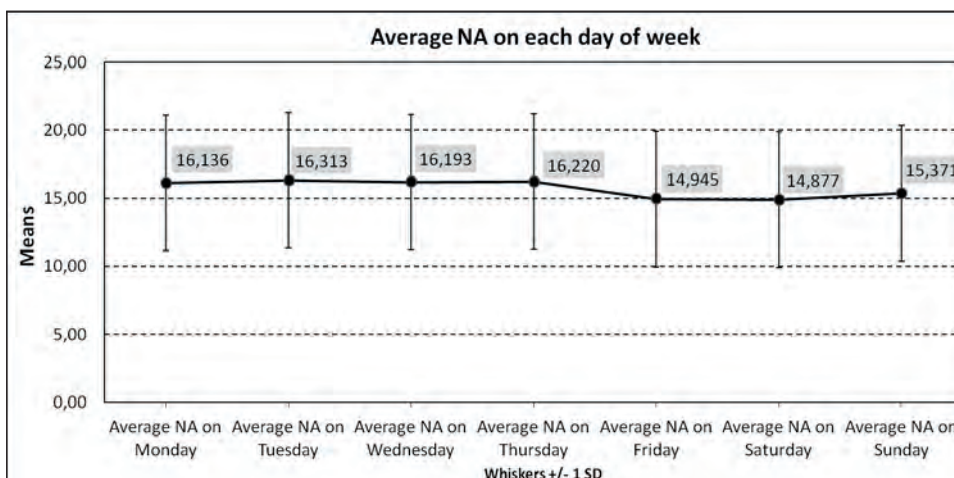
Fig. 2. Level of negative affect averaged on successive days of the week

Tab. 3. Results of tests of intra-object effects of negative affect – day of the week

Source		Sum of squares	df	Average square	F	Sig.	Partial η²
Day	Assumed sphericity	276.540	6	46.090	3.464	.002	.029
	Greenhouse-Geisser	**276.540**	**5.248**	**52.691**	**3.464**	**.004**	**.029**
	Huynh-Feldt	276.540	5.529	50.017	3.464	.003	.029
	Lower-bound	276.540	1.000	276.540	3.464	.065	.029
Error	Assumed sphericity	9182.019	690	13.307			
	Greenhouse-Geisser	9182.019	603.555	15.213			
	Huynh-Feldt	9182.019	635.820	14.441			
	Lower-bound	9182.019	115.000	79.844			

In order to assess which days differ in negative affect, the former were compared in pairs. The results, presented in Table 4, reveal that on Friday and Saturday the average intensity of negative affect is significantly lower than on the other days except for Sunday, yet Friday and Saturday do not differ significantly from each other. The remaining weekdays do not significantly differ from one another. In case of Sunday, the results are lower than on the other days, yet the difference is significant only on the level a statistical trend.

Tab. 4. Comparisons of pairs of successive days of the week in relation to negative affect

(I) day	(J) day	Average difference (I-J)	Standard difference error	Sig.	95% range of ifference confidence	
					Lower limit	Upper limit
Monday	Tuesday	-.158	.405	**.697**	-.961	.644
	Wednesday	-.095	.517	**.855**	-1.118	.929
	Thursday	-.078	.482	**.872**	-1.032	.877
	Friday	1.194*	.473	**.013**	.258	2.130
	Saturday	1.227*	.571	**.034**	.096	2.358
	Sunday	.754	.458	**.102**	-.153	1.662
Tuesday	Wednesday	.063	.460	**.891**	-.849	.975
	Thursday	.080	.431	**.852**	-.773	.934
	Friday	1.352*	.453	**.003**	.455	2.249
	Saturday	1.385*	.480	**.005**	.434	2.336
	Sunday	.912*	.460	**.050**	.001	1.823
Wednesday	Thursday	.017	.427	**.968**	-.828	.862
	Friday	1.289*	.442	**.004**	.414	2.164
	Saturday	1.322*	.575	**.023**	.184	2.460
	Sunday	.849	.490	**.086**	-.121	1.820
Thursday	Friday	1.272*	.507	**.014**	.267	2.276
	Saturday	1.305*	.512	**.012**	.290	2.319
	Sunday	.832	.479	**.085**	-.117	1.781
Friday	Saturday	.033	.474	**.944**	-.905	.971
	Sunday	-.440	.466	**.347**	-1.362	.483
Saturday	Sunday	-.473	.462	**.308**	-1.388	.442

Daily variability of positive affect

Presented in Figure 3 below are the results of repeated-measures analysis of variances for the variable of positive affect.

Table 5 presents the results of the tests of intra-object effects, revealing that positive affect is significantly and statistically different depending on the time of the day. One should also note that the value of η^2 is significantly higher than in case of the so-far dependences, which means that the dependence/relation is significantly stronger. Daily differences of positive affect are significant.
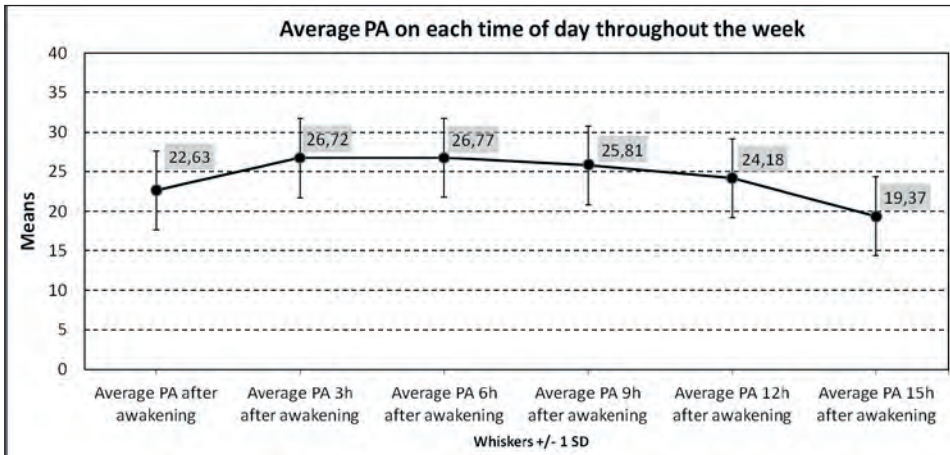
Fig. 3. Level of positive affect averaged at successive times of the day

Tab. 5. Results of tests of intra-object effects of positive affect – time of the day

Source		Sum of squares	df	Average square	F	Sig.	Partial η²
Day	Assumed sphericity	4793.033	5	958.607	94.085	**.000**	.450
	Greenhouse-Geisser	**4793.033**	**3.261**	**1469.654**	**94.085**	**.000**	**.450**
	Huynh-Feldt	4793.033	3.368	1423.189	94.085	**.000**	.450
	Lower-bound	4793.033	1.000	4793.033	94.085	**.000**	.450
Error	Assumed sphericity	5858.542	575	10.189			
	Greenhouse-Geisser	5858.542	375.053	15.621			
	Huynh-Feldt	5858.542	387.298	15.127			
	Lower-bound	5858.542	115.000	50.944			

In order to assess which times of the day differ in positive affect, the former were compared in pairs. The results are presented in Table 6.

Tab. 6. Comparisons of pairs of successive times of the day in relation to positive affect

(I) time	(J) time	Average difference (I-J)	Standard difference error	Sig.	95% range of difference confidence	
					Lower limit	Upper limit
after awakening	after 3h	-4.085*	.370	**.000**	-4.817	-3.353
	after 6h	-4.142*	.405	**.000**	-4.943	-3.340
	after 9h	-3.175*	.419	**.000**	-4.005	-2.345
	after 12h	-1.544*	.520	**.004**	-2.574	-.515
	after 15h	3.262*	.543	**.000**	2.186	4.339

after 3h	after 6h	-.057	.228	**.804**	-.508	.395
	after 9h	.910*	.311	**.004**	.293	1.527
	after 12h	2.541*	.433	**.000**	1.683	3.398
	after 15h	7.347*	.521	**.000**	6.315	8.380
after 6h	after 9h	.967*	.239	**.000**	.493	1.441
	after 12h	2.597*	.412	**.000**	1.782	3.413
	after 15h	7.404*	.509	**.000**	6.396	8.412
after 9h	after 12h	1.631*	.329	**.000**	.978	2.283
	after 15h	6.437*	.454	**.000**	5.538	7.337
after 12h	after 15h	4.807*	.430	**.000**	3.955	5.659

The analysis of the results in the table indicates that all the times of the day differ as to the intensity of positive affect, except for the measurements after 3 and 6 hours, which in the group under discussion are insignificantly different. The intensity of positive affect proves low shortly after awakening and grows rapidly after 3 hours and remains on this level after 6 hours, while gradually decreasing after 9 and 12 hours, though failing to reach the level observed immediately after awakening. After 15 hours the intensity of positive affect falls sharply to an all-day low (lower than after awakening).

The results clearly indicate curvilinear dependence, best described by a second-degree polynomial and a parabolic curve; this being confirmed by the tests of intra-objects contrasts presented in Table 7. The effect described by the second-degree curve reaches the highest value of test F.

Tab. 7. Results of tests of intra-object contrasts of positive affect – time of the day

Source	dependence	Sum of squares	df	Average square	F	Sig.	Partial η^2
hour	linear	1027.465	1	1027.465	47.437	**.000**	.292
	square	**3621.059**	**1**	**3621.059**	**256.602**	**.000**	**.691**
	cubic	18.376	1	18.376	2.493	**.117**	.021
	4-th degree	126.108	1	126.108	22.860	**.000**	.166
error	linear	2490.861	115	21.660			
	square	1622.834	115	14.112			
	cubic	847.662	115	7.371			
	4-th degree	634.400	115	5.517			

Daily variability of negative affect

Presented below in Table 8 are the results of repeated-measures analysis of variances for the variable of negative affect.

Tab. 8. Results of tests of intra-object effects of negative affect – time of the day

Source		Sum of squares	df	Average square	F	Sig.	Partial η²
Day	Assumed sphericity	34.038	5	6.808	1.579	**.164**	.014
	Greenhouse-Geisser	**34.038**	**3.306**	**10.297**	**1.579**	**.189**	**.014**
	Huynh-Feldt	34.038	3.415	9.967	1.579	**.188**	.014
	Lower-bound	34.038	1.000	34.038	1.579	**.211**	.014
Error	Assumed sphericity	2479.022	575	4.311			
	Greenhouse-Geisser	2479.022	380.149	6.521			
	Huynh-Feldt	2479.022	392.744	6.312			
	Lower-bound	2479.022	115.000	21.557			

It is clearly visible that the time of the day does not significantly differentiate the intensity of negative affect. Therefore, the comparisons of pairs were not carried out due to their groundlessness. Figure 4 illustrates the course of negative affect in case of daily mood variability.
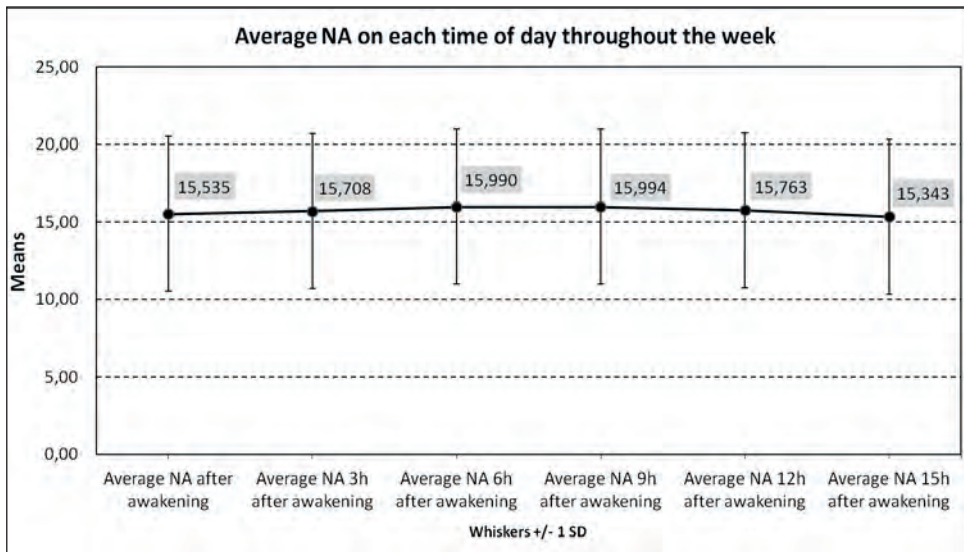
Fig. 4. Level of negative affect averaged at successive times of the day

Discussion

The objective of this research was to describe daily and weekly mood changes in experiencing positive and negative affects. Positive affect (PA) was taken into consideration as a factor independent of negative affect (NA). The research so far has shown that researchers using various testing methods recognize the circadian rhythm for both PA and NA. The latest analyses of circaseptan rhythms (Cornelissen

et al., 2005) provide evidence for the rhythmicality of affective experiences, although such analyses still requires confirmation in further research.

The results revealed that subjects from a Polish population experience a significantly higher positive affect on Thursday rather than on the other six days (it shows the difference between Polish and American groups of subjects). This seems to be interesting when we consider that the time difference between Europe and the United States is from 6 to 9 hours, and when in Poland it is Thursday, in the United States it is still Wednesday. Is circaseptan associated with other unexplored determinants, i.e. with the geomagnetic movement of the earth?

Positive affect is the lowest on Sunday. The result confirms the data gathered by Clark and Watson (1988) stating that the most intense positive emotions may be experienced during the working week as these are attached to social interactions. The researchers indicated that people tend to experience their best well-being, reported as high level of happiness, energy, and enthusiasm when they are socially and physically active. The analysis of the results also justifies the reasoning that Sunday as a day off, is not characterised by the highest indications of positive affect. Data gathered in other tests confirm that on Sunday many people report an increase in sadness and disengagement, which still remains unclear and is subject to further research (Watson, 2000). Possibly, the sense of being involved and included gives people the sense of belonging and being needed (Baumeister & Leary, 1995).

Research on the society of today indicates that in most countries the pace of life revolves around work; in western Europe being more intense than in Brazil, Indonesia or Mexico. On this list Poland occupies the twelfth position, being several places higher than the United States (Kwiatkowska & Sztuka, 2010). Human activity is increasingly characterised by a higher intensity of professional tasks carried out under time pressure and subject to growing requirements. While trying to reconcile professional challenges with their role in the family, humans may experience psychological tension and a sense of discomfort. While observing circaseptan changes, American researchers also noticed a weekly mood rhythm characterised by the gradual growth of the positive affect from Sunday till Tuesday, followed by its fall on Thursday and a slight growth towards the end of the week (Clark et al., 1989; Cornelissen et al., 2005). The weekend seems to be less characterized by positive affect due to the fact that anticipation of events is connected with more positive emotions than the experiencing of the actual events. It has been established that negative affect remains on a similar level on all weekdays except Friday and Saturday, when it drops slightly, only to start climbing again on Sunday and to remain the same for the subsequent days of the week. The obtained results have shown that during the week negative affect is slightly increased in comparison with the weekend, which may indicate that in spite of experiencing many positive emotions, we still experience independent negative emotions connected, for instance, with stress or tiredness.

The results of daily analyses show distinct differences within the scope of positive affect experienced at different times of the day. They confirm the presence

of the daily variability of positive affect. Similar data with reference to negative affect was not confirmed in the group subjected to testing. The so-far affect-related tests, including 3-hour intervals (Clark & Watson, 1988; Clark et al., 1989; Cornelissen et al., 2005; Murray et al., 2002, 2009; Porto et al., 2007), confirm circadian variation in positive affect. Researchers, who studied the American population (Clark et al., 1989; Cornelissen et al., 2005), indicated that positive affect grows during the day until afternoon to fall at night-time. Researchers analyse individual human potential by testing rhythms, e.g. circadian ones. The obtained results allow the conclusion that the daily emotional state is regulated by a biological clock (Mitsutake et al., 2001). In the surveyed Polish population, it was observed that positive affect increases until afternoon hours, then it reaches its peak and starts to decrease after nine hours after awakening to reach its lowest range at night – fifteen hours after awakening. What is interesting is that essential daily changes were not observed within the scope of negative affect, which proves that negative emotions remain on the same steady level throughout the day. Activity of the human reward system is partly determined by information generated by SCN which may explain first the daily variability of PA, and second no visible rhythm of NA.

Conclusions

Statistical results have indeed confirmed the rhythmic variability of positive affect in an individual in their daily activity as well as weekly rhythmicality within the scope of positive and negative affect. The analysis of the daily rhythm confirms the influence of the biological clock on the psycho-biological functioning of a human being (endogenous influence). Social synchronizers, such as periods regulated by social activity (professional or educational one), are most likely to also have influence. The observed weekly changeability of positive and negative affect occurs mainly as the consequence of social synchronizers. The knowledge about the rhythmicality affect in various populations may be used in preparation of social and occupational activities in the periods of the highest index for positive affect and avoidance of planning any activities in the periods of the highest negative index. The awareness of PA and NA rhythmicality allows planning the time of rest in the periods of the lowest positive affect index and the highest negative affect index. What is more, researchers studying mood should take under consideration differences between PA and NA in various parts of the day and week in tested groups.

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Interindividual Differences and Intraindividual Variability in Emotional Well-being: an Examination of Gender, Time Perspective and Emotion Regulation

Abstract

This study examined Taiwanese undergraduates' trajectories of emotional well-being, positive affect, and negative affect over a 16-week period within one semester. The effect of their differences in gender and time perspective profiles on intraindividual variability of weekly affect and associations between time trends of affects and use of two emotional regulation strategies, i.e., reappraisal and suppression, were also investigated. Longitudinal data from 96 undergraduates were analyzed by hierarchical linear modeling (HLM). With time passing, the habitual use of reappraisal was related to the increase of emotional well-being and positive affect and related to the decline of negative affect. By contrast, habitually using suppression was related to an increase of negative affect over time. The main findings also indicated that individuals with balanced time perspective had higher levels of emotional well-being compared to those without balanced time perspective at the baseline of the study. Gender and time perspective profiles were also demonstrated as moderators in the relationship between changes in using emotional regulation strategies on emotional well-being.

Keywords: emotional well-being, time perspective, emotional regulation, Taiwan

Międzyosobnicze różnice i wewnątrzosobnicza zmienność emocjonalnego dobrostanu: płeć społeczna, perspektywa czasowa i regulacja emocji

Streszczenie

Badaniem objęte zostały trajektorie emocjonalnego samopoczucia u tajwańskich studentów obejmujące afekt pozytywny i negatywny przez okres 16 tygodni w ciągu jednego semestru. Zbadano także wpływ różnic płci i profili perspektyw czasowych na wewnątrzosobniczą zmienność tygodniowego afektu, a także powiązania między trendami czasowymi afektów a zastosowaniem dwóch strategii regulacji emocji (*powtórnej analizy* oraz *tłumienia*). Dane podłużne pochodzące od 96 studentów zostały zanalizowane za pomocą hierarchicznych modeli liniowych (HLM). Z upływem czasu zwyczajowe stosowanie strategii regulacji

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emocji, jaką jest powtórna analiza, związane było ze wzrostem samopoczucia emocjonalnego i z afektem pozytywnym, z jednoczesnym spadkiem afektu negatywnego. Odwrotnie, regularne stosowanie strategii tłumienia miało związek ze wzrostem afektu negatywnego w czasie. Główne wnioski wskazały również, że osoby o zrównoważonej perspektywie czasowej charakteryzowały się wyższym stopniem samopoczucia emocjonalnego niż te, które nie wykazywały w początkowej fazie badania zrównoważonej perspektywy czasowej. Płeć i profile perspektywy czasowej zostały ukazane również jako moderatory relacji między zmianami w stosowaniu strategii regulacji emocji w odniesieniu do samopoczucia emocjonalnego.

Słowa kluczowe: dobrostan emocjonalny, perspektywa czasowa, regulacja emocjonalna, Taiwan

Introduction

The pursuit and improvement of well-being are crucial life goals and regulating emotion is a key factor in well-being (Gross & John, 2003). Numerous emotion regulation strategies have been categorized into behavioural or cognitive and engagement or avoidance super-ordinate categories (Parkinson & Totterdell, 1999), or into need-, goal-, and person-oriented strategies (Koole, 2009). Augustine and Hemenover (2009) conducted a meta-analysis to evaluate the relative effectiveness of various emotion regulation strategies and determined reappraisal and distraction strategies to be the most effective means of regulating affects. Cognitive reappraisal and expressive suppression are two common goal-oriented emotion regulation strategies. Previous studies have shown that using reappraisal is positively related to positive-emotion experience and negatively related to negative-emotion experience. People using suppression experience fewer positive emotions and more negative emotions (Balzarotti, John, Gross, 2010; Gillander, Wild, Deighan, Gillanders, 2008; Gross & John, 2003; Haga, Kraft, Corby, 2009; Moore, Zoellner, Mollenholt, 2008). However, most of these studies were cross-sectional rather than longitudinal.

In longitudinal studies involving a short time period, such as a few minutes or days, individual differences in reappraisal and suppression have been treated as stable trait variables. The consequences of these trait variables on the mean level and changes in affective experiences over time have been investigated (Kuppens, Oravecz, Tuerlinckx, 2010; Meyer, Smeets, Giesbrecht, Merckelbach, 2012). Considerably less evidence exists regarding how within-individual differences, the use of reappraisal and suppression strategies influence changes in affective experiences over time. The main finding of the aforementioned studies is that reappraisal is related to an increase in positive affect and suppression is related to a negative affect (Nezlek & Kuppens, 2008). When conducting longitudinal studies for a long time period, such as several weeks or months, the use of reappraisal and suppression can be observed continually to determine which emotional strategies people use habitually. The use of various time intervals and sampling schemes should be considered to explore which interval or scheme can be used to capture distinct affective fluctuations precisely.

Based on the line of inquiry regarding the effect of individual difference patterns on the dynamics of emotional well-being over time, we incorporated certain key predictors into our study. Cross-sectional studies have indicated that people with a balanced time perspective possess more positive emotions, subjective happiness, and life satisfaction than those without a balanced time perspective (Boniwell, Osin, Linley, Ivanchenko, 2010; Boniwell & Zimbardo, 2004; Drake, Duncan, Sutherland, Abernethy, Henry, 2008; Gao, 2011). It has been hypothesized that people who flexibly shift time perspectives to achieve balanced states show a pattern of stronger well-being than those who do not. A balanced time-perspective state involves higher future, present-hedonistic, and past-positive orientations, whereas a non-balanced time-perspective state involves lower present-fatalistic and past-negative orientations (Boniwell & Zimbardo, 2004; Boyd & Zimbardo, 2005). Although people excessively focus on particular time perspectives, they may encounter dysfunction. For example, people who have a highly past-negative time perspective, a highly present-fatalistic time perspective, or a highly present-hedonistic time perspective tend to have lower self-esteem and more emotional problems, such as aggression, anxiety, and depression, than those who do not (Holman & Zimbardo, 2009; Zimbardo & Boyd, 2008). By employing various conceptualizations of a balanced time perspective, Webster (2011) found that people with a balanced time perspective possess greater happiness. However, knowledge of whether emotional well-being is more persistent over time for people with a balanced time perspective compared with people without a balanced time perspective is limited. People with a balanced time perspective may also be more likely to use different emotion-regulation strategies to maintain their emotional well-being because they can adaptively shift their states depending on various situations. Hence, we incorporated time-perspective profiles as a moderator in this study.

Gender differences also have substantial effects on various dimensions of psychological well-being (for a meta-analysis, see Roothman, Kirsten, Wissing, 2003), and these effects on affective experiences often result from biological influences and gender-stereotypic socialization (Bagozzi, Wong, Yi, 1999; Fischer, Mosquera, van Vianer, Manstead, 2004; Roothman et al., 2003; Simon & Nath, 2004). In socialization processes, women are encouraged to express their emotions (Bagozzi, Wong, Yi, 1999; Fischer et al., 2004; Roothman et al., 2003; Simon & Nath, 2004). Regarding emotion regulation strategies, women use venting and express affect more than men do (Lipovčan & Prizmić, 2009). When women adopt suppression strategies, inhibiting their emotions may increase negative affect. For example, Nezlek and Kuppens (2008) found that the relationship between suppressing positive emotion and increasing negative consequences was stronger for women than for men. Emotion regulation strategies play a mediating role in the relationship between gender differences and emotional experience.

The purpose of this study was to examine the moderating effects of gender and two time-perspective profiles (balanced and non-balanced) on initial states and fluctuations of emotional well-being and positive and negative affects over time by

using reappraisal and suppression. We assumed that habitually employing cognitive reappraisal increases emotional well-being and positive affect, and decreases negative affect over time, and that participants who hold a balanced time perspective demonstrate greater emotional well-being and positive affect. We contribute to previous studies by exploring the moderating effects of individual differences in time-perspective profiles and gender on the relationship between using regulation strategies and emotional experiences over time.

Method

Participants

The participants were 135 undergraduates majoring in psychology at a Taiwanese university (62 men and 73 women). While attending their statistics or psychological testing courses, they were invited to complete a self-report emotional experience and regulation questionnaire weekly for 16 weeks in return for one grade point. We excluded 39 participants from the final sample because they did not complete the initial time-perspective measures in the first week of the semester. The final sample of 96 participants provided 1.193 valid assessments during the 16-week period. The sample consisted of a higher percentage of women than of men (62.5% and 37.5%), and ranged in age from 18 to 26 years.

Measures

Time was coded as the number of weeks during one semester for each measurement, beginning with Time 1 in Week 2 and ending Time 16 in Week 17.

Ambulatory repeated measures

Emotional well-being, positive and negative affect

Emotional well-being is the presence of positive affect and the absence of negative affect (Diener, Oishi, Lucas, 2003; Jovanovic, 2011; Keyes, 2000; Schimmack, Schupp, Wagner, 2008; Spence, Oades, Caputi, 2004). Hence, emotional well-being in this study was assessed using a composite score from typical levels of positive affect minus negative affect. Affective experiences were assessed using a Chinese translation of the Positive and Negative Affect Schedule (PANAS; Lai, 2007; Watson, Clark, Tellegen, 1988), which comprises 10 positive and 10 negative items. Participants indicated the extent of their feelings during the previous week on a 4-point scale where 1 = *not at all* and 4 = *very strong*. Cronbach's Alphas of the Positive Affect (PA) scale ranged from .63 to .82, and those of the Negative Affect (NA) scale ranged from .82 to .90; both ranges were calculated across 16 weeks. In addition, Positive Affect and Negative Affect were treated as two separate constructs because emotional well-being tends to be bi-dimensional when people perceive little change in their lives (Keyes, 2000).

Emotional regulation

The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003), translated into a Chinese version (Liang, 2009), comprises 10 items that ask participants about the extent of their habitual use of emotion regulation strategies endorsed on a 4-point scale from 1 (*disagree strongly*) to 4 (*agree strongly*) and is divided into two sub-scales: reappraisal and suppression. Cronbach's Alphas of the reappraisal scale ranged from .81 to .85, and those of the suppression scale ranged from .62 to .83; both ranges were calculated across 16 weeks.

Between-person measures

Time perspectives

The 20-item Zimbardo Time Perspective Inventory – Chinese version (ZTP; Tu, 2004; Zimbardo & Boyd, 1999), was used to assess five time perspectives: Past-Positive (PP), Past-Negative (PN), Present-Hedonistic (PH), Present-Fatalistic (PF), and Future (F). Each of the five dimensions was measured according to the four items with the highest factor loadings from the original ZTP (Zimbardo & Boyd, 1999). Cronbach's Alphas indicated that the reliability of five dimensions was acceptable (.77 for PP, .76 for PN, .50 for PH, .71 for PF, and .68 for F).

Two approaches to operationalizing balanced time perspective have been applied in relevant studies: cut-off point and person-oriented approaches (Boniwell et al., 2010; Drake et al., 2008; Gao, 2011). Boniwell et al. (2010) suggested that the person-oriented approach is more suitable than the cut-off point approach is for distinguishing among participants with different time perspective profiles. Gao (2011) identified two types of time perspective profiles among young adults in Taiwan by using a two-stage cluster analysis, which is a person-oriented approach. One cluster fits the configuration of balanced time perspective proposed by Boniwell and Zimbardo (2004), and the other was characterized by an entirely different pattern compared with the balanced time perspective. We conducted a non-hierarchical k-means cluster analysis by using simple Euclidean distance as the similarity measure, specifying a two-cluster solution according to Gao (2011). One profile was labelled as a balanced time perspective, because PP, PH, and F were characterized by relatively high scores, whereas the PN and PF scores were considered relatively low. The other profile was labelled as a non-balanced time perspective because it was characterized by relatively low scores in PP, PN, and F and a relatively high level of PN and PF. We separated all participants into two groups according to their configurations of time perspectives: 55 were in the balanced time perspective group, and 41 were in the non-balanced time perspective group.

Time perspective profile was coded as 0 = *balanced time perspective group* and 1 = *non-balanced time perspective group*. Gender was coded as 0 = *male* and 1 = *female*.

Statistical analysis

Data were analysed using HLM 6.03 (Raudenbush, Bryk, Congdon, 2005) to explore unconditional analysis of variance (ANOVA) models and linear, quadratic, and cubic-growth models. Each analysis yielded estimates of fixed effects describing the average mean level (intercept) and within-individual trajectories. The full model specified the trajectory of emotional well-being, positive affect, and negative affect, and a set of latent growth parameters as follows:

$$Y_{ti} = \pi_{0i} + \pi_{1i}(\text{TIME}) + \pi_{2i}(\text{TIME})^2 + \pi_{3i}(\text{TIME})^3 + \varepsilon_{ti}$$
$$\pi_{0i} = \beta_{00} + r_{0i}$$

where Y_{ti} is Person i's self-rated emotional well-being or affective experience scores at a given time t, π_{0i} is Individual i's estimated emotional well-being or affect scores at the baseline, π_{1i} is the effect of the linear trajectory for each individual, π_{2i} is the quadratic effect of time for each individual, π_{3i} is the cubic effect of time for each individual, ε_{ti} is a residual, β_{00} is the average of emotional well-being or affect experiences at the baseline, and r_{0i} is a residual around the mean emotional well-being or affect experiences at the baseline.

The full model is a cubic model. The parameters of quadratic and linear models were calculated after sequentially removing the cubic term and the slope term. The unconditional linear, quadratic, and cubic models were chosen according to their relative fit to the data, with smaller deviances indicating better model fit. We then examined whether within-individual changes in using reappraisal and suppression as time-varying covariates predicts changes in weekly emotional well-being and affect experiences. We modelled between-individual differences of gender and time-perspective profiles in these estimated underlying growth parameters. Individual mean-centred reappraisal and individual mean-centred suppression were added as time-varying covariates into a set of linear growth models (for a discussion on centring, see Raudenbush & Bryk, 2002). For example, for Model 3, in which the time-varying covariates were added to between-individual predictors, we used the following equation:

Level-1 Model

$$Y_{ti} = \pi_{0i} + \pi_{1i}(\text{TIME}) + \pi_{2i}(\text{Individual mean-centred REAPPRAISAL})$$
$$+ \pi_{3i}(\text{Individual mean-centred SUPPRESSION}) + \varepsilon_{ti}$$

Level-2 Model

$$\pi_{0i} = \beta_{00} + \beta_{01}(\text{GENDER}) + \beta_{02}(\text{TP}) + r_{0i}$$
$$\pi_{1i} = \beta_{10} + \beta_{11}(\text{GENDER}) + \beta_{12}(\text{TP}) + r_{1i}$$
$$\pi_{2i} = \beta_{20} + \beta_{21}(\text{GENDER}) + \beta_{22}(\text{TP}) + r_{2i}$$
$$\pi_{3i} = \beta_{30} + \beta_{31}(\text{GENDER}) + \beta_{32}(\text{TP}) + r_{3i}$$

where π_{2i} is the effect of within-individual changes in reappraisal; π_{3i} is the effect of within-individual changes in suppression; β_{01} is the effect of gender on π_{0i}; β_{02} is the

effect of time perspective on π_{0i}; β_{11}, β_{21}, and β_{31} are the moderating effects of gender on π_{1i}, π_{2i}, and π_{3i}; and β_{12}, β_{22}, and β_{32} are the moderating effects of time perspective on π_{1i}, π_{2i}, and π_{3i}.

Results

The intraclass coefficients (ICCs) for emotional well-being, positive affect, and negative affect were estimated as ratio values of between-individual variance to total variance after performing an unconditional ANOVA model with random effects. The ICCs were .4392, .4690, and .5946 for emotional well-being, positive affect, and negative affect, respectively. These indicated that 43.92% of the total variance of emotional well-being, 46.90% of the total variance of positive affect, and 59.46% of the total variance of negative affect were caused by between-individual components, and 56.08%, 53.10%, and 40.54% of the total variance of emotional well-being, positive affect, and negative affect, respectively, were caused by within-individual components.

The results of chi-square difference tests of models embedded with different time trend (i.e. linear, quadratic, and cubic) effects compared with their unconditional ANOVA models are shown in Tables 1 and 2. The results showed that the unconditional linear growth model had a significantly better fit compared with the unconditional ANOVA model for emotional well-being ($\triangle\chi^2$ (2) = 29.17, $p < .001$) and positive affect ($\triangle\chi^2$ (2) = 31.98, $p < .001$). The unconditional linear growth models also provided a better fit than quadratic and cubic models did in emotional well-being, positive affect, and negative affect.

Tab. 1. Parameters estimates and fit indices of linear, quadratic, and cubic growth models for emotional well-being and PA

	Linear model		Quadratic model		Cubic model
	Coefficient (*SD*)	*t*	Coefficient (*SD*)	*t*	Coefficient (*SD*)
Emotional Well-being					
Intercept	.45*** (.05)	8.29	.52*** (.06)	8.43	.53*** (.07)
Linear Change	-.02*** (.00)	-4.34	-.05*** (.01)	-3.75	-.06* (.03)
Quadratic Change			.00* (.00)	2.59	.00 (.00)
Cubic Change					-.00 (.00)
Deviance	1978.33		1984.58		1997.89
Chi-square	29.17***		22.92***		9.61*
DF	1		2		3
Positive Affect					
Intercept	2.53*** (.04)	71.97	2.55*** (.04)	65.32	2.56*** (.04)

	Coefficient (SD)	t	Coefficient (SD)	t	Coefficient (SD)
Linear Change	-.01*** (.00)	-4.64	-.02* (.01)	-2.59	-.03 (.02)
Quadratic Change			.00 (.00)	1.23	.00 (.00)
Cubic Change					-.00 (.00)
Deviance	958.93		972.41		986.28
Chi-square	31.98***		18.50***		4.63
DF	1		2		3

Note: *$p < .05$; **$p < .01$; ***$p < .001$

Tab. 2. Parameters estimates and fit indices of linear, quadratic, and cubic growth models for NA

	Linear model		Quadratic model		Cubic model
	Coefficient (SD)	t	Coefficient (SD)	t	Coefficient (SD)
Negative Affect					
Intercept	2.08*** (.04)	48.51	2.03*** (.05)	43.51	2.03*** (.05)
Linear Change	.01* (.00)	2.10	.03*** (.01)	3.21	.028* (.02)
Quadratic Change			-.00** (.00)	-2.98	-.00 (.00)
Cubic Change					-.00 (.00)
Deviance	903.93		908.83		923.23
Chi-square	.79		-4.11[a]		-18.51[a]
DF	1		2		3

Note. *$p < .05$; **$p < .01$; ***$p < .001$

a. Negative values reflect that deviances of the quadratic and cubic models are larger than that of the unconditional ANOVA models indicating poor model fit

Based on the results, linear growth models were adopted in this study. Significant parameter estimates of the linear slope of time were observed in emotional well-being, positive affect, and negative affect (π_{1i} = -.02, $p < .001$; π_{1i} = -.01, $p < .001$; π_{1i} = .01, $p < .05$). The results indicated a slightly decreasing trend in emotional well-being and positive affect and a slightly increasing trend in negative affect over time. Chi-square tests of the variance component for emotional well-being, positive affect, and negative affect indicated a significant variation in initial levels ($\chi^2(95) = 432.61$, $p < .001$; $\chi^2(95) = 429.95$, $p < .001$; $\chi^2(95) = 700.38$, $p < .001$) and in time slope ($\chi^2(95) = 219.00$, $p < .001$; $\chi^2(95) = 210.36$, $p < .001$; $\chi^2(95) = 235.34$, $p < .001$). Hence, between- and within-individual predictors of variation in emotional well-being, positive affect, and negative affect were explored in subsequent models.

Regarding emotional well-being (see Tab. 3), Models 2 and 3 exhibited a significantly better fit than Model 1 and the unconditional linear growth model did ($\Delta\chi^2(2) = 58.27$, $p < .001$; $\Delta\chi^2(10) = 49.43$, $p < .001$). In Models 2 and 3, the parameter

estimates of the linear time trend were negative and statistically significant, which is consistent with the previously reported results. The results from Models 2 and 3, in which the time-varying covariates were added, showed that changes in using reappraisal across 16 weeks were positively associated with changes in emotional well-being (β_{20} = .37, p < .001, for Model 2; β_{20} = .47, p < .001, for Model 3). In Model 3, in which between-individual predictors were added, the results indicated that participants without a balanced time perspective were associated with lower emotional well-being at the baseline than were those with a balanced time perspective (β_{02} = -.26, p < .05). Individual differences in gender also moderated the relationship between changes in using reappraisal and changes in emotional well-being (β_{21} = -.23, p < .05) indicating that the magnitude of the effect of within-individual changes in using reappraisal on emotional well-being within female participants was lower than that within male participants.

Tab. 3. Parameters estimates of within- and between-individual predictors and fit indices of multilevel models

	Emotional Well-being			Positive Affect			Negative Affect	
	M 1	M 2	M 3	M 1	M 2	M 3	M 1	M 2
Intercept	.45***	.42***	.58***	2.53***	2.51***	2.65***	2.08***	2.09***
	(.05)	(.05)	(.10)	(.04)	(.04)	(.07)	(.04)	(.04)
Female			-.08			-.12		
			(.11)			(.07)		
Non-BTP			-.26*			-.16*		
			(.10)			(.07)		
Linear Slope	-.02***	-.01***	-.01*	-.01***	-.01***	-.01*	.01*	.01*
	(.00)	(.00)	(.01)	(.00)	(.00)	(.00)	(.00)	(.00)
Female			.00			-.00		
			(.01)			(.00)		
Non-BTP			-.01			-.01		
			(.01)			(.00)		
Reappraisal Slope		.37***	.47***		.20***	.32***		-.17***
		(.04)	(.09)		(.06)	(.06)		(.03)
Reappraisal* Female			-.23*			-.21***		
			(.10)			(.06)		
Reappraisal* Non-BTP			.10			.02		
			(.10)			(.06)		
Suppression Slope		-.04	.04		.02	.10		.06*
		(.04)	(.08)		(.03)	(.05)		(.03)
Suppression* Female			-.04			-.05		
			(.09)			(.06)		
Suppression* Non-BTP			-.15			-.12*		
			(.09)			(.06)		
Deviance	1978.33	1920.06	1928.90	958.93	922.61	931.25	903.93	874.69
Chi-square		58.27***	49.43***	–	36.32***	27.68***	–	29.24***
DF	–	2	10	–	2	10	–	2

Note. *p < .05; **p < .01; ***p < .001

The results for positive affect were similar to those for emotional well-being (see Tab. 3). In Model 3, the time-perspective profile significantly negatively predicted the initial level of positive affect (β_{02} = -.16, p < .05), indicating that participants with a balanced time perspective possessed more positive affect than did those without a balanced time perspective at the baseline. The critical test involved the interaction between time and the use of a reappraisal strategy, which were both positive and significant (β_{20} = .32, p < .001), indicating that the within-individual slope relating reappraisal to positive affect increased in magnitude across the 16-week period. Gender moderated the effect of within-individual changes in using reappraisal on positive affect (β_{21} = -.21, p < .001), and the magnitude of the effect within male participants was stronger than that within female participants. Time-perspective profiles moderated the relationship between changes in using suppression on positive affect (β_{32} = -.12, p < .05). The magnitude of using suppression related to positive affect across time for those without a balanced time perspective was lower than that for those having a balanced time perspective.

Regarding negative effect, Table 3 shows that Model 2, in which reappraisal and suppression strategies were added as time-varying covariates, exhibited a significantly better fit over other models (deviance = 874.69, p < .001). Consistent with Model 1, the linear effect of time was positive (π_{1i} =.01, p < .05), and participants frequently using a reappraisal strategy showed decreasing negative affect over time (β_{20} = -.17, p < .001). The results also showed that the tendency to use suppression was associated with increasing negative affect within individuals across weeks (β_{30} = .06, p < .05). Between-individual predictors did not have significant effects on initial state, rate of change, and association with time-varying covariates for negative effect.

Discussion

This study contributes to preliminary evidence clarifying the role of gender, time-perspective profiles, and emotional-regulation strategies in emotional well-being trajectories. We observed a slightly decreasing trend in the emotional well-being and positive affect and a slightly increasing trend in the negative affect of Taiwanese undergraduates over a 16-week period. The results of using a longitudinal design suggest that the increased use of reappraisal is associated with higher emotional well-being (specifically, an increase in positive affect and a decline in negative affect), whereas increased use of suppression is associated with increasing negative affect over time. These findings are consistent with those of previous studies that used a cross-sectional design, demonstrating that people who habitually reappraise have more positive and less negative emotional experiences than those who do not, whereas habitual suppression involves negative emotional experiences (Balzarotti et al., 2010; Gillander et al., 2008; Gross & John, 2003; Nezlek & Kuppens, 2008).

However, an increase in using suppression was not associated with decreases in emotional well-being and positive affect over time in this study. Koole (2009)

indicated that reappraisal is more effective than suppression in goal-oriented emotion regulation. Nezlek and Kuppens (2008) indicated that the use of distinct regulation strategies is derived from various regulation goals. With the goal of improved emotional well-being, people may reappraise positive affect and negative affect to increase their positive affect and reduce their negative affect. However, the effect of suppression on emotional well-being is confounded because of various types of regulated affects (i.e. suppressing negative affect may reduce experienced negative affect, but suppressing positive affect may reduce experienced positive affect). Quoidbach, Berry, Hansenne, and Mikolajczak (2010) determined that the use of suppression did not significantly predict positive affect and life satisfaction. Compared with the effect of reappraisal, the effect of suppression on positive affect and well-being was not sufficiently large to be detected. Regarding emotion regulation, we did not distinguish between the reappraisal and suppression of positive and negative affect in this study. It was unclear which types of affects participants suppressed more frequently. Future studies could divide regulation strategies into more comprehensive subcategories to identify various emotion regulation effects.

Time-perspective profiles were a significant between-individual predictor of initial status in emotional well-being and positive affect. People with a balanced time perspective possessed more emotional well-being and positive affect at the baseline of the study than those without a balanced time perspective. The pattern of the time perspective profiles of young adults in Taiwan, an Eastern society, is similar to those identified in previous studies in Western societies when people experienced psychological well-being (Boniwell et al., 2010; Drake et al., 2008; Zhang, Howell, Stolarski, 2012). The time-perspective profile was also a moderator in the relationship between changes in using suppression and positive affect over time. People with a balanced time perspective had a stronger association between positive affect and using suppression as an emotional regulation approach than those without a balanced time perspective. People who have a balanced time perspective, a psychological mechanism proposed by Zimbardo and Boyd (1999), possess a positive attitude about their past, enjoy the present, focus on future goals, and are more adaptive across situations than those who have a bias toward a particular time perspective. People with balanced time perspective use various emotion regulation strategies flexibly to sustain their positive affect. For those with an unbalanced time perspective profile, suppressing feelings may be an inappropriate approach to responding to external emotional stimuli, and the lack of using multiple regulation strategies may reduce their positive affect over time.

We also observed that gender has a moderating effect on the relationship between using reappraisal and emotional well-being and positive affect over time. For male participants, the magnitude of the effect of changes in using reappraisal on emotional well-being and positive affect over time was larger than that for females. McRae, Ochsner, Mauss, Gabrieli, and Gross (2008) used functional magnetic resonance imaging (fMRI) to test gender differences in emotion regulation and found that men exhibited less prefrontal region activity and greater down-regulation of

amygdala activity than women during reappraisal. They suggested that men use reappraisal more efficiently than women and that women use positive emotion more than men when down-regulating their negative emotion. The result of this investigation suggests that men regulate their emotion by using reappraisal more efficiently than women.

However, there was no evidence showing that gender and the time-perspective profile have effects when participants experienced and recalled negative affect. Wirtz, Chiu, Diener, and Oishi (2009) indicated that the meaning of positive and negative affect differs between Easterners and Westerners. Based on culturally implicit theories, Westerners focus and recall positive affect and life satisfaction as positive components of subjective well-being more than Easterners. Easterners have greater recall of negative affect than Westerners. Affective structure may also differ according to cultural identification (Perunovic, Heller & Rafaeli, 2007). Cultural contexts should be explored in future studies.

In conclusion, the frequent use of reappraisal may be an effective strategy for enhancing emotional well-being over time. Young Taiwanese men use reappraisal to regulate emotion more efficiently than young women, and people with a balanced time perspective profile are more positive in their affects than those without. Gender and time perspective profiles are also significant moderators in the relationship between changes in using emotional regulation strategies and the emotional well-being of young adults in Taiwan.

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Associations between Psychosocial Well-being and the Development of Beneficial Time Perspectives

Abstract

A growing body of research suggests that some time perspective orientations are more beneficial than others with regard to well-being. However, little is known about the factors affecting the development of these time perspectives. This gap in the research was addressed through two studies. Study 1 (N = 218; M = 29.8 years, SD = 11.45) identified ZTPI past positive (PP) as a beneficial time perspective and past negative (PN) as a detrimental time perspective. Structural equation modelling was then used in Study 2 (N = 443; M = 31.2 years, SD = 13.0) to develop two models of the associations between attachment orientation, basic psychological need satisfaction and PP and PN, respectively. While anxious and avoidant attachment orientation were associated with both PP and PN, the three basic psychological needs were differentially associated. The findings of these studies suggest the importance of early childhood care to the development of beneficial time perspectives.

Keywords: time perspective, well-being, attachment, basic psychological needs

Związki między psychospołecznym dobrostanem a rozwojem korzystnych perspektyw czasowych

Streszczenie

Wyniki licznych badań wskazują, iż niektóre orientacje perspektywy czasowej w odniesieniu do samopoczucia jednostki są bardziej korzystne od innych. Wciąż jednak zbyt mało wiadomo na temat czynników wpływających na rozwój tych korzystnych perspektyw czasowych W dwóch przeprowadzonych przez autorkę artykułu badaniach poświęcono uwagę temu zagadnieniu. W badaniu nr 1 (N = 218; M = 29.8 lat, SD = 11.45) zidentyfikowano pozytywną przeszłość (PP) ZTPI jako korzystną perspektywę czasową oraz przeszłość negatywną (PN) jako szkodliwą perspektywę czasową. W badaniu nr 2 zastosowano model równań strukturalnych (N = 443; M = 31.2 lat, SD = 13.0), aby opracować dwa modele związków między wzorcem przywiązania, zaspokojeniem podstawowych potrzeb psychologicznych oraz odpowiednio PP i PN. O ile wzorce przywiązania typu *niepokoju* oraz *unikania* wykazały związek zarówno z PP jak i z PN, o tyle trzy podstawowe potrzeby psychologiczne okazały się

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powiązane w zróżnicowany sposób. Wnioski z przeprowadzonych badań potwierdzają istotne znaczenie stylu opieki we wczesnym dzieciństwie na późniejszy rozwój korzystnych perspektyw czasowych.

Słowa kluczowe: perspektywa temporalna, dobrostan, przywiązanie, podstawowe potrzeby psychiczne

Introduction

Time perspectives (TPs) are the temporal frames that are employed by an individual to inform decision making in the present moment, they affect behaviour and shape social, intrapersonal and interpersonal experiences, influencing the subjective interpretation of everyday events (Boniwell & Zimbardo, 2003; Zimbardo & Boyd, 1999, 2008). With reference to the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999), the five time perspectives are Past-Negative (PN), Past-Positive (PP), Present-Hedonism (PH), Present-Fatalism (PF), and Future (F).

A PN time perspective is manifested when an individual thinks negatively (or ruminates) about past experiences, leading them to draw on unpleasant memories when interpreting events and making decisions (e.g. past failures, rejections, embarrassments). Such PN-influenced behaviours, thoughts and emotions tend to be based on 'worst case' scenarios, keeping individuals chained to the past. In contrast, a PP time perspective is evident when and individual draws instead on positive memories (e.g. successful coping, achievements, self-efficacy, evidence of being valued and loved by others), which provides a solid foundation for decision making in the present and a more positive interpretation of experiences. When decisions are influenced by a PH time perspective, they are driven by the gratification of present desires. This enables an individual to experience pleasure in the present moment without thought of future consequences, which is often necessary for an individual to become nurtured, revitalised and reenergised but is also associated with risk-taking. While also present focused, PF is quite different. A PF time perspective is utilised when an individual feels that they have no control over their future, such as when they see no link between their current actions and future outcomes; they believe that it does not matter what they do (or do not do) now. This fatalistic approach to decision making is sometimes associated with feelings of helplessness and/or hopelessness. In contrast, a future time perspective is evident when decisions are made with reference to anticipated consequences. This temporal frame influences decisions when working towards and achieving goals is a priority for an individual (i.e. delaying gratification), and may be associated with a sense of purpose or feelings of responsibility for (or control over) future outcomes (Boyd & Zimbardo, 2005; Zimbardo & Boyd, 1999, 2008).

There is some evidence that the tendency to predominantly (and habitually) utilise one or two temporal frames (or, have a TP bias) is learned, with the five TPs being somewhat associated with culture, education, socioeconomic status

and religion (Zimbardo & Boyd, 1999, 2008). The associations between the TPs and personality traits (Zimbardo & Boyd, 1999) also suggest that 'nature' may play a role in the development of TP biases. However, with much of the attention of TP researchers firmly focused on the psychosocial correlates and outcomes associated with different TPs (for reviews see: Boniwell & Zimbardo, 2004; Boyd & Zimbardo, 2005), little has been done to investigate other factors that may influence the development of beneficial (or detrimental) TPs. Knowledge of any such other factors will further our understanding of the individual differences in TPs that are evident within different population groups. Such information will also assist parents and educators to promote the development of beneficial time perspectives in the children for whom they provide nurturing and guidance.

Study 1: Determining beneficial time perspectives

Before examining the development of beneficial TPs, there is a need to first determine which of the TPs are beneficial. According to Zimbardo and Boyd (1999, 2008), the most beneficial TP profile is the Balanced Time Perspective (BTP), which consists of high PP, moderately high F, moderate PH, and low PN and PF (Boniwell & Zimbardo, 2004). It is believed that an individual with a BTP integrates past, present, and future temporal frames to achieve consistency of behaviour, shifting flexibility between the various TPs to employ the most appropriate perspective for the needs of their present situation (Boyd & Zimbardo, 2005). While the ability to shift TPs adaptively has not been demonstrated in the literature, the beneficial nature of a BTP has been established by a number of studies, where individuals with a BTP have been found to have more favourable levels of psychosocial functioning than individuals without a BTP (Boniwell, Osin, Linley & Ivanchenko, 2010; Drake, Duncan, Sutherland, Abernethy & Henry, 2008; Stolarski, Bitner & Zimbardo, 2011; Zhang, Howell & Stolarski, 2012).

These investigations into the benefits of a BTP are based on the premise that the BTP profile (as outlined above) is necessary for psychosocial well-being. However, there is some evidence that this may not be the case. For example, in a general population sample, Drake et al. (2008) found that PN was negatively associated with subjective happiness (large effect size), while both PP and PH were positively associated (small effect). PF and F were not found to be significantly associated with happiness. Thus, it is possible that levels of some TPs may be more (or less) important than others for psychosocial well-being.

Zhang et al. (2012) found somewhat similar findings to Drake et al. (2008) after examining the associations between the five TPs and subjective happiness as well as other indicators of psychosocial well-being, including life satisfaction and positive (PA) and negative (NA) affect, across three college student samples. Specifically, the researchers found PN was negatively associated with happiness (medium- to large-sized effects), life satisfaction (medium- to large-sized effects), and PA (small effects), but positively associated with NA (medium to large effects).

Unsurprisingly, the associations between PP and the well-being variables were the converse, with medium- to large-sized effects for happiness and life satisfaction, but small to medium effects for both PA and NA. The patterns of association for PH and F were similar, with both positively associated with happiness, life satisfaction and PA (small effects for all), and there was either no significant association with NA or a slight negative one (for F only). The pattern of associations for PF was similar to that for PN, but the effect sizes differed: small negative associations were evident between PF and happiness and life satisfaction, associations with PA ranged from none to a small negative one, and there were medium-sized, positive associations with NA. Thus, Drake et al.'s (2008) and Zhang et al.'s (2012) results indicate that PN is most strongly associated with indicators of psychosocial well-being, followed by PP, then PF, F and PH.

In line with these findings, van Beek, Kerkhof & Beekman (2011) found that PN was positively associated with depression and suicidality for a sample comprised of psychiatric patients and a control group of non-patients, while PP was negatively associated with both – the effect sizes for all of these associations were large. PF was also negatively associated with depression and suicidality (medium effects), while F was negatively associated with suicidality (small effect) and not significantly associated with depression. PH was not found to be associated with either depression or suicidality. In comparing their two participant groups, van Beek et al. (2011) found that psychiatric patients scored significantly higher than non-patients on PN and PF, and significantly lower on PP. The two groups did not differ significantly in relation to either PH or F TPs. The researchers concluded that high levels of PN, in particular, are implicated in psychiatric conditions. Further, they suggested that PP may be a protective factor against psychopathology.

Thus, while BTP is theoretically and empirically linked to psychosocial well-being, it appears that the key components of this may be high levels of PP and low levels of PN and PF, with PH and F playing little if any role in explaining well-being. At least, this appears to be the case when examining univariate associations. It is, however, possible that multivariate analyses will indicate different findings. This possibility will be tested in the present study, which will focus on the association between the five TPs and psychological well-being and distress, where TPs that are positively associated with psychological well-being *and* negatively associated with psychological distress will be considered to be beneficial TPs. In keeping with the past findings discussed above, it is hypothesised that PP will be found to be a beneficial TP while PN and PF will, in showing the converse pattern of associations, be identified as detrimental TPs.

Method

The 218 participants (83% female) were recruited through undergraduate psychology courses at two regional universities in Australia. Participants, who were aged between 18 and 72 years (M = 29.8, SD = 11.45), were provided with a link

to an anonymous online questionnaire that was hosted by SurveyMonkey.com. The questionnaire contained demographic items, the 18 item version of the Mental Health Inventory (MHI-18; Ware, Manning, Duan, Wells & Newhouse, 1984; McHorney, Ware, Rogers, Raczek & Lu, 1992) and the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999).

The MHI-18 was used to assess psychological well-being. Participants responded to 18 statements to indicate how often they have felt certain ways during the past four weeks using a 6-point scale (1 = all of the time, 6 = none of the time), enabling calculation of a Mental Health Index score (scoring range: 0–100, where higher scores indicate greater psychological well-being). Subscales measuring depression (4 items; e.g. 'did you feel depressed?'), anxiety (5 items; e.g. 'have you been a very nervous person?'), loss of behavioural control (4 items; e.g. 'did you feel emotionally stable?'), and positive affect (4 items; e.g. 'were you a happy person?') can also be calculated (scoring range: 0–100, where higher scores are indicative of higher levels of symptomatology).

The ZTPI was used to assess the participants TPs. The 56 ZTPI items are responded to on a 5-point scale (1 = very untrue of me, 5 = very true of me) and five subscales can be calculated: Past Positive (9 items; e.g. 'Familiar childhood sights, sounds, smells often bring back a flood of wonderful memories'), Past Negative (10 items; e.g. 'I often think of what I should have done differently in my life'), Present Hedonism (15 items; e.g. 'I believe that getting together with one's friends to party is one of life's important pleasures'), Present Fatalism (9 items; e.g. 'Fate determines much in my life'), and Future (13 items; e.g. 'I believe that a person's day should be planned ahead each morning'). All subscales have a scoring range of 1–5, where higher scores indicate a preference for that particular time perspective.

Results and discussion

The correlations between the ZTPI and MHI-18 scales (see Tab. 1) indicate that PP could indeed be defined as a beneficial TP, being positively correlated with the Mental Health Index and the positive affect scale and negatively associated with the depression, anxiety and loss of behavioural control scales (all medium-sized effects). As hypothesised, the patterns of associations for PN and PF were inversed, with large effect sizes evident for the associations between the MHI-I8 scales and PN, but medium-sized effects for PF, confirming that PN and PF can be considered detrimental TPs. The pattern of association for F was the same as that for PP, indicating that it also is a beneficial TP, although all effect sizes were small. PH was only found to be significantly associated with positive affect, and weakly at that.

A multiple regression analysis was completed to assess the relationships between the five ZTPI scales and the MHI-18 Mental Health Index scores. Together, the five scales explained 43% of the variance in Mental Health Index scores: $R^2 = .44$, Adjusted $R^2 = .43$, $F(5, 204) = 31.61$, $p < .001$. However, as is evident in Table 2, only PN and PP explained significant proportions of the variance, and PN was the most

important of the ZTPI scales for this purpose. Given the strength of their univariate associations with Mental Health Index scores, it is unsurprising that PH and F do not contribute significantly within the multiple regression analysis. However, the lack of significant contribution by PF is unexpected. It is likely that this is a reflection of the shared variance evident between this variable and PN, which correlate moderately (r = .43).

Tab. 1. Means, standard deviations, alphas, and inter-correlations between ZTPI and MHI-18 scales

	M	SD	α	PP	PN	PH	PF	F	MH Index	Depression	Anxiety	Loss BC
PP	3.59	0.58	.78	-								
PN	3.09	0.70	.85	-.38***	-							
PH	3.31	0.49	.81	.20**	< .01	-						
PF	2.45	0.50	.70	-.15*	.43***	.24***	-					
F	3.54	0.49	.79	.17**	-.13	-.28***	-.35***	-				
MH Index	68.17	17.74	.95	.37***	-.64***	.09	-.35***	.13*	-			
Depression	70.87	21.28	.91	-.32***	.59***	-.06	.31***	-.16*	-.90***	-		
Anxiety	63.83	20.54	.86	-.36***	.58***	-.09	.29***	-.14*	-.83***	.76***	-	
Loss BC	74.77	20.22	.86	-.37***	.55***	-.09	.36***	-.16*	-.91***	.81***	.74***	-
Pos Affect	61.76	19.21	.86	.44***	-.59***	.17*	-.32***	.16*	.86***	-.70***	-.64***	-.73***

* p < .05, ** p < .01, *** p < .01

Note: *PP* is Past-Positive, *PN* is Past-Negative, *PH* is Past-Hedonism, *PF* is Present-Fatalism, *F* is Future, *Loss BC* is Loss of Behavioural Control, *Pos Affect* is Positive Affect

Tab. 2. Standard multiple regression, predicting Mental Health Index scores from ZTPI scales

	B	*β*	*r*	*sr²*
PP	3.79*	.120	.37	.011
PN	-14.11***	-.544	-.64	.210
PH	3.66	.097	.09	.008
PF	-3.89	-.108	-.35	.008
F	1.30	.035	.13	<.001

* p < .05, ** p < .01, *** p < .001

Note: R^2 = .44, Adjusted R^2 = .43, $F(5, 204)$ = 31.61, p < .001. The squared semi-partial (sr^2) correlation is derived from the part correlation in SPSS. The *r* given is for the zero-order correlation. Predictors were entered simultaneously

These results support those of van Beek et al. (2011), indicating that PN is the principal ZTPI scale explaining psychological well-being differences between individuals, and that PP also plays a small role. As noted by van Beek et al., the relationship between PN and psychological distress is likely to be bidirectional, with people who are experiencing symptoms of psychological distress (i.e. depression, anxiety) being more likely to ruminate on past negative experiences, and those who dwell on negative experiences being more likely to develop symptoms of depression

and anxiety. It is also possible that a similar bidirectional relationship is present for psychological well-being and PP, with individuals with high levels of well-being, such as positive affect, being more likely than those with lower levels to draw on positive memories in everyday life and to interpret current experiences in a positive light, thus increasing their levels of PP. Nevertheless, at least in relation to psychological well-being, it appears that low PN and high PP are more important than the other ZTPI scales for explaining positive everyday functioning.

Study 2: The development of beneficial time perspectives

While there is some evidence that TPs are learned and are related to personality (Zimbardo & Boyd, 1999, 2008), there is a lack of research investigating other factors that may influence their development. Consistent with the findings of the previous study, the present study focused on using structural equation modelling to develop a model of the factors underlying PP, which was identified as the most beneficial TP. A model was also developed for PN, which was identified as the most detrimental TP. For this study, the decision was made to focus on basic psychological need satisfaction and attachment orientation as possible factors underlying PP and PN TPs.

The three basic psychological needs, as outlined within Deci and Ryan's Self-Determination Theory, are autonomy, competence and relatedness. Deci and Ryan (2000) state that these needs are 'innate psychological nutriments that are essential for ongoing psychological growth, integrity and well-being' (p. 229). Need satisfaction is evident when an individual's actions are undertaken of their own free will, with such behaviour being self-directed and regulated (autonomy), when they feel they are capable of accomplishing tasks and of interacting with others and their environment effectively (competence), and they have close emotional bonds and attachments with other people (relatedness). As such, optimal functioning, growth and well-being are evident when the three needs are satisfied (Deci & Ryan, 2000). Research supports this theory, with individuals with high levels of autonomy, competence and relatedness being found to be more likely than those with low levels of these qualities to: have high levels of psychological well-being and positive affect, be intrinsically motivated, have enhanced self-motivation and self-regulation, engage in prosocial behaviours; and to be less likely to experience burnout, depression and anxiety (Ryan & Deci, 2000; Ryan, Huta & Deci, 2008; Van den Broeck, Vansteenkiste, De Witte & Lens, 2008).

Zhang et al. (2012) found overall psychological need satisfaction to be positively associated with PP, PH and F, and negatively associated with PN and PF; they did not examine associations independently for autonomy, competence and relatedness. The patterns of inter-correlations between these variables are likely to provide some clarification on the mechanisms underlying these associations. However, it can be speculated that PP is positively associated with relatedness, because pleasant memories are often the result of social interactions (e.g. celebrations, family

gatherings, shared experiences with friends); competence, because an individual tends to feel this when they can draw on examples from their past to provide evidence of their ability to successfully engage with their environment (e.g. coping with challenges, attainment of skills, accomplishments); and autonomy, because when an individual acts autonomously, they are likely to engage in activities that they enjoy and have experiences that they value, thus their autonomy may result in the creation of a greater number of 'positive' memories.

Laghi, D'Alessio, Pallini and Baiocco (2009) also assessed psychological need satisfaction in conjunction with ZTPI scales, but did not report associations between the variables. Nevertheless, they found that parental and peer attachment were positively associated with PP, autonomy, competence and relatedness, and negatively associated with PN. Positive associations between basic psychological need satisfaction and secure attachment orientation were also found by La Guardia, Ryan, Couchman and Deci (2000). Attachment theory explains the mechanisms by which the caregiver-child relationship impacts on the psychosocial well-being of individuals throughout life; the attachment orientation developed during early childhood generally does not change substantially over the lifespan without intervention or therapy. Attachment orientation is measured in relation to two continuums: attachment anxiety and attachment avoidance. A securely attached individual will score low on both continuums. In contrast, insecurely attached individuals may be high on attachment anxiety, which is associated with feeling negatively about the self while holding positive views of others, and/or high on attachment avoidance, which is associated with holding positive views of the self and negative views of others (Bartholomew, 1990).

The basic tenants of attachment theory (for review see: Ainsworth & Bowlby, 1991) state that a child develops a secure attachment style when they receive warm, responsive and consistent caregiving. Through this nurturing relationship, the child learns that other people are reliable, caring and trustworthy, and the child develops feelings of self-worth because they feel valued. The outcomes of such a secure attachment to a caregiver enable an individual to feel safe in relationships, being able to give and receive support and care, and to feel connected to others (i.e. satisfaction of relatedness needs). Secure attachment relationships in childhood also lead the child to view the physical environment as a place into which they can venture safely, because they know that their caregiver is available if needed. This provides optimal conditions for a child to explore their environment, learning about the physical and social world and developing abilities, skills and feelings of self-efficacy (i.e. satisfaction of competency needs). When appropriately supported, such exploration of their environment also enables a child to be autonomous in their behaviour, learning to be self-directed and to regulate their behaviour as necessary for different contexts, but also learning to act independently of others to achieve their own goals, on their own terms (i.e. satisfaction of autonomy needs).

To summarise, it is posited here that secure attachment relationships during early childhood provide optimal conditions for an individual to achieve satisfaction

of their autonomy, competency and relatedness needs, laying the foundation for the development of beneficial TPs and social and emotional well-being throughout life. Conversely, without intervention, insecure attachment can have adverse repercussions across the lifespan, undermining the satisfaction of basic psychological need satisfaction, promoting the use of detrimental TPs, and leading to psychological distress. It is, therefore, hypothesised that the attachment orientation and basic psychological need satisfaction will be associated with PP and PN as is depicted in Figure 1. However, it is likely that the two attachment orientation variables and three basic psychological needs will interrelate differently with PP and PN, thus two separate models will be developed.
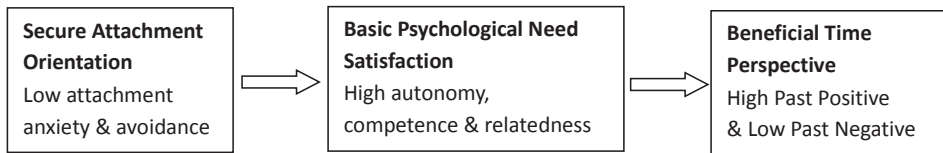

Fig. 1. Proposed model of association between factors leading to the development of beneficial time perspectives

Method

The sample of 443 (75% female) participants consisted of undergraduate psychology students and members of the broader population. Students were recruited through courses at two regional universities in Australia, while other participants were recruited via social media (e.g. Facebook) and email snowballing. Participants were aged between 18–80 years ($M = 31.2$, $SD = 13$). As in Study 1, participants were provided with a link to an anonymous online questionnaire that was hosted by SurveyMonkey.com. The questionnaire contained demographic items, the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999), the revised version of the Experiences in Close Relationships Questionnaire (ECR-R; Fraley, Waller & Brennan, 2000), and the Basic Psychological Need Satisfaction Scale (BPNS; Gagne, 2003).

The 36-item ECR-R was used to assess adult attachment orientation. Participants responded to items on a 7-point scale (1 = strongly disagree, 7 = strongly agree), indicating how they felt about someone with whom they were in a relationship. Two subscales can be calculated: attachment anxiety (18 items; e.g. 'I worry that they won't care about me as much as I care about them') and attachment avoidance (18 items; e.g. 'I get uncomfortable when they want to be very close'), both with scores ranging 0–7, where higher scores indicate higher levels of attachment insecurity.

The BPNS consists of 21 items, which can be responded to on a 7-point scale (1 = not at all true, 7 = very true). There are three subscales: autonomy (7 items; e.g. 'I feel like I am free to decide for myself how I live'), competence (6 items; e.g. 'Most

days I feel a sense of accomplishment from what I do'), and relatedness (8 items; e.g. 'I get along with people I come into contact with'). All subscales have a scoring range of 1–7, with higher scores indicating greater levels of need satisfaction.

Results and discussion

As can be seen in Table 3, PP was positively correlated with all three BPNS scales and negatively associated with attachment anxiety and avoidance scales. The inverse pattern of associations was evident for PN. Additionally, the two attachment scales were negatively associated with autonomy, competence and relatedness.

Tab. 3. Means, standard deviations, alphas, and inter-correlations between ZTPI, ECR-R and BPNS scales

	M	SD	α	PP	PN	PH	PF	F	AAnxiety	AAvoidance	Autonomy	Competence
PP	3.64	0.55	.75	-								
PN	3.09	0.71	.85	-.36***	-							
PH	3.37	0.47	.80	.19***	.05	-						
PF	2.47	0.52	.72	-.13**	.42***	.22***	-					
F	3.54	0.47	.76	.13**	-.08	-.25***	-.30***	-				
AAnxiety	3.12	1.3	.93	-.14**	.50***	.14**	.33***	-.08	-			
AAvoidance	2.88	1.14	.89	-.19***	.31***	-.09	.27***	-.09	.59***	-		
Autonomy	4.95	0.89	.77	.29***	-.56***	.15**	-.28***	.04	-.48***	-.40***	-	
Competence	4.97	1.01	.75	.35***	-.57***	.11*	-.35***	.25***	-.47***	-.38***	.61***	-
Relatedness	5.52	0.83	.82	.40***	-.38***	.17*	-.23***	.07	-.29***	-.38***	.58***	.48***

* $p < .05$, ** $p < .01$, *** $p < .001$

Note: *PP* is Past-Positive, *PN* is Past-Negative, *PH* is Past-Hedonism, *PF* is Present-Fatalism, *F* is Future, *AAnxiety* is Attachment Anxiety, *AAvoidance* is Attachment Avoidance

A series of multiple regression analyses were undertaken to identify variables for inclusion in the two SEM models. In keeping with the hypothesised model, the first set of two regressions examined the relationships between the three BPNS scales and PP and PN, respectively (see Tab. 4). These analyses indicated that competence and relatedness explained significant proportions of the variance in PP scores ($R^2 = .19$, Adjusted $R^2 = .19$), while autonomy and competence explained significant proportions of variance in PN scores ($R^2 = .39$, Adjusted $R^2 = .39$). Relatedness explained the largest proportion of variance in PP scores whereas competence explained the largest proportion in PN scores.

Tab. 4. Standard multiple regressions, predicting Past-Positive and Past-Negative from BPNS scales

	B	β	R	sr²
Past Positive: R^2 = .19, Adjusted R^2 = .19, $F(3, 456)$ = 35.47, $p < .001$				
Autonomy	-0.02	-.026	.29	<.001
Competence	0.12***	.215	.35	.028
Relatedness	0.20***	.310	.40	.062
Past Negative: R^2 = .39, Adjusted R^2 = .39, $F(3, 456)$ = 98.26, $p < .001$				
Autonomy	-0.25***	-.337	-.55	.050
Competence	-0.26***	-.360	-.57	.082
Relatedness	-0.03	-.009	-.39	<.001

* $p < .05$, ** $p < .01$, *** $p < .001$

Note: The squared semi-partial (sr^2) correlation is derived from the part correlation in SPSS. The r given is for the zero-order correlation. Predictors were entered simultaneously

The second set of three regression analyses examined the relationships between the ECR-R scales and autonomy, competence and relatedness, respectively (see Tab. 5). For autonomy (R^2 = .25, Adjusted R^2 = .24) and competence (R^2 = .24, Adjusted R^2 = .24) both attachment scales explained significant proportions of the variance, with attachment anxiety explaining the largest amount. In contrast, only attachment avoidance explained a significant proportion of variance in relatedness scores (R^2 = .15, Adjusted R^2 = .15), however attachment anxiety was near significance (p = .06).

Tab. 5. Standard multiple regressions, predicting BPNS from ECR-R scales

	B	β	R	sr²
Autonomy: R^2 = .25, Adjusted R^2 = .24, $F(2, 437)$ = 71.58, $p < .001$				
AAnxiety	-0.25***	-.371	-.48	.089
AAvoidance	-0.14**	-.178	-.40	.021
Competence: R^2 = .24, Adjusted R^2 = 24, $F(2, 437)$ = 68.19, $p < .001$				
AAnxiety	-0.29***	-.377	-.47	.092
AAvoidance	-0.14**	-.160	-.38	.017
Relatedness: R^2 = .15, Adjusted R^2 = .15, $F(2, 437)$ = 39.25, $p < .001$				
AAnxiety	-0.06	-.103	-.29	.007
AAvoidance	-0.23***	-.321	-.38	.067

* $p < .05$, ** $p < .01$, *** $p < .001$

Note: *AAnxiety* is Attachment Anxiety, *AAvoidance* is Attachment Avoidance. The squared semi-partial (sr^2) correlation is derived from the part correlation in SPSS. The r given is for the zero-order correlation. Predictors were entered simultaneously

Based on these findings, two models were tested using structural equation modelling (see Fig. 2 & 3) and found to be a good fit with the data (see Tab. 6 for model fit indices). For PP, the model explained 19% of variance in scores, while the PN model explained 44% of variance.

Tab. 6. Indices of model fit for Past-Positive and Past-Negative

Model	χ2	df	χ²/df	RMSEA (90% CI)	CFI	TLI
Past Positive	1.703	2	0.852	<.001 [<.001, .090]	1.000	1.003
Past Negative	3.084	1	3.084	.069 [<.001, .163]	0.997	0.974

Note: RMSEA is Root Mean Square Error of Approximation, CFI is Comparative Fit Index, TLI is Tucker-Lewis Index
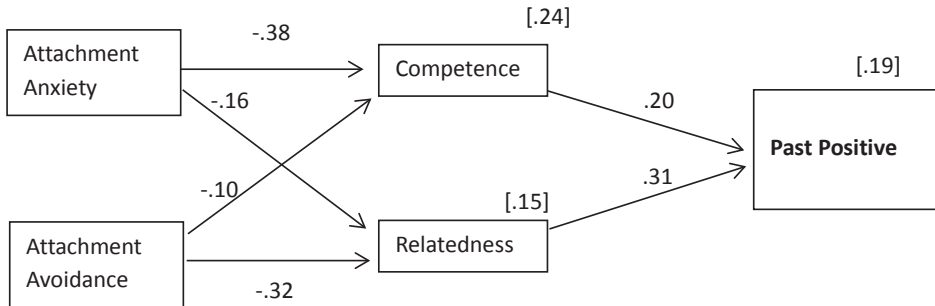

Fig. 2. Model of cross-sectional predictors of past positive scores. Relationships are statistically significant (p < .001), with the exception of attachment avoidance and competence (p = .002) and attachment anxiety and relatedness (p = .058). Values in square brackets are the percentage variance explained

The model for PP (see Fig. 2) indicates that its relationships with both attachment anxiety and attachment avoidance are fully mediated by competence and relatedness. While keeping in mind that these models are based on cross-sectional data, it appears that attachment security (i.e. low levels of attachment anxiety and avoidance) leads to higher levels of satisfaction of competence and relatedness needs, which in turn lead to a PP bias. As such, this model generally conforms to the pattern of associations hypothesised. Specifically, it seems that attachment anxiety, where individuals are overly dependent on others, undermines the development of feelings of competency, whereas attachment avoidance (unsurprising) adversely affects the ability of individuals to develop close relationships with others. In turn, it is suggested that the activities and experiences associated with the satisfaction of relatedness and competence needs provide a ready store of pleasant memories and experiences for individuals to draw on when interpreting events and making decisions in the present, which is reflected by high PP scores.

The model for PN (see Fig. 3) indicates that attachment anxiety is directly related to PN but that the relationship between attachment avoidance and PN is mediated by both autonomy and competence. Thus, it appears that high levels of attachment avoidance lead to lower levels of satisfaction of autonomy and competency needs, which, along with high levels of attachment anxiety, lead to a PN bias. While there were no specific hypotheses for the PN model, it was implied that it would be somewhat the reverse of the PP model. In terms of the directions of the associations,

this is the case; however, it is important to note the differences between the two models. Specifically, the direct association between attachment anxiety and PN and the fact that the satisfaction of autonomy needs does not play a role in PP, whereas satisfaction of relatedness needs is not associated with PN. Further, the importance of attachment orientation and competence in both models should be noted.
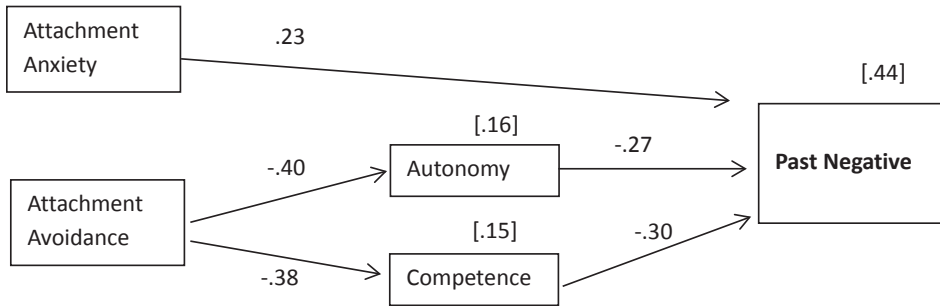

Fig. 3. Model of cross-sectional predictors of past negative scores. Relationships are statistically significant (p < .001). Values in square brackets are the percentage variance explained

Together, these models suggest that attempting to counter high PN by working to increase PP, as suggested by van Beek et al. (2011), will only do part of the job. Additionally, the level of success of this method will be dependent on which underlying factors are improved by these efforts. That is, if efforts are made to increase levels of relatedness, this may act to increase PP but have no impact on PN. In contrast, if competency needs or attachment issues are addressed, it is likely that increases will be evident for both PP and PN.

General discussion

The findings from the two studies presented here indicate that there is benefit in looking at individual TPs rather than just focusing on the ideal of a BTP. In relation to psychological well-being/distress, it is evident that PN is a detrimental TP and that it is the most important TP in terms of explanatory power. That is, while PP is a beneficial TP, it only explains a small amount of the variance in symptomatology scores. It is possible that the patterns of association between the five TPs and other psychosocial indicators of well-being may differ, with other TPs explaining a higher proportion of variance than PN, but there is little evidence of this in the literature. Thus, it is suggested that greater research and clinical attention be paid to high levels of PN to improve our understanding of the impact of this TP on everyday functioning and determine the best methods in which levels can be lowered for affected individuals.

The model developed for PN in the present study provides a starting point for future efforts in this area. For example, research is needed to determine if interventions aimed at increasing the satisfaction of autonomy and competence

needs result in decreased levels of PN and associated psychological distress over time. Similarly, and in line with the tenants of positive psychology (Seligman & Csikszentmihalyi, 2000), it is important to also assist people to increase their levels of well-being, such as by increasing PP levels. This may be achieved through interventions aimed at increasing social connections and building feelings of competency. Attachment orientation could also be addressed in both cases, however, this is likely to be a somewhat harder task than increasing basic psychological need satisfaction.

These models should, however, be interpreted with some level of caution as they are based on cross-sectional rather than longitudinal data. As TPs are likely to be dynamic rather than fixed over time, probably being affected through bidirectional relationships or 'feedback loops' (e.g. TP impacting on current well--being and affect, leading to rumination and/or memory biases, which then impact TP [or perhaps their measurement]). There is a need for longitudinal studies to determine how stable TPs are during adulthood and what types of life experiences can cause both positive and adverse changes in an individual's TP. Additionally, while a somewhat developmental approach has been suggested in this study, particularly through the use of attachment orientation (which is known to be relatively stable throughout life, without intervention), longitudinal studies are needed to fully investigate the development of TP from infancy through adulthood to capture the interplay of nature, nurture and life experiences on the development of beneficial time perspectives, and in doing so, determine the veracity of the models proposed here.

Further to this, it is also important to note that the PP model only explains 19% of the variance in PP scores, and the PN model explains 44% of variance. This indicates that there are likely to be other factors that explain significant proportions of the variance. It is likely that such factors will have some effect on efforts to increase PP and decrease PN scores, thus, further research is needed in this area to identify possible factors and investigate the role/s they play in relation to the development of both beneficial and detrimental TPs. Moreover, the results presented here should be viewed with the knowledge that the predominantly female samples in both studies may mean that results are not as applicable to males.

Nevertheless, it is suggested that greater efforts are made to encourage and support parents to develop secure attachment relationships with their children, promote the satisfaction of their basic psychological needs, and assist in their development of beneficial TP profiles. Further, due to their influence on the daily lives of children, there is a need for early childhood educators to learn about these psychosocial factors so that they can actively support the development of social and emotional well-being in the children they teach and nurture (Temple & Emmett, 2013). It is likely that such efforts will have a preventative effect on incidence rates of psychological distress, particularly if information provision is augmented with training in skills and techniques associated with promoting the development and maintenance of well-being across the lifespan.

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Student Time Perspective
in the Context of Their Preferred Values

Abstract

The aim of the thesis is to research the connections between time perspective and values of university students. The following investigative methods were used: The Zimbardo Time Perspective Inventory (ZTPI) and Schwartz's Portraits Value Questionnaire (PVQ-21). The group consisted of 127 students of Pedagogical University in Cracow. The results obtained show connections between temporal orientation and the values esteemed by the students. A positive correlation was found between Present-Hedonistic scale and following values: Hedonism, Stimulation and Self-direction, and negative correlation with Benevolence and Tradition. The Future perspective was positively associated with Conformity, Tradition, Achievements, Self-direction and Universalism, and negatively with Hedonism. Past-Positive is positively connected with Conformity and Tradition. Past-Negative – positively with Power and negatively with Stimulation and Self-direction.

Keywords: time perspective, temporal orientation, values

Perspektywy czasowe studentów w kontekście cenionych przez nich wartości

Streszczenie

Prezentowane badanie miało na celu uzyskanie odpowiedzi na pytanie, czy istnieją i jakie są związki między perspektywami czasowymi przyjmowanymi przez studentów a cenionymi przez nich wartościami. W badaniu posłużono się następującymi metodami: Kwestionariuszem Postrzegania Czasu Zimbardo (ZTPI) oraz Kwestionariuszem Portretowym Wartości Schwarza (PVQ-21). W badaniu wzięło udział 127 studentów Uniwersytetu Pedagogicznego w Krakowie. Uzyskane wyniki pokazały, że istnieją związki między wartościami cenionymi przez studentów a przyjmowanymi przez nich perspektywami czasowymi. Stwierdzono pozytywne korelacje między teraźniejszą-hedonistyczną perspektywą czasową a następującymi wartościami: hedonizmem, stymulacją i samosterownością oraz negatywne z życzliwością i tradycją. Perspektywa przyszłościowa jest pozytywnie związana z konformizmem, tradycją, osiągnięciami, samosterownością i uniwersalizmem, a negatywnie z hedonizmem. Perspektywa przeszła-pozytywna jest pozytywnie skorelowana

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z konformizmem i tradycją, a przeszła-negatywna – pozytywnie z władzą, a negatywnie ze stymulacją i samosterownością.

Słowa kluczowe: perspektywa czasowa, orientacja temporalna, wartości

Introduction

Basic time perspective

One of the basic conditions pertaining to human life (and the way of its experiencing) is that it happens in time. From the point of view of psychology, an individual's subjective experience of "being in time" is an especially interesting issue. The primary issue here is cognitive representations of three temporal areas: past, present and future, or more precisely, representations of self in those three temporal areas – time perspective (Łukaszewski, 1983; Hornik & Zakay, 1996; Boniwell & Zimbardo, 2004/2007). Individual differences in experiencing oneself in time are particularly interesting. It is one of the essential issues of temporal psychology. The objective of the research presented in the article was to show whether individual time perspectives are connected to values and if so, to what values. The answer to the question: "What values kept in high regard (and what in low regard) are connected with being focused on a given time perspective?".

The temporal perspective refers to the level of a person's concentration on a given time dimension, the amount of the person's attention directed to past memories, the present and future planning and prediction. It shows proportion of cognitive representation presence for past, present and future in the person's mind and the power of their influence on the person's actions. We could describe such power as regulatory power of individual time categories (Łukaszewski, 1983; Hornik & Zakay, 1996; Nosal, 1993, 2002; Boniwell & Zimbardo, 2004/2007; Zimbardo & Boyd, 2008/2009). It pertains to directing thoughts, emotions and actions to objects, states and experiences situated in the past, present or future (Zaleski, 1988). The proportions of individual time dimension presence in thinking, experiencing and acting of the person are valid. Some people's lives are dominated by a single time perspective. There are people, whose present life focuses around cultivating memories from the past. Others live in the present, not giving enough attention to the objectives they might reach in the future. Others still, are so focused on systematic and timely execution of tasks connected to attaining future objectives, that they are unable to be „here and now" and enjoy the present moment, i.e. sensual impressions during a walk or contact with their friends. Single time perspective domination may even be a person's permanent disposition (Boniwell & Zimbardo, 2004/2007; Zimbardo & Boyd, 2008/2009). Łukaszewski also writes about fixation on a specific time dimension (Łukaszewski, 1983, 1984). The dominant time period becomes a frame of reference in predicting and evaluating events, moreover, it directs actions (Nosal & Bajcar, 1999). With other people, the proportions between perspectives relating to "things that passed", "things that are" and "things that will

be" may be more balanced. The most optimal pattern is, of course, switching from one time perspective to another, depending on the situational needs (Boniwell & Zimbardo, 2004/2007; Zimbardo & Boyd, 2008/2009). We may cultivate tradition and recall common history during family meetings (past perspective), relax on holidays and enjoy the presence of our friends who we are spending time with (present perspective), but at work we may be focused on timely execution of tasks and systematic achievement of life objectives (future perspective). There are people with balanced time perspectives. Others may learn flexible switching from one perspective to another depending on the needs of the situation. Presently adopted time perspective may depend on the mood, as proved by the Klapproth (2011) experiment.

Time perspective also has a value aspect (positive-negative), which is connected with emotional reaction patterns connected with thinking about a given temporal space (Boniwell & Zimbardo, 2004/2007; Nosal, 2002; Zimbardo & Boyd, 1999). A person focused on the past may affectionately and nostalgically remember wonderful moments from childhood or the thrill of their first love. Another "past person" may remember the hurts and failures from the past, which stop him/her from feeling happy in present life. Emotional undertone of temporal orientation refers to all time dimensions.

Zimbardo and Boyd (1999, 2008/2009) differentiate six basic time perspectives, all featured in The Zimbardo Time Perspective Inventory (ZTPI). The perspectives relate to a person's degree of concentration on a given time space, the amount of attention a given person directs to past memorize, present and future plans and predictions, and the value aspect (positive-negative). Following perspectives were differentiated (Zimbardo & Boyd, 2008/2009): two pertaining to the past, but characterized by a different attitude to own history: (1) Past-Positive – including a positive attitude to past and (2) Past-Negative – related to a negative attitude to own past. Two present perspectives: (3) Present-Hedonistic relates to focusing on present pleasures and enjoying them and the (4) Present-Fatalistic perspective connected with the feeling of inability to influence your own life, which leads to escaping responsibility and concentrating on present pleasures. (5) Future perspective relates to future focus and future planning. A Transcendental perspective (6) was differentiated, relating to time after death, which will not be touched upon in this article.

Analysing the content of questions which make up the ZTPI scale, a person with high results in negative scale of Past perspective devotes much attention to negative memories and negative evaluation of the past, which may make it difficult to enjoy the present. The person focuses mainly on negative past memories and negative emotions connected with them. People obtaining high results in negative Past scale are, among others, more depressive, aggressive, uneasy and shy, they are less happy friendly and conscientious (Zimbardo & Boyd, 2008/2009). Whereas Positive-Past perspective is connected with keeping positive memories. It relates to pleasant, sentimental and nostalgic views to own past. People with high results

in that scale attach much importance to preservation of friend and family relations and to cultivating tradition (Zimbardo & Boyd, 2008/2009; Boniwell & Zimbardo, 2004/2007). People with high results on this scale often have high self-esteem and happiness and they tend to be confident. They are rarely depressed. If this time orientation is dominant (it is not balanced with present and future orientations), it may be connected with conservatism, reluctance to change and lack of openness to new experiences (Zimbardo & Boyd, 2008/2009; Boniwell & Zimbardo, 2004/2007).

Present-Hedonistic perspective is connected with the attitude to enjoy the moment, especially with the search for pleasure and stimulation and acting on a momentary impulse. It corresponds with hedonism described by Nosal (1993) as focusing on present tasks, maximizing present pleasure – the hedonistic attitude to reality. People who obtain high results on the Present-Hedonistic scale, especially if it is the dominant perspective for them, live the moment, value sensual pleasures and intense actions, seek sensations and are open to new friendships and sexual adventures. They are frequently creative, can enjoy life, have much energy and often many friends. It is also frequent that they do not devote enough attention to systematic work and act impulsively. They are often unpunctual or execute tasks untimely, which may cause problems at school, at the university or later, in professional life. The Present-Fatalistic perspective is connected with the feeling of lack of influence on own life and lack of possibility to decide about own future, which pushes the person towards focusing on current pleasures, which yet may have the character of an escape – an escape from taking responsibility for their own future. High results in this scale are often connected with higher tendency for depression, higher fear and aggression levels. The questionnaire does not yet include any perspective focused on the present, which is based around conscious an authentic presence "here and now". A perspective, which would not tend towards "being absorbed into pleasure", but one that would be connected with a high level of consciousness and situation presence, regardless of its stimulation value or the level of momentary pleasure. In the characteristics of positive possibilities for present characteristics (Zimbardo & Boyd, 2008/2009) we may find references to such quality, it is not however, differentiated as a separate ZTPI scale. But according to Boniwell and Zimbardo (2004/2007) – joy in everyday life and spontaneous freshness in experiencing reality, play a positive role in people with balanced time perspective. A review of attitudes stressing different aspects of using the present and the present moment can be found in the work of Sobol-Kwapińska (2007).

ZTPI Future perspective scale (Zimbardo & Boyd, 2008/2009) is connected with setting objectives and planning, with present life focused on these activities. Future focus, unbalanced with other time perspective, may be connected with chasing success, which makes the person unable to be present "here and now". A person then falls into a time crunch (Zimbardo, 2001). According to Gleick (1999/2003), a constant acceleration is characteristic for our way of life. Klamut (2002) claims that future temporal orientation is connected with the sensation of a meaningful life when the person can substantiate the future in present actions. Research of Cycoń

and Zaleski (1998) proved that people who rarely plan distant future, experience the feeling of despair more often, they are characterized by weaker emotional balance and weaker sense of meaningful life in comparison to people who frequently make distant plans. Future-oriented people act in accordance with their plan, sometimes even "forcing" themselves, without regard for their own emotions or feelings. They keep executing plans and moving towards their assumed objectives. They are systematic, conscientious, punctual and finish the tasks they started. Thanks to this, they frequently succeed in school, university, and in their profession, which is important to them because they are frequently ambitious people, with a high need of achievement (Zimbardo & Boyd, 2008/2009). If this perspective is not balanced by others, they also suffer high personal costs such as: stress, tension, fear of failure and difficulty in accepting their own weaknesses. Too strong future orientation may also be connected with minimizing the need for social bonds and weak roots in community and tradition.

Each of the orientations (if it is not balanced by other perspectives) carries with it certain risks. The people focused on the present try to enjoy life, enjoy the current moment, but after a while they realize that time has passed and their goals remain unfulfilled. People focused on the future pursue established goals in a disciplined manner, not taking their own emotions or current needs into consideration, achieve high personal goals "by force", and upon reaching them, they cannot enjoy them. Being "now", present in the situation, can be contrasted with waiting for something that will happen or with a feeling of regret for the past.

"The optimal mix of perspectives" cited by Zimbardo (Zimbardo & Boyd, 2008/2009) is: high Past-Positive, moderately high prospective (future-oriented), moderately high present-hedonistic and low negative: Past and Fatalistic present. The most adaptive and balanced Time Perspective (Boniwell & Zimbardo, 2004/2007; Zimbardo & Boyd, 2008/2009) is characterized by positive assessment of the past and the future, flexibility and the ability to switch the perspective of time, depending on the needs of the situation. Also by planning the future, but in a non-rigid way. Taking into account long-term goals and plans in current activities, being at the same time present in "here and now" and enjoying the activities aimed at goals. Such people can also connect the past, present and future in a meaningful whole (Boniwell & Zimbardo, 2004/2007; Zimbardo & Boyd, 2008/2009).

Time perspective versus values

It seems that an important factor influencing the temporal perspective is values. Temporal orientation appears to be associated more closely with the values actually held than with the declared ones. For this reason, the research into values used the Schwartz questionnaire (PVQ), which examines the values directly in the form of declared values, but using the descriptions of people putting certain values into practice (the name of the value does not appear in the questions) to whom the tested person compares oneself.

Schwartz's concept refers to the values which are subjectively important to many people. Values according to Schwartz (Schwartz et al., 2001; Cieciuch &

Zalewski, 2011) can be characterized in the form of six properties: 1) Values are beliefs associated with emotions. 2) Values are a motivational construct, which refers to the desired goals people struggle to attain. 3) They go beyond single actions and situations, by virtue of which they differ from the norms and attitudes typically limited to specific situations. 4) They usually function as standards of evaluations and choices of actions, though are not necessarily perceived in everyday life. 5) They are arranged hierarchically in a relatively permanent system of preferences. 6) The actions are not directed by single preferences, but by the collective significance of values (Schwartz et al., 2001; Cieciuch & Zalewski, 2011).

In the Schwartz's concept 10 values were distinguished: 1) self-direction – independence in thought and action, creativity, freedom, autonomous choice of one's own purposes; 2) stimulation – a search for novelty, the pursuit of an exciting and varied life; 3) hedonism – the pursuit of pleasure, the satisfaction of one's – mostly sensual – needs; 4) achievements – personal success, achieved by demonstration of competences according to social standards; 5) power – social status and prestige, control or authority over people and resources; 6) security – safety, harmony, and stability of society, of relationships, and of self; 7) conformity – limiting our aspirations and actions that could harm others or violate social norms; obedience, self-discipline, respect for the elderly; 8) tradition – the acceptance of and respect for the customs and ideas of one's own culture or religion; 9) benevolence – reinforcing the prosperity of those with whom one is in frequent personal contact (the 'in-group'); 10) universalism – understanding, appreciation, tolerance, and protection of the well-being of all human beings and environment (Schwartz, 2010; Schwartz et al., 2001; Berzonsky et al., 2011; Cieciuch & Zalewski, 2011; Cieciuch & Harasimczuk, 2010).
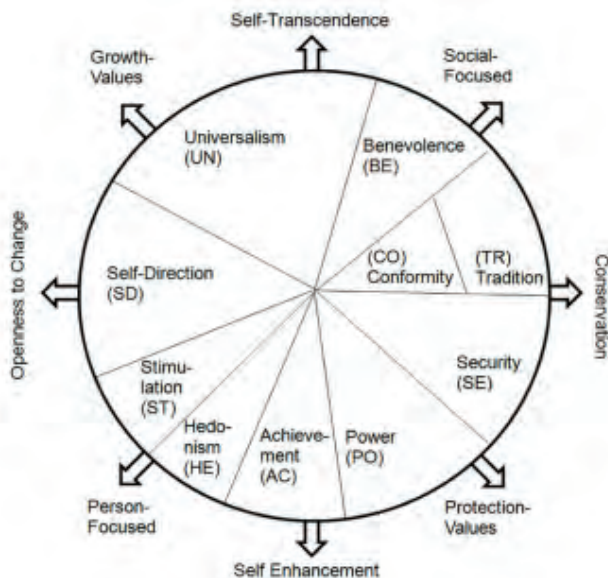

Fig. 1. The Value Circle (structure of value types by Schwartz)

Source: Strack & Dobewall (2012)

The values depicted on the Circle constitute a continuum. The graphic image of a circle shows two rules. Firstly, the principle of relationship – closeness of content in adjacent values that are similar to each other and usually their co-accomplishment is possible. (e.g., stimulation is adjacent to hedonism on one side and on the other side borders on self-direction). Implementation of adjacent values in a single action is possible because they are based on similar motivation. Secondly, the principle of the opposite values conflict. The implementation of the opposite values in a single action is impossible, because it leads to contradictory psychological or social consequences (Schwartz et al., 2001; Berzonsky, 2011; Cieciuch & Zalewski, 2011; Strack & Dobewall, 2012).

The aim of the thesis is to research the connections between time perspective, values and well-being of university students. Results obtained may have application value. A better understanding, what value system is connected with being focused on a given time perspective may provide useful clues for training and individual work with people, who want to work out their optimal time perspective. It would allow to formulate more individual ways of work, taking into account a given person's value system.

Methods

Research Question: Are there connections between temporal orientation (time perspectives) and the values preferred by the individual?

Hypothesis: 1) There are connections between time perspectives and the values, especially universalism, benevolence, conformity and tradition (i.e. social-focused) – positively associated with focusing on positively evaluated past (Past-Positive), whereas negatively associated with focusing on negatively evaluated past (Past-Negative). The hypothesis is based on the characteristics of people obtaining high values in positive Past scale, who are more friendly (than people with low results in that scale) (Zimbardo & Boyd, 2008/2009). People with positive past orientation cultivate tradition, keep close relations with family and friends, i.e. by organizing family meetings (Zimbardo & Boyd, 2008/2009). Additionally, positive past experiences may increase kindness towards other people.

2) Hedonism and stimulation are in a positive relationship with hedonistic present time perspective. In accordance with Zimbardo and Boyd characteristics (2008/2009) Present-Hedonistic perspective is connected with focus on enjoying the present moment, and, more specifically, searching for pleasure and excitement (stimulation).

3) High evaluation and focus on achievements is positively associated with the future-oriented perspective. The hypothesis was made on the basis of future-oriented people (Zimbardo & Boyd, 2008/2009), who concentrate on work for future objectives and prizes, frequently giving up current pleasures. The driving forces of the future orientation are frequently ambition and the need of achievements (Zimbardo & Boyd, 2008/2009).

4) Future orientation is positively connected with universalism. The basis of hypothesis formulation is a conclusion, that fulfilling the value of universalism is care for the common good of all people, care for the environmental protection, justice, wisdom and peace. (Schwarz & Rother, 2001) – this requires long term and systematic actions, frequently connected with giving up present gratification for achieving distant objectives, which is characteristic for future orientation.

Research methods

The Zimbardo Time Perspective Inventory (Polish translation)

The questionnaire examines five time perspectives (temporal orientation) discussed at the beginning. It consists of five scales: 1) Past-Negative, 2) Past-Positive, 3) Present-Hedonistic, 4) Present-Fatalistic, and 5) Future (Zimbardo, 2012). It consists of 56 quest items in the form of statements in respect to which the examined individuals ask themselves how much a statement is typical or true for them. Self-assessment is made on a 5-point scale (from 1 – completely false to 5 – very true).

In the study, the Polish translation of the Zimbardo questionnaire published in the Polish translation of the book *The Time Paradox* (Zimbardo & Boyd, 2008/2009, translation: Cybulko & Zieliński) was used.

Polish Version of Schwartz's Portraits Value Questionnaire (PVQ-21)

Portraits Value Questionnaire (PVQ) measures the preference of the 10 types of values (described earlier). PVQ consists of 10 scales: 1) self-direction, 2) stimulation, 3) hedonism, 4) achievements, 5) power, 6) security, 7) conformity, 8) tradition, 9) benevolence, and 10) universalism. PVQ items describe different people in terms of their goals, aspirations and beliefs about what is important in life. They always consist of two sentences. One sentence names mainly the goal, the second one is an additional explanation in specific terms. The subject assesses the degree to which the described person is similar to them on a 6-point scale (from "very much like me" to "totally not like me". Polish adaptation of a 40- item PVQ version was made by Cieciuch and Zaleski (2011). The validity and reliability parameters, comparable to those from other countries, allow for considering the PVQ as a good tool for individual and group research (Cieciuch & Zaleski, 2011). In this study we used the version of 21-items. Bilsky, Janik, and Schwartz (2011) analysed the Portrait Values Questionnaire shortened (PVQ-21; Schwartz, 2003) data from three rounds of the European Social Survey (2002–2006) "with a focus on the universals in the content of human values and their structural organization" while applying confirmatory multidimensional scaling. They found again, a strong relation of $r = -.65$ between a manually counted number of configuration deviations per country and the country's development index.

Respondents

The study was carried out among 127 students of Pedagogical University in Krakow. Approximately 80% of them were women and 20% were men. 16.5%

of them are studying more than one faculty. All the participants were at the age 18–26 (*M* = 20.47, *SD* = 1.33). Among them 39 admitted that they divide their time between studies and work, of whom 30 had a full-time job and the rest a part-time one. What's more, 31.5% of the participants answered "yes" to the question: "Do you regularly attend some other courses/clubs (sports or other)?". 4 participants did not finish the last questionnaire: PWB.

Results

The relations between the perception of time and personal values have been assessed. Descriptive statistics for all scales used can be found in Table 1. The distribution of most of the variables was relatively close to normal, except one case with very high negative skewness: PVQ – benevolence.

Tab. 1. Descriptive statistics used for all tests

	N	M	SD	Skewness (*SE* = .22)	Kurtosis (*SE* = .43)
ZTPI – Negative Past	127	31.86	7.284	-0.014	-0.606
Hedonistic Present	127	53.47	7.506	-0.206	0.428
Future	127	43.95	7.587	-0.335	0.482
Positive Past	127	31.65	5.78	-0.669	0.391
Fatalistic Present	127	26.14	4.916	-0.327	0.185
PVQ – Universalism	127	13.69	2.662	-0.63	0.644
Benevolence	127	10.15	1.76	-1.199	1.446
Conformity	127	7.38	2.397	-0.119	-0.641
Tradition	127	7.72	2.556	-0.26	-0.746
Security	127	8.28	2.088	-0.331	-0.067
Power	127	7.27	2.29	0.047	-0.536
Achievement	127	8.76	1.966	-0.422	0.427
Hedonism	127	7.84	2.562	-0.196	-0.912
Stimulation	127	7.91	2.382	-0.48	-0.227
Self-direction	127	9.33	1.773	-0.393	-0.482

Except for this scale, all of the others were relatively normal and therefore a classic r-Pearson's correlation was used to assess relationships between the results in the Zimbardo Time Perspective Inventory and values measured by the Schwartz's questionnaire (PVQ-21). The results can be seen in Table 2. Most relationships can be seen in relation to the scale of Present-Hedonistic and Future. In the first scale one can observe a high correlation with Hedonism and the Stimulation and negative correlation with Conformity. Also significantly weaker were associations: negative with Tradition and positive with Self-direction. As far as the Future is concerned, the relationships were generally weaker (the highest correlation is r = .355), but frequent and rather one-sided. What turned out to be significant were positive

relationships of the Future with Conformity, Tradition, Achievement, Self-direction and Universalism, and the negative relationships with Hedonism (the corresponding values of r can be found in Tab. 2). With regard to the past, justifying it in positive terms was positively associated with Benevolence and Tradition, whereas seeing it in negative terms was positively associated with power and negatively associated with self-direction and stimulation. There was no relationship between values and Present-Fatalistic scale.

Tab. 2. Pearson's *r* correlations between scales of Zimbardo Time Perspective Inventory (ZTPI) and Schwartz's Portraits Value Questionnaire (PVQ)

ZTPI / PVQ	Negative Past	Hedonistic Present	Future	Positive Past	Fatalistic Present
Universalism	.012	-.092	**.187**[*]	.164	-.047
Benevolence	.062	.116	.076	**.300**[**]	.028
Conformity	.057	**-.493**[**]	**.355**[**]	-.013	-.106
Tradition	-.096	**-.287**[**]	**.242**[**]	**.322**[**]	-.052
Security	.165	-.155	.059	.128	.148
Power	**.181**[*]	.163	-.017	.053	.091
Achievements	.144	.114	**.228**[**]	.009	-.019
Hedonism	-.087	**.644**[**]	**-.333**[**]	.135	.136
Stimulation	**-.177**[*]	**.585**[**]	.043	.121	-.124
Self-direction	**-.218**[*]	**.315**[**]	**.195**[*]	.081	-.172

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

Discussion

Time perspectives of respondents were found to be connected to their value system. A strong focus on future-oriented perspective occurred in people who prefer values in different areas of the value circle. Future-oriented people appreciate values both from the self-transcendence group (Universalism) and from the self-enhancement one (Achievement), with emphasis on both the values from the openness group (Self-direction) as well as conservation (Tradition and Conformity). However, it can be noted that obviously the people who appreciate the values from the group of growth (Universalism and Self-direction) have forward-looking attitude that cannot be observed in the group of protection-values.

The hypothesis of a relationship between future-oriented perspective and high appreciation of Universalism (concern for the welfare of all people, care for the environment, justice, wisdom, peace) was confirmed. Universalism turned out to be associated only with future-oriented perspective (not with other perspectives). Thus, people for whom care for the welfare of others and for the global good are most important are future-oriented individuals, setting goals and pursuing them persistently. The results presented are consistent with Milfont and Gouveia results

(2006). Their results show that care for the natural environment is significantly connected with future orientation and acknowledging such values as altruism and care for biosphere.

A positive relationship between future-oriented perspective and Conformity (reducing one's own aspirations and actions that could harm others or violate social norms, obedience, self-discipline, respect for elders) was also found and confirmed. It is the strongest correlation of the future-oriented scale with the values. Subordination of our own desires for the common and social good of other people is also associated with forward-looking attitude. The result seems consistent with other research results (Zimbardo & Boyd, 2008/2009; Epel, Bandura & Zimbardo, 1999), demonstrating that people with high results in the future scale are characterised by higher self-discipline. This discipline manifests in regularity and strong impulse control, also in exhibiting less aggression in interpersonal contacts. During negotiations they are focused on cooperation and a common win, understanding, that long term benefits outweigh the short term ones (Zimbardo & Boyd, 2008/2009).

A positive relationship was also noted between the Future perspective and Tradition. However, those valuing highly conservative values: Adaptation and Tradition – are not only focused on the future, but also have low scores on a Present-Hedonistic scale. That also indicates that people cultivating the values associated with the common good of society (social-focused) are able to submit their own momentary whims to the objectives pursued and are characterized by a higher discipline. One may even risk a hypothesis that this is due to the fact that socially-oriented people are more socialized and therefore follow momentary impulses to a lesser degree and realize their objectives more consistently (for the future).

This is also indicated by the result showing that the only scale negatively correlated with future-oriented perspective is precisely Hedonism, which in turn, as expected, correlates positively with the present hedonistic perspective. This is consistent with the characteristic of strong future-oriented people (Zimbardo & Boyd, 2008/2009), who give up current pleasures for the sake of achieving future objectives. It is also consistent with research results (Zimbardo & Boyd, 2008/2009), showing that people with high results on the future scale are more in control of the impulses and less frequently seek excitement.

Of the closer "person-focused" group also two categories: Self-direction (independence in thought and action, creativity, freedom, autonomous choosing of one's own purposes) and Achievement (personal success, achieved by demonstrating competence according to social standards) are associated with future-oriented perspective. Thus, among the students focused on the future we can distinguish two groups: social-focused and person-focused. Relationship between the level of future orientation and the degree of affirming individual values are shown in Figure 2.
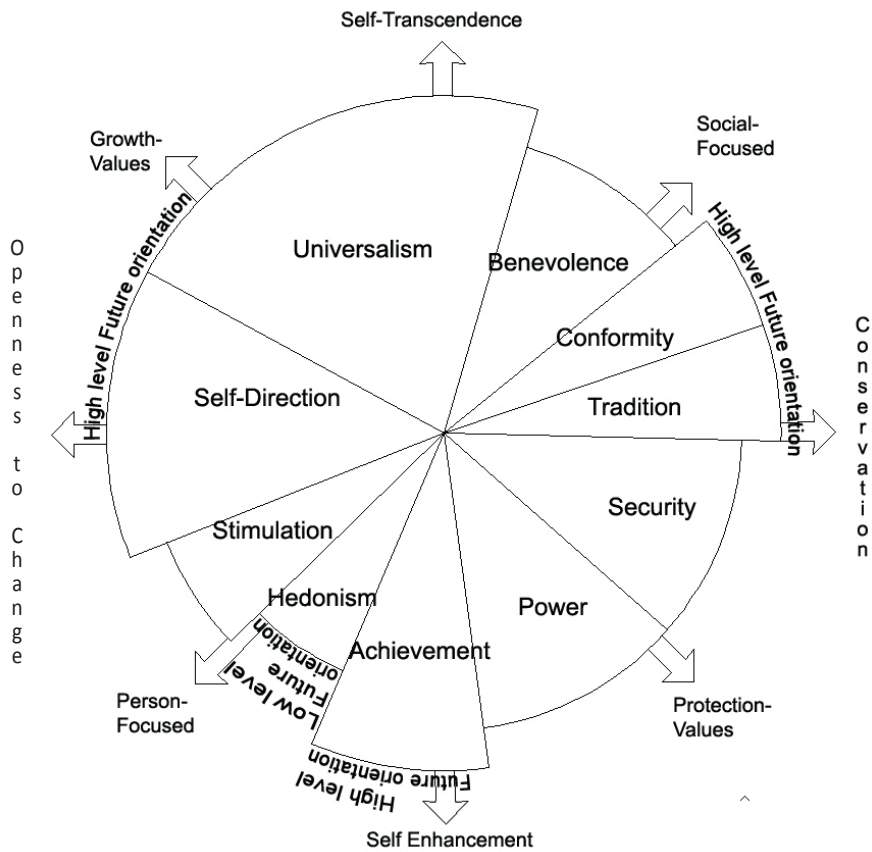
Fig. 2. Values and future perspective. The fragments protruding from the boundaries of the circle (high level future orientation) and fragments placed deeper in the circle (low level future orientation) signify statistically important correlations. Pictures 3, 4 & 5 are marked in the same way

It would be worthwhile to examine whether the lack of relationship with the scales of autonomy and positive relations is not due to the fact that among the future-oriented people are individuals oriented both towards social-focused values (it is worth checking whether this subgroup does not get higher results on the scale of positive relations) and person-focused values (one could check whether they do not have higher results on the scale of autonomy). Relationships of future-oriented perspective with as many as four scales of well-being indicate its importance for optimal pattern of time perspective (Zimbardo & Boyd, 2008/2009).

According to Zimbardo and Boyd (2008/2009) the model in which one perspective dominates the whole life of a person is usually maladaptive. For example, people focused only on the future often do not know how to enjoy the present moment or how to be present in the "now". For such people, it could prove useful to consider the dilemma: what matters more, the aim or the road to it? If

they cannot enjoy the road to the aim, will they be able to enjoy it when the goal is reached? It is worth prompting them to wonder how to achieve goals, to change the attitude of "Today is invalid, because I'm waiting for tomorrow, when the goal is achieved" into the attitude of "Today makes sense, because it is the way to the goal, it is a part of that goal".

The hypothesis of a positive relationship between Hedonism, Stimulation and Present-Hedonistic perspective was confirmed. This is coherent with data presented by Zimbardo and Boyd (2008/2009), according to which, people with high results on the Present-Hedonism scale more frequently look for excitement and novelty and are more drawn to hazard games. The Perspective-Hedonistic is also positively related with Self-direction. However, for those who appreciate most the hedonistic, the Present-Hedonistic perspective is the only time perspective with which we can find positive relationships. Thus, among a significant part of people for whom hedonistic values are the most important, there is a lack of balance of focus on present pleasures, positive past and future perspective. With respect to forward-looking (future) perspective, the relationship is plainly negative. Therefore, a large number of cases of people who highly appreciate hedonistic values are affected with lack of balance, reflected by the fact that they "live in the moment" too often (following the momentary impulses and seeking immediate pleasure), but fail to meet deadlines, as a result of which they fail to achieve their objectives (which requires the involvement of a forward-looking perspective). It seems probable that it is them who most often have problems with meeting the deadlines – at school, at university and at work. This issue can be helpful in working with students who perform badly at school or university due to lack of systematic work. This may prove to be important in the management of employees who lack the discipline to complete assigned tasks timely and who lack determination to achieve goals. It could help people (like pupils, students, employees) who face hardships resulting from excessive focus on Present-Hedonistic and want to change that. It is certain that psychoeducation concerning the pros and cons of different time perspectives will be useful, and in particular showing effects imbalance between the perspectives as well as presenting an adaptive pattern of balanced time perspective. In case of these individuals training in time management methods can be useful. However, if the dominance of Present-Hedonistic perspective is related to the value system of a person who appreciates most precisely hedonistic values, this work may prove to be ineffective if work with person's professed values is excluded. Perhaps to activate the ability to consistently achieve the objectives (forward-looking perspective), the person will have to discover what they really care about and set it as a goal. Here it may be useful to work with day-dreams. Working with dreams can be helpful because, according to professional literature (Levinson et al., 1978, 1996; Oleś, 2000; Obuchowski, 1993; Łukaszewski, 1984; Singer, 1975/1980, 1976) and opinions of respondents (Kałużna-Wielobób, 2011), dreams perform many positive functions, such as making people aware of what they want, which plays an important part in setting life objectives. They can also be a source of energy, vitality and motivation.

While working with over-hedonistic people, you might want to check whether they are aware of what they really care about (do they have contact with their authentic dreams), and whether the goals they set are related to these dreams. A goal set without taking into account the desires and dreams of a given person can turn out be very demotivating. The strength of its attraction may prove to be weaker than the force of impulses that push one to follow momentary pleasures. Perhaps in some cases dreams were not included in the implementation of the objectives on the ground that the person does not believe in the possibility of their fulfilment. Others may have trouble with proper setting of goals. It is worth showing them effective ways of setting and achieving goals. It should be demonstrated to them that setting goals is worth it, that have a form of a more specified vision based on a dream (possibly very distant), which performs a motivating function and gives direction. The motivational value (based on a dream) should be so strong that it can withstand the power of "momentary impulses". It is also important to set smaller, current objectives, which are stages on the way to the main goal and indicate what's worth doing for the sake of that goal "here and now".

Students who highly appreciate the value of self-direction achieve high scores on both the Present-Hedonistic scale as well as on future-oriented one. However, they reach low scores on the Past-Negative scale, that is most clearly connected with low well-being (Kałużna-Wielobób, in press). Self-direction seems to be an important category for time perspectives because it is connected with as many as three perspectives (covering all three dimensions of time). So even though this is an oversimplification, we may venture a statement that it is associated with "an adaptive pattern of being in time" – consistent with the "optimum model" of balanced time perspective presented by Zimbardo and Boyd (2008/2009), and Boniwell and Zimbardo (2004/2007). Relations between the level of Present-Hedonistic orientation and the degree of value given to individual values are shown in Figure 3.

Another hypothesis is that this balance is more common in those who value Self-direction and less frequent in those who appreciate the Hedonic values most (unless it is balanced by other values).

The statements included in the "Present-Hedonistic" scale seem to focus on search for pleasure and stimulation. An analysis of the literature data presented in the introduction shows that perhaps we should distinguish a separate present perspective: being present "here and now", connected with consciousness (awareness), contact with oneself and the situation, regardless of whether it is currently enjoyable or not (Sobol-Kwapińska, 2007; King, 1986; Stinissen, 1992/1997; Teasdale et al., 2000; Borcovec, 2002; Zaleski, 1988; Pastuszka, 1967). The study (Kałużna-Wielobób & Wielobób, in press) shows that while the search for pleasure and stimulation as criteria for "proper use of time" appeared frequently (61% of the students), the statements indicating the inclusion of conscious being "here and now" were uttered only by 15% of respondents. While working with young adults it would be useful to pay attention to the fact that the search for pleasure and/or stimulation, provided it's done in moderation, can perform

a function of relaxation and satisfy the need of entertainment, while in the long run, it can lead to running away from responsibility and contact with reality. The actual contact with reality is associated with experiencing both pleasant and unpleasant things. Those only seeking pleasure, for example while creating a relationship such as marriage, can have tendency to avoid unpleasant conversations concerning difficult issues that arise in the relationship. Such evasion of "the unpleasant" can lead to subsequent sharp and uncontrolled outbreak of the conflict or spoil relations when suppressed negative emotions are excessively accumulated and lead to e.g. uncontrolled expression. However, conscious being "here and now" is associated with the joy of life, contact with reality and experiencing both positive and negative impressions. It is also closely related to a consideration of how to use the "now" for "the purpose of the future". During psychological trainings it would be worth exercising the conscious being "here and now". It would also be worth to make people reflect on how to be present in the present day and enjoy life, achieving goals. Work on this type of "here and now" presence could be helpful in working with people of all patterns of time perspective proportions.
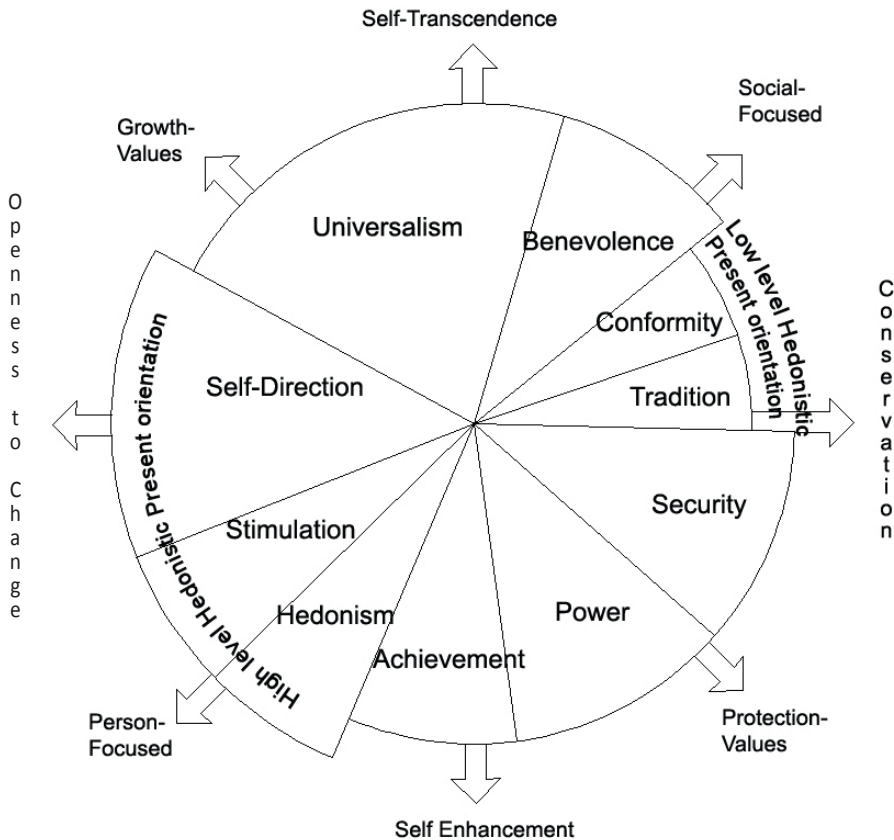

Fig. 3. Values and hedonistic present perspective

Low scores on a Present-Hedonistic scale were obtained by those who highly value Conformity and Tradition. One cannot exclude the fact that people who appreciate most the social values could have learned in the process of socialization to give priority to responsibilities connected with social welfare and obligations to others over selfish impulses. This may suggest yet another way to work with those who lack the future attitude and their perception, emotions and actions are dominated by the hedonistic attitude of the present. The thing that might prove helpful for such people might be increasing the frequency of monitoring timely completion of tasks (at school or at work). However, it would have to be a well-wishing, friendly supervision preceded by arrangements with that person who would consider this "oversight", reminding of the deadlines, as helpful in realization of his or her objectives. After some time of disciplined work, the person will most likely develop a habit of systematic work (regardless of mood or momentary impulses).

Relationships between values and Past-Negative and Present-Fatalistic perspectives seem to be important to such a degree that it is these two perspectives that are most clearly negatively associated with well-being (Kałużna-Wielobób, in review).

The hypothesis of a negative relationship between Universalism, Benevolence and Adaptation with Past-Negative or Present-Fatalistic was not confirmed. Still, Stimulation (novelty seeking, striving for an exciting and varied life) and Self-direction turned out to be negatively connected with Past-Negative, those being values on the side of openness to change. So the attitude of openness to change is associated with a lower tendency to focus on negative memories of the past and a greater focus on the Present-Hedonistic. Perhaps one of the techniques of work on the release from "imprisonment in the negative memories of our own history" may be focusing on planning changes in our life (openness to change). On the other hand, the introduction of changes in life may require a "reinterpretation" of our own history in a manner consistent with the direction of planned changes (by selecting those factors that can be interpreted according to the "path that leads in the direction in which we want to go"). For example, difficult situations can show us that a given trend "is not for us" and direct us "somewhere else", they could be a "lesson", they could show us what's important, etc. – thus giving even negative experiences "positive significance".

Relations between the level of Past-Negative orientation and the degree of value given to individual values are shown in Figure 4.

Past-Negative perspective is, however, positively related with high evaluation of power (status and social prestige, control and domination over other people and resources). Power on the circle of values is situated on the side of protection-values and self-enhancement. It turns out that the focus on this value is not associated with any of the other time perspectives. One may wonder whether the focus on this value is not the result of negative experiences from the past, which make one "protect themselves" (by strengthening the "Me" and the protection of their own values). On the other hand, we may wonder whether the focus on power does not lead to

frustration (especially if other people do not want to grant power to those who have no regard to the social good, and social values are on the opposite side of the circle). In questions about "the proper use of time" people who highly appreciate power did not mention (or rarely mentioned) relationships with other people and the necessity to achieve one's objectives so as to be happy doing it. Perhaps it shows the direction of work with people valuing power, so that we may help them reformulate their goals to make them reflect on how to gain what they want, but in such a way as to be able to enjoy it. Also drawing their attention to the role of building positive relationships with others can be helpful for them. Emmon's studies (1986, 1991) have shown, that the objectives associated with intimacy with others are associated with life satisfaction. Work on freeing ourselves from negative focus on the past seems to be important, as highlighted by the author of time perspective questionnaire (Zimbardo & Boyd, 2008/2009). The methods of existential work concerning the consciousness of being in time can also be found in Tokarska's work (2010).
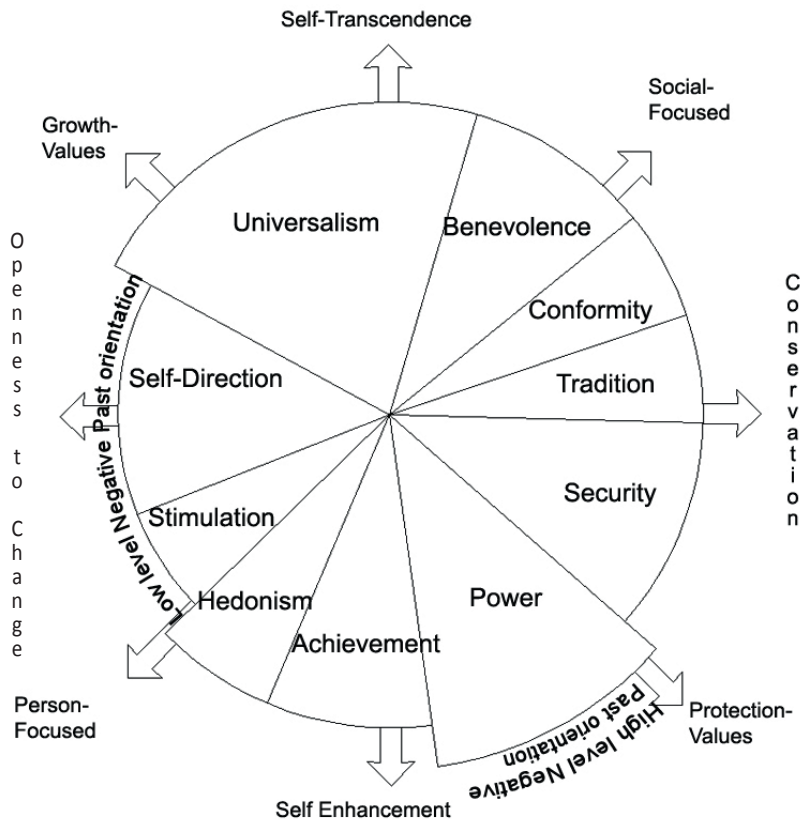

Fig. 4. Values and Past-Negative perspective

The hypothesis of a positive relationship between Tradition and Past-Positive perspective was confirmed. The positive perception of the past is also associated

with Benevolence (the group of "social-focused"). On the one hand, positive experiences from the past can increase kindness to others. On the other hand, work on a sympathetic attitude towards others can help change attitude towards our own history (from negative to more positive). Perhaps focus on other people is also related to the fact that our experience becomes more positive. Relations between the level of positive past orientation and the degree of value given to individual values are shown in Figure 5.
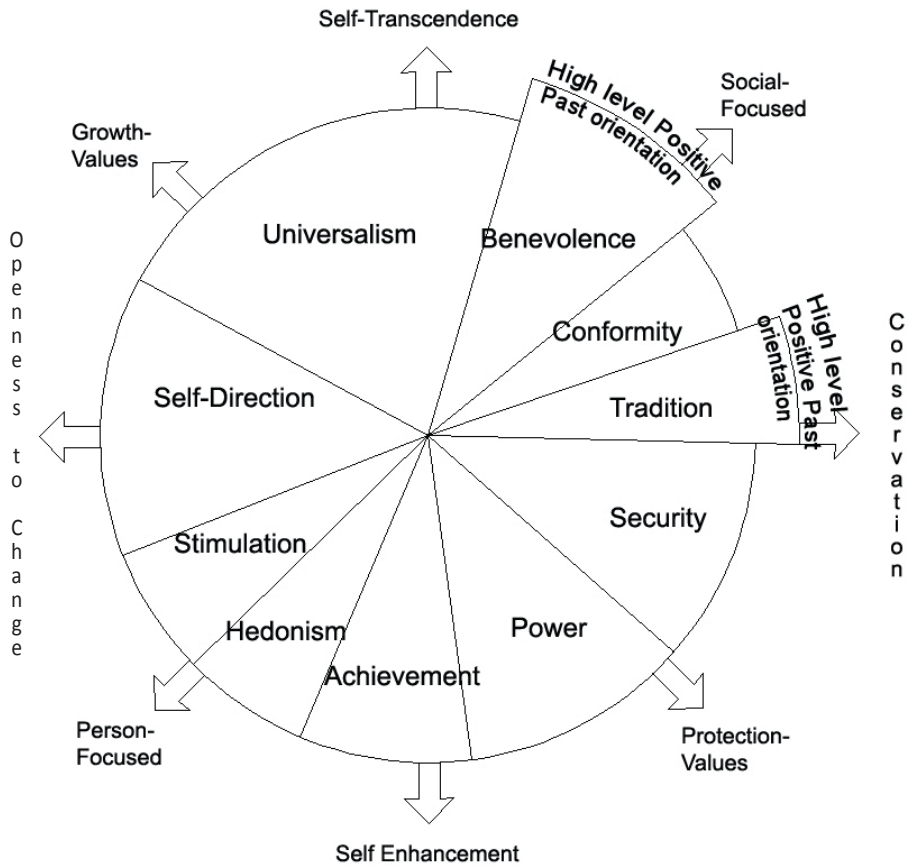

Fig. 5. Values and Past-Positive perspective

Conclusions

The results obtained show connections between temporal orientation and the values esteemed by the students. The hypothesis of a positive relationship between positive past perspective and two values: tradition and benevolence was confirmed, but with universalism and conformity – not. The hypothesis of a negative relationship between universalism, benevolence and adaptation with negative past or fatalistic present were not confirmed. Stimulation and self-direction proved

negatively connected with negative past. Negative past and hedonistic present perspectives are positively related with high evaluation of power. The hypothesis of a positive relationship between hedonism, stimulation and present hedonistic perspective was confirmed. The hedonistic perspective is also positively related with self-direction. Low scores on a present hedonistic scale were obtained by those who highly value conformity and tradition. The hypothesis of a relationship between future-oriented perspective and high appreciation of universalism and achievement was confirmed. A positive relationship was also noted between the future perspective and tradition, conformity and self-direction. Future perspective is negatively associated with hedonism.

It may prove useful in work with people, who would like to obtain a more balanced time perspective and develop the skill to move focus flexibly to this temporal dimension (past, present or future), which allows for the most adaptive concentration in a given situation.

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Time Perspective and Self-Esteem: Negative Temporality Affects the Way We Judge Ourselves

Abstract

Time Perspective is the process by which people categorize, archive and recover personal and social experiences through temporal frames (past, present, and future), influencing various aspects of human behaviour and cognition. It was proposed that it is related to self-esteem, though until now the main approach when exploring this relation was correlational. In this study, we explore a structural equation model of Time Perspective's association with Self-Esteem. The sample was composed of 474 undergraduate students with a mean age of 19 years. The final model presented a high predictive power of Self-Esteem (R^2 = .39, p < .001) and good fit indices (x^2/df = 2.1, CFI = .94, GFI = .91, RMSEA = .05) with two temporal dimensions entering the model: Past Negative ($\beta_{\text{Self-Esteem.PastNegative}}$ = -.52, p < .001) and Future-Negative ($\beta_{\text{Self-Esteem.FutureNegative}}$ = -.17, p < .001) showing that negative affects of time dimensions (rather than positive ones) are more related to Self-Esteem. Results are discussed in relation to Self-Esteem and TP literature.

Keywords: time perspective, self-esteem, motivation, structural equation modelling

Perspektywa czasowa a samoocena: wpływ negatywnej temporalności na sposób oceniania samego siebie

Streszczenie

Perspektywa czasowa jest procesem, dzięki któremu ludzie kategoryzują, archiwizują oraz odzyskują doświadczenia osobiste i społeczne z wykorzystaniem ram temporalnych (przeszłych, teraźniejszych i przyszłych) mających wpływ na różne aspekty ludzkiego zachowania i poznania. Dotychczas postulowano już istnienie związku między perspektywą czasową a samooceną, jednak metodologia poznawania go miała głównie charakter korelacyjny. W niniejszym badaniu zgłębiono model równań strukturalnych w odniesieniu do związku między perspektywą postrzegania czasu a samooceną. W skład próby badawczej weszło 474 studentów o średniej wiekowej 19 lat. Wypracowany model końcowy pokazał istotną predyktywność wysokiej samooceny (R^2 = .39, p < .001) oraz wskaźniki dobrego dopasowania (x^2/df = 2.1,

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CFI = .94, GFI = .91, RMSEA = .05) w powiązaniu z dwoma wymiarami temporalnymi wchodzącymi do modelu: Przeszłością Negatywną ($\beta_{\text{Samoocena.PrzeszłośćNegatywna}}$ = -.52, $p < .001$) oraz Przyszłością-Negatywną ($\beta_{\text{Samoocena.PrzyszłośćNegatywna}}$ = -.17, $p < .001$). Wskazano, iż negatywne afekty wymiarów czasu (w przeciwieństwie do pozytywnych) są bardziej związane z samooceną. Wyniki zostały omówione zarówno w odniesieniu do zagadnienia samooceny, jak i literatury dotyczącej perspektywy postrzegania czasu.

Słowa kluczowe: perspektywa czasu, samoocena, motywacja, modelowanie strukturalne

Introduction

Time has been fascinating humans since time immemorial, as it has an enormous potential for structuring all human experiences (Kant, 1997). Mankind has tried to understand, capture, and recreate time and its influence on our daily lives through literary and artistic work, but also through our "newly formed" sciences. In this context, Time Perspective has been claimed as one of the most influential determinants of human motivation, so its relations with other psychological constructs have been explored. Nevertheless, the relationship with one of the most popular psychological constructs, Self-Esteem, remains unexplored in a systematic way. Which of the time frames influences our Self-Esteem more or which dimensions of Time Perspective should be preferentially targeted for intervention in Self-Esteem programs are questions with no clear response until now.

Time Perspective

Time Perspective (TP) is a construct that has Kurt Lewin as one of its most prominent precursors. Lewin (1965) introduced a model of psychological time which ruptured from the dominant paradigm at the time: behaviourism. He considered that the analysis of the subjective temporal frames of past and future have a central importance in the explanation of human cognition and behaviour, as they are always active in the present. He postulated TP as "the totality of the individual's view of his psychological future and psychological past existing at a given time" (Lewin, 1965, p. 75). During recent decades, research in TP based on Lewin's assumptions has surged, now also considering how TP shapes groups and societies. For instance, Zimbardo and Boyd (1999) defined TP as the non-conscious process through which personal and social experiences are placed in categories or temporal frames, which helps individuals give order, coherence and meaning to these experiences.

Initially, the model proposed by Zimbardo and Boyd (1999) contained 5 temporal dimensions: the Past-Negative, related to feelings of anxiety, depression, anger, and repulsion towards the past; the Past-Positive, related to an affectionate, sentimental, pleasant, and enthusiastic view of the past; the Present-Fatalist, which represents a feeling of hopelessness or lack of control over the various events happening today; the Present-Hedonistic, which refers to a perspective entirely oriented towards the search for emotions, sensations, and novelty, with disregard for possible consequences; the Future, the temporal spectrum in which the individual's

cognitions and behaviours describe an intent to define and pursue projects in the medium/long term. This model has been quite prolific in the quantity and diversity of studies that have been produced around it. For example, it was found that Future Time Perspective is positively associated with adaptive and functional situations, such as: various types of pro-environmental behaviours (Corral-Verdugo, Fraijo-Sing & Pinheiro, 2006; Milfont & Gouveia, 2006); academic achievement (Bembenutty & Karabenick, 2004; Boniwell & Zimbardo, 2004); and vocational development (Janeiro, 2010; Paixão, 2004). In the same way, higher scores in dimensions like the Present-Fatalistic, Past-Negative and Present-Hedonistic are associated with behaviours that can undermine a healthy developmental trajectory like, for example, risky driving (Zimbardo, Keough & Boyd, 1997), smoking and alcohol consumption (Keough, Zimbardo & Boyd, 1999), cannabis consumption (Apostolidis, Fieulaine, Simonin & Rolland, 2006), and procrastination (Ferrari & Diaz-Morales, 2007) among others.

Currently, there is a sixth temporal dimension that is also being considered, the Transcendental-Future Time Perspective – TFTP (Zimbardo & Boyd, 2008), which explores the individual's beliefs about a possible life after the death of their physical body, their characteristics, and how everyday actions can influence this supposed life *post-mortem*. This dimension differs from the traditional Future Time Perspective – FTP – in the sense that it extends beyond the moment of physical death, while the traditional FTP does not embrace this subjective temporal mark (it includes the near future until the end of physical life). Thus, the Transcendental-Future allows us to expand the Time Horizon, to address a unique and – depending on the subject's beliefs – endless time period. Research using this scale has shown that third year college students have lower scores in Transcendental-Future Time Perspective when compared with first year students (Ortuño, Paixão & Janeiro, 2011b) and that religious students have significantly higher scores in TFTP than non-religious students (Ortuño, Paixão & Janeiro, 2011a).

Also recently, many scholars have claimed that an analysis of subjective time that does not consider the negative affect for the future is incomplete, and new instruments emerged in the last decade to measure and investigate it (Carelli, Wiberg & Wiberg, 2011; Worrell, Mello & Buhl, 2012; Janeiro, 2012). In fact, in Lewin's (1965) description of Time Perspective, fears and anxiety about the future have an important effect on human behaviours and cognitions. Congruently, Trommsdorff (1983) claims that the affective component of Future Time Perspective exerts as much influence on behaviour and motivation as the cognitive component. Taking this into account, a seventh temporal dimension was included in the study. The Future-Negative (or Anxious Future), a dimension related to negative feelings and an external and unstable control locus about the future. In previous studies, the Future Negative Time Perspective has proven to be useful in the understanding of psychological concepts, such as: School Well-Being and Adaptation (Nobre & Janeiro, 2010), Satisfaction with Life and Psychological Well-Being and Emotional Balance (Ortuño et al., in press).

Self-Esteem

The concept of Self-Esteem has attracted great attention from psychologists for decades. It was defined as the positive or negative attitude towards the self, including feelings of self-acceptance, self-respect and worth for one's own self (Rosenberg, 1986). Self-Esteem represents the conjunct of the person's judgments of their own worthiness: in other words, the evaluative part of the self-concept (Heatherton & Wyland, 2003). Self-Esteem is a very popular construct in psychological research because of its predictive power. It has consistently found to be related to personality variables such as extraversion, neuroticism and negative and positive affectivity (Watson, Suls & Haig, 2002) and mental health phenomena such as depression (Fleming & Courtney, 1984; Furr & Funder, 1998; Neiss, Stevenson, Legrand, Iacono & Sedikides, 2009), happiness, life satisfaction, and well-being among different socio-cultural conditions (Diener & Diener, 1995; Gray-Little & Hafdahl, 2000), eating disorders (Peck, 2008), self-concept (Santos & Maia, 2003), and career trajectories (Salmela-Aro & Nurmi, 2007). For this reason, Self-Esteem has been a frequently targeted process in psychological interventions. The antecedents of Self-Esteem were also extensively studied. In general, results show that parental behaviours (especially involvement and acceptance), socio-economic status, gender and other demographic variables affect Self-Esteem. Other determinants of Self-Esteem are acceptance, virtue, influence and achievements (Mruk, 2006). Two main accounts were postulated to explain the origin and function of Self-Esteem: one known as the anxiety buffer in the context of terror management theory, and sociometer theory. In the first theory, Self-Esteem is a buffer which people have against existential fear at the prospect of their own death, serving as a distal defence mechanism. That defence is activated when the person is convinced that he or she acts in a culturally relevant way and are psychologically protected from own death-concerns (Pyszczynski, Greenberg & Solomon, 1999). On the other hand, the sociometer theory postulates that Self-Esteem is a psychological meter to measure the quality of the social life of people and of their relationships with others. This psychological mechanism is conceived in a way so that people can self-control how they are being rejected or accepted by other members of their community (Leary, 1999).

Time Perspective & Self-Esteem

Very few studies directly addressed the relationship between Time Perspective and Self-Esteem, despite there being some data provided by correlational analyses in the context of validation studies. For example, Zimbardo and Boyd (1999) found negative correlations of the Past-Negative and Present-Fatalist (r = -.48 and r = -.28 respectively), and positive with Past-Positive (r = .28) with Self-Esteem measured by the Rosenberg Self-Esteem Scale (RSES). In another validation study, the Greek version of the ZPTI showed the same pattern of correlations with Past-Negative and Present-Fatalist being negatively correlated (r = -.58 and r = -.23 respectively) and positively with Past-Positive but to a lesser extent (r = .19) (Anagnostopoulos & Griva, 2012). In addition, a study involving Italian adolescents (Laghi, Baiocco,

D'Alessio & Gurrieri, 2009) established that severe suicidal ideation is mostly explained by a function including these variables: psychopathological symptoms, Self-Esteem and Past-Negative and Present-Fatalist using the ZPTI. Suicide ideators[2] had lower Self-Esteem and score higher in Past-Negative and Present-Fatalist than non-ideators. Although values of correlations are not reported in this study, this function provides validity to the idea of association between Self-Esteem and Time Perspective.

One study has addressed the relationship between TP and Self-Esteem using neither the ZPTI nor the RSES. Janeiro (2010) investigated career attitudes and maturity, Time Perspective (using the Time Perspective Scales – TPS), and Self-Esteem (using the Self-Esteem Inventory – SEI) among Portuguese adolescents from grade 9 and 12. Correlations were found of general Self-Esteem of .35 with Future Time Perspective, of -.19 with past orientation and -.30 with Future-Negative among 9th-graders. Similarly, among 12th-graders significant correlations were of .39, -.24 and -.33, respectively. These results show a systematic pattern of association between Self-Esteem and different components of Time Perspective. Lastly, also in the Portuguese context, it was found that Past-Negative ($\beta = -.44$, $p < .001$), Present-Hedonistic ($\beta = .15$, $p < .05$) and Future-Negative ($\beta = -.27$, $p < .001$) were significant predictors of Self-Esteem ($R^2 = .40$, $p < .001$) entering the Stepwise Regression model with RSES Self-Esteem as a criterion (Ortuño, Paixão & Janeiro, 2013a).

The present study

The results reported previously suggest that Self-Esteem and Time Perspective are related to an important extent, but the lack of integrated and comprehensive statistical analyses leave unresolved issues about how these processes are related. Despite being used as a variable for external validation of scales, very few explanations were given about how these processes could be related. We consider that the relationship between Time Perspective and Self-Esteem is given by parental care, involvement and reasonable expectations; peer acceptance is conducive to a high Past-Positive and on the contrary, the lack of these elements to a Past-Negative perspective. Furthermore, low levels of Self-Esteem should be related to Present-Fatalist in the way that failure, rejection from peers and social groups, and the feeling of guilty about some events is conducive to looking at the present with hopelessness or a negative attitude. Low Self-Esteem is possibly related to a negative vision of the future. As we have stated before, studies with the ZTPI Future scale show moderate to low correlations, probably due to the fact that this scale asks more about planning and a general vision about the future and does not ask about attitudes or affect about the future. The studies of Janeiro (2010) and Ortuño et al. (2013a) give the only clues about how Future-Negative is related to Self-Esteem. Thus, Future-Negative was considered an important element to be further investigated in adult samples.

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[2] Ideator – A person experiencing suicidal ideation

As individual's values are considered an important element to explain Self-Esteem and the relations established with the awareness of mortality, we consider that the Transcendental-Future Time Perspective could be somehow related to it. For example, the belief that we are contributing to the well-being and prosperity of our religious in-group and that actions could make us happier after death, could be an enhancer of the feeling of our own worthiness. Nonetheless, the lack of studies considering the influence of perceptions about life after death on Self-Esteem makes us cautious about making a hypothesis about its inclusion in the model.

All in all, the main goal of this study is to test several dimensions of Time Perspective in a regression model of Self-Esteem, through structural equation modelling in order to determine which temporal variables are strongly associated with Self-Esteem.

Method

Participants

The sample was composed by 473 Portuguese college students (age range: 17 to 61; M = 19.67, SD = 4.10). 408 (86.1%) were female and 66 (13.9%) male. The participants were recruited in the Faculties of Psychology and Educational Sciences of three Portuguese Universities: 356 (75.1%) are students from the University of Coimbra, 103 (21.7%) from the University of Lisbon, and 15 (3.2%) from the University of Porto. 339 (71.5%) participants are in the first year of their course, 64 (13.5%) in the second year, 54 (11.4%) in the third year, 15 (3.2%) in the fourth year, and 2 (0.4%) in the fifth year.

Instruments

Sociodemographic questionnaire: Created by the authors to collect different information about the participants, including gender, age, level of education, GPA, and religious doctrine.

Zimbardo Time Perspective Inventory – ZTPI (Zimbardo & Boyd, 1999): The Portuguese version of the ZTPI (Ortuño & Gamboa, 2009) was used, which is composed of 56 items (five-point Likert scale) that represent five temporal dimensions: 1) Past-Positive, related to pleasant and warm attitudes towards the past (explained variance = 6.02%, α = .68; 9 items), 2) Past-Negative, which represents an aversive and distressful attitude towards the past (variance explained = 7.85%, α = .80; 10 items), 3) Present-Hedonistic, which represents a tendency to seek immediate pleasure, through exciting and risky experiences (explained variance = 8.37%, α = .79; 15 items), 4) Present-Fatalist, which shows a total defeatist attitude towards life (explained variance = 6.42%, α = .66; 9 items) and 5) Future, which indicates a strong tendency to create and pursue long-term objectives (variance explained = 6.57%, α = .74; 13 items). These 5 temporal dimensions explain 35.25% of the total variance. This factor structure is very similar to that presented by Zimbardo and Boyd (1999) in the original ZTPI, and in several international adaptations (Ortuño et al., 2011a).

Concerning the test-retest validity, the Portuguese ZTPI shows values between .66 and .86 (Ortuño & Gamboa, 2008).

Transcendental-Future Time Perspective Inventory – TFTPS (Boyd & Zimbardo, 1997): The Portuguese TFTPS (Ortuño, Paixão & Janeiro, 2013b) is a one-dimensional scale that consists of 10 items (five-point Likert scale). It is used to assess individual attitudes and beliefs regarding the future, immediately following the imagined death of the physical body. In its original version, it explains 10% of the total variance and it is the factor that explains most variance (in a total of 6 temporal dimensions). It has an internal consistency of .87 and its test-retest stability is .86. To date, efforts have been made to adapt this instrument to several countries, including: Germany, Estonia and Lithuania.

Inventário de Perspectiva Temporal – IPT (Janeiro, 2012; Janeiro, 2006): The Time Perspective Scales – TPS is a Portuguese inventory formed by 32 items (five-point Likert-type scale), grouped in four temporal dimensions: 1) Past Orientation, 2) Present Orientation, 3) Future Orientation and 4) Future-Negative. In this study we used only four items related to the Future-Negative dimension (variance explained = 8%, α = .70; 4 items), which is related to an unpredictable and threatening vision of events yet to come.

Rosenberg Self-Esteem Scale – RSES (Santos & Maia, 2003): Self-Esteem was assessed with a 10-item Portuguese version of the Self-Esteem Scale (Rosenberg, 1965) adapted into Portuguese by Santos and Maia (1999, 2003). The Rosenberg Self-Esteem scale evaluates global Self-Esteem. Participants made their responses about how they generally feel about themselves on a 4-point Likert scale (1 – strongly disagree; 4 – strongly agree). Half of the items are formulated in a positive direction and the other half in a negative direction, which are reverse scored. The range of the scale is 10–40, with higher scores reflecting higher global Self-Esteem. Santos and Maia (1999, 2003) reported with exploratory and confirmatory factor analyses the existence of only one underlying dimension for the 10 items with an internal consistency of .84. The RSES reliability for this sample was .89.

Procedures and statistical analysis

All data was collected at the Faculties of Psychology and Educational Sciences of the Universities of Coimbra, Porto and Lisbon. The instruments were always applied collectively during day-time classes. The teachers of these classes were previously asked for permission in order to collect the data. At the beginning of each data collection all participants were informed of the study's goals as well as the voluntary and anonymous nature of their participation. There was no form of remuneration, financial or otherwise, for the participants. For data analysis, the *IBM SPSS Statistics* v20 and the *IBM SPSS AMOS* ver. 20 were used. Multiple imputations using the Expectation-Maximization – EM algorithm were used to replace isolated missing values in the data set (representing less than 1.5% of the responses for each item). In order to assess the direction and intensity of the associations between the variables a correlational analysis (Pearson Coefficient) was performed. Then,

a structural equation modelling was developed with the objective of evaluating the effects of Time Perspective on Self-Esteem.

Two initial proposed hypothetical models (see Fig. 1) are tested. Model 1 is formed by all 7 temporal dimensôns originally used in this study (Past-Positive, Past-Negative, Present-Hedonistic, Present-Fatalist, Future, Future-Negative, and Transcendental-Future) as exogenous variables and Self-Esteem as an endogenous variable. In Model 2 (see Fig. 1), the exogenous variables are Past-Positive, Past-Negative, Present-Fatalist, and Future-Negative and again Self-Esteem as an endogenous variable. This last model was previously defined taking into account the main results present in the literature about the relation between Time Perspective and Self-Esteem.
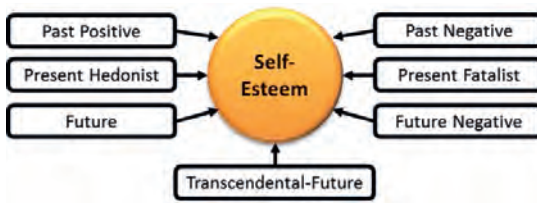
Model 1

Model 2

Fig. 1. Initial Tested Models

Results

Preliminary analysis

All the variables presented a normal univariate distribution ($sk < 3$; $ku < 10$). The multivariate normal distribution was not achieved ($ku = 243.99$), yet it was not considered as a problem, due the utilization of Maximum Likelihood method. No multicolinearity problems were found, since all the exogenous variables presented acceptable VIF values (VIF < 5; Marôco, 2010).

In Table 1 descriptive statistics and Pearson correlations between the investigated variables are presented. RSES scores are significant and negatively correlated to Past- Negative, Future-Negative, and, to a lesser extent, with Present-Fatalist. All the ZPTI variables are correlated in the expected fashion. TFTPS shows mild positive correlations with all other TP variables except for Future-Negative. Future-Negative is moderately correlated with Past-Negative and Present-Fatalist ZPTI scales.

Tab. 1. Means, Standard Deviations and Correlations of RSES, ZTPI, TFTPS and TPS (n = 473)

		M	S.D.	1	2	3	4	5	6
1.	Self-Esteem (RSES)	30.80	4.90	-					
2.	Past-Positive (ZTPI)	3.72	.56	.08	-				
3.	Past-Negative (ZTPI)	2.73	.65	-.55**	-.08	-			
4.	Present-Hedonistic (ZTPI)	3.57	.45	.04	.25**	.13**	-		
5.	Present-Fatalist (ZTPI)	2.39	.54	-.18**	.14**	.38**	.30**	-	
6.	Future (ZTPI)	3.60	.43	.08	.14**	-.06	-.27**	-.25**	-
7.	Transcendental-Future (TFTPS)	2.84	.80	-.02	.20**	.14**	.17**	.20**	.16**
8.	Future-Negative (TPS)	8.54	4.76	-.36**	-.09*	.39**	.10*	.23**	-.18**

** $p < .01$; * $p < .05$

Primary analysis

An exploratory predictive model (Mod. 1) using structural equation modelling with Maximum Likelihood estimation was employed to examine the relations between seven Time Perspective variables and Self-Esteem. The initial proposed Model 1 (see Fig. 1) failed to achieve acceptable fit indices (CFI = .73, GFI = 73; more information in Tab. 2). As a consequence, it was decided to test a second model, theoretically more robust.

Tab. 2. Fit Indices and Model Comparison

	Model	X^2	df	ΔX^2	Δdf	$X^2 df$	AIC	MECVI	CFI	PCFI	GFI	PGFI	NFI
1.	Model 1	6336.81	3040	-	-	2.08	6736.81	14.42	.73	.70	.73	.69	.59
2.	Model 2	1985.94	797	4350.87	2243	2.49	2197.94	4.69	.82	.76	.82	.72	.73
3.	Model 3	510.16	242	5826.65	2798	2.11	626.16	1.34	.94	.83	.91	.74	.89

** $p < .01$; * $p < .05$

Note: ΔX2 compared with the initial seven dimensions model

Therefore, the modified model (Mod. 2, Fig. 1) using four temporal dimensions (Past-Positive, Past-Negative, Present-Fatalist, and Future-Negative), predicts a considerable amount of Self-Esteem variance (R^2 = .39, $p < .001$). This model presented better fit indices compared with the previous Model 1. Still, in absolute terms the fit indices of Model 2 were barely acceptable (x^2/df = 2.5, CFI = .82, PCFI = .76, GFI = .82, PGFI = .72, RMSEA = .06). Regarding the trajectories of the exogenous variables regarding the endogenous variable, two are statistically significant: `PN → SE´ ($\beta_{Self\text{-}Esteem.PastNegative}$ = -.52, $p < .001$) and `FN → SE´ ($\beta_{Self\text{-}Esteem.FutureNegative}$ = -.18, $p < .001$). The other two trajectories are not statistically significant, with neither presenting an expressive magnitude: `PP → SE´ ($\beta_{Self\text{-}Esteem.PastPositive}$ = .06, $p = .36$) and `PF → SE´ ($\beta_{Self\text{-}Esteem.PresentFatalist}$ = .09, $p = .13$).
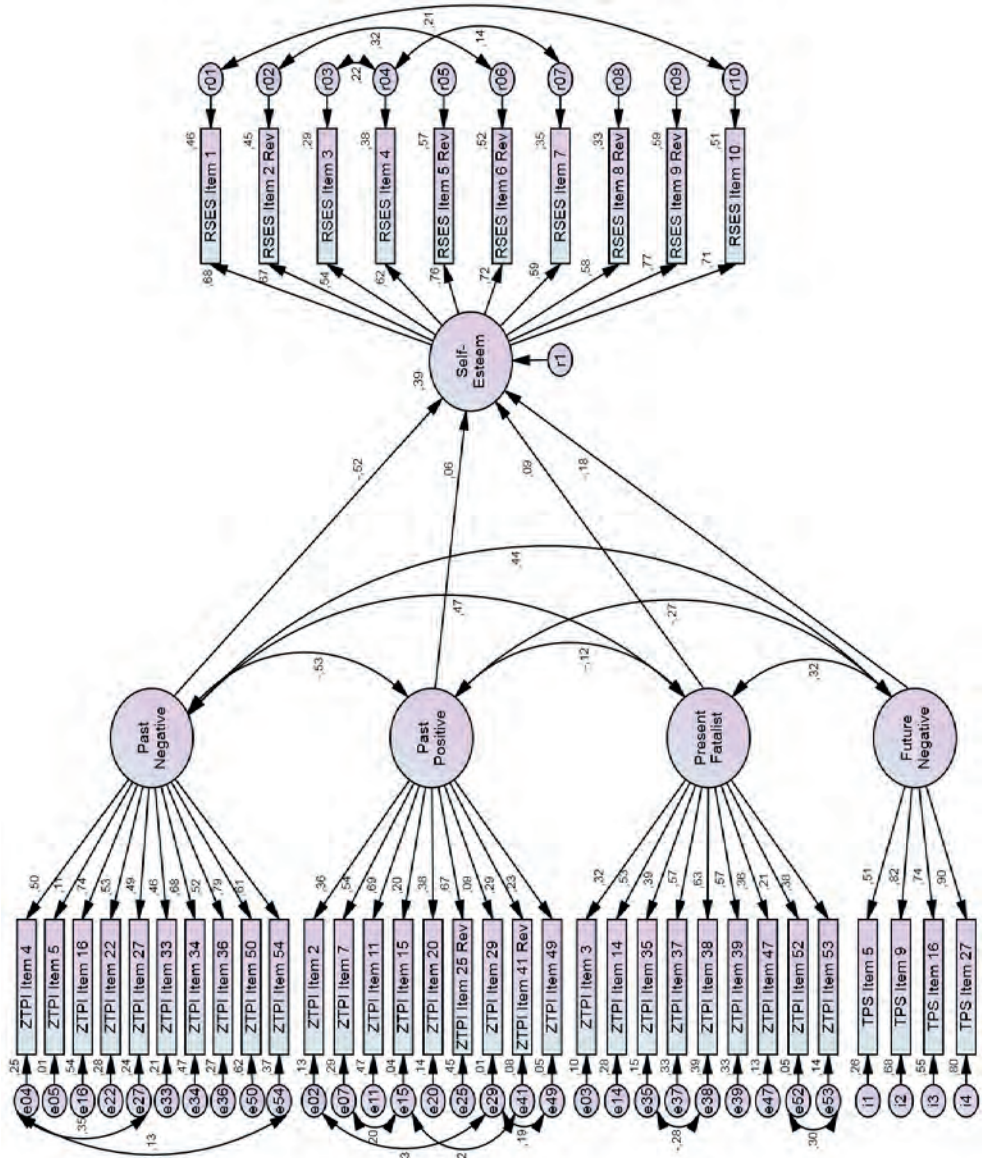
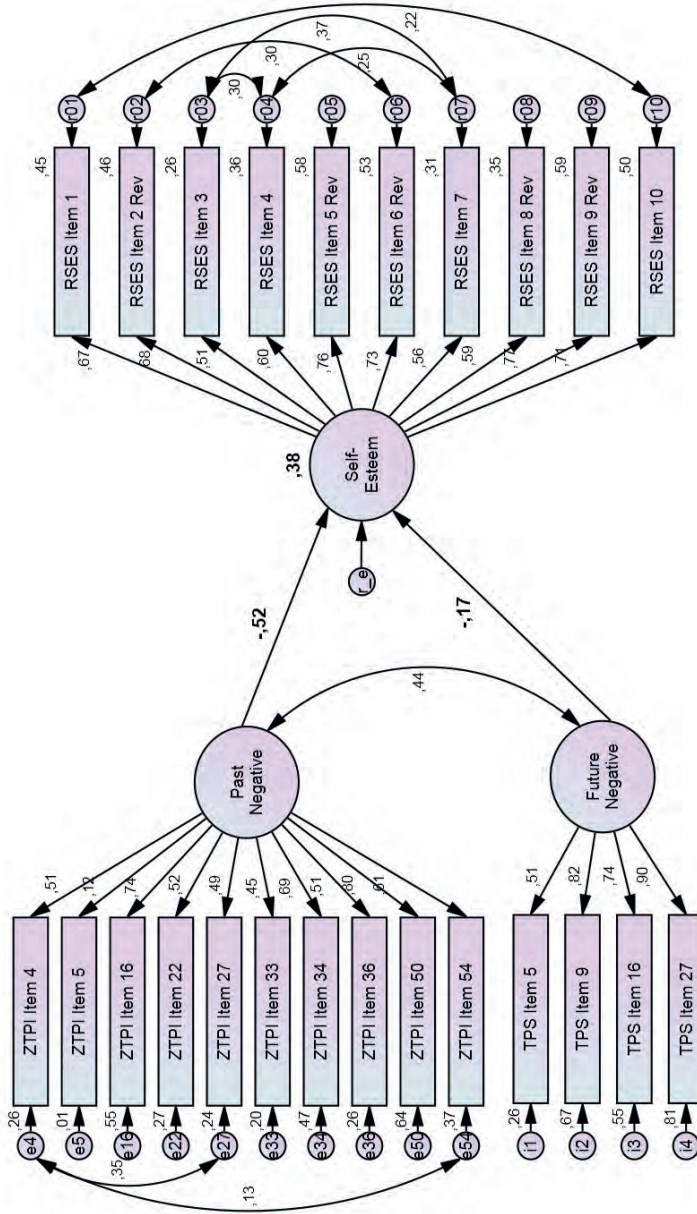**Fig. 2.** Model 2 path-diagram (standardized estimates)

Fig. 3. Model 3 path-diagram (standardized estimates)

Considering these results, the exogenous variables without significant statistical predictive power ($p < .05$) were removed (Past-Positive and Present-Fatalist) in order to test a new model, composed only of Past-Negative and Future-Negative as predictor variables.

This last model (Mod. 3, see Fig. 3) still predicts a considerable amount of Self-Esteem variance ($R^2 = .39$, $p < .001$) using only two temporal dimensions: Past-Negative ($\beta_{\text{Self-Esteem.PastNegative}} = -.52$, $p < .001$) and Future-Negative ($\beta_{\text{Self-Esteem.FutureNegative}} = -.17$, $p < .001$). The fit indices of Model 3 exceed previous models fit indices ($x^2/df = 2.1$, CFI = .94, PCFI = .83, GFI = .91, PGFI = .74, RMSEA = .05).

Model comparison

Via Akaike's Information Criterion analysis – AIC and Modified Expected Cross-Validation Index – MECVI in all three models (see Tab. 2), Model 3 was considered as the most parsimonious, as well as the most stable in the studied population (Marôco, 2010), as it presented the lowest values in those estimates (AIC = 626.16, MECVI = 1.34). Also, considering the differences in the X^2 estimate compared with the original Model 1 (Model 3 $\Delta X^2 = 5826.65 >$ Model 2 $\Delta X^2 = 5136.77$), Model 3 appears as the best model.

Discussion

The objective of this study was to determine which temporal dimensions are related with Self-Esteem. In order to achieve that, three models were tested. The first one (Model 1), formed by seven temporal dimensions, showed good predictive power but failed to show good fit indices. Model 2, composed of four temporal dimensions, still presented good predictive capabilities and also presented better fit indices, but it was still not acceptable. The last model tested (Model 3) not only showed good fit indices, but also presented practically the same predictive power of the previous models. Thus it was considered as the most parsimonious of the three tested models.

The direction of the relation of the two exogenous variables of Model 3 regarding the endogenous variable was expected. Past-Negative and Future-Negative presented a negative relation with Self-Esteem, in the same way they presented negative relations with other adaptive psychological constructs, such as: Emotional Stability and Impulse Control (Zimbardo & Boyd, 1999), Altruistic Values (Milfont & Gouveia, 2006), Big Five Agreeableness (Dunkel & Weber, 2010), and Satisfaction with Life (Boniwell, 2005) in the case of Past-Negative. Also School Well-Being and Adaptation (Nobre & Janeiro, 2010), Satisfaction with Life, Psychological Well-Being and Emotional Balance (Ortuño et al., in press), in the case of Future-Negative. Moreover, results with Model 3 are similar to those presented by Ortuño et al. (2013a) in a regressional study, since Past-Negative and Future-Negative were also strongly and significantly associated with Self-Esteem. The only difference was regarding Present-Hedonistic Time Perspective, which was not relevantly associated

with Self-Esteem in this study, nor was it significantly correlated in Zimbardo and Boyd's (1999) study. We suppose that striving for hedonism could be present both in individuals with high and low Self-Esteem. Also the lack of relevance of Present-Hedonistic could be related to the sample composition, since it is formed only by college and female students, who are known to present lower values in this temporal dimension. Contrary to what could be expected by the terror management theory, belief in a transcendental life could function as an anxiety buffer promoting Self-Esteem, but our data does not match with this idea. No correlations or effects were found, thus giving some additional support to the sociometer theory. Past-Positive, Present-Fatalistic, and Future ZPTI scales were also found to have no consistent effects on Self-Esteem. In general, our findings support the idea that depression, negative affect and Self-Esteem belong to a common temperamental core (Neiss et al., 2009; Watson et al., 2002). Low levels of global Self-Esteem imply general negative affect and a more negative vision of the future, which is also a symptom of clinical depression. Negative evaluations about one's own past are also considered to produce a self-depletion state that reduces the evaluation of one's own worthiness.

We would like to alert readers to some potential limitations of this study. Even though the sample size was large enough to successfully develop the proposed statistical analyses, the composition of the sample was very homogeneous: mainly female university students. It is important to replicate this study with more heterogeneous samples in order to know if the reported associations between Time Perspective and Self-Esteem exist in the same way in participants of different ages and occupations. Likewise, following studies about Time Perspective and Self-Esteem should include other constructs that are proven predictors of Self-Esteem, in order to determine if Time Perspective could mediate or moderate their relations. For example, a future study could include analyses with variables such as depression symptoms, personality variables and negative emotionality to explore how the time dimensions could be included in the description of the temperamental core (Neiss et al., 2009). We should note that there are other facets of TP not in the scope of this study, such as temporal extension or temporal density that could also be related to Self-Esteem.

Considering the obtained results regarding Self-Esteem, which is an important variable of the individual's psychological functioning, Time Perspective should be pondered as a keystone in the creation of a new generation of therapeutic programs, in which the subjective notions of time have a central role in the modification of cognitions and behaviours – as for example the Time Perspective Therapy (Sword, Sword, Brunskill & Zimbardo, 2013). Finally, we consider that more investigation should be carried out to determine in a more systematic fashion which other constructs can be affected by the Time Perspective.

Conclusions

This study brings an important contribution to the scientific literature regarding the association of Time Perspective with an important psychological phenomenon such as Self-Esteem, but also sheds light on the predictive power of the former over the latter, using a robust statistical technique. From the several temporal dimensions tested, those related with a negative valence were those presenting a greater role in the prediction of Self-Esteem. We encourage researchers to consider Time Perspective as a relevant variable in the understanding of Self-Esteem.

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Career Indecision from the Perspective of Time Orientation[2]

Abstract

The present study focuses on the link between career indecision status and time perspective of high school students. Previous works mainly investigated the relationship between future orientation and career indecision, neglecting attitudes towards other time perspective dimensions, such as the past and the present. Therefore, our aim was to overcome this hiatus by using the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) and Career Factor Inventory (Chartrand, Robbins, Morrill & Boggs, 1990) in a sample of 683 high school students. By considering variable-centered and person-centered analyses, results suggest that scores on TP factors are closely associated with the career indecision type that one can be classified into. "Path seeker" and "Ready to decide" students have a balanced time perspective; "Chronically indecisive" youngsters have a time perspective pattern which is dominated by the past negative factor and they are less future-oriented; "Choice anxious" students have scores lower on all TP factors (except Past-Negative TP) than any other group.

Keywords: career indecision types, time perspective, cluster analysis

Niezdecydowanie zawodowe a orientacja temporalna

Streszczenie

Przedmiotem zainteresowania w ramach niniejszych badań jest tzw. stan niezdecydowania zawodowego w powiązaniu z perspektywą postrzegania czasu przez uczniów szkoły średniej. W dotychczasowych pracach analizowano głównie związek między orientacją przyszłościową a niezdecydowaniem zawodowym, z pominięciem innych wymiarów perspektywy czasowej (przeszłej i teraźniejszej). Celem niniejszego badania stało się zatem wypełnienie tej luki za pomocą Kwestionariusza Postrzegania Czasu (Zimbardo i Boyd, 1999) oraz Czynnikowego Inwentarza Kariery (Chartrand, Robbins, Morrill i Boggs, 1990) zastosowanego na próbie 683 uczniów szkoły średniej. Wyniki wskazują, że poszczególne odmiany perspektywy

postrzegania czasu są ściśle powiązane z typem niezdecydowania zawodowego. Uczniowie z grup określonych jako „Poszukiwacze drogi" oraz „Gotowi do decyzji" charakteryzują się zrównoważoną perspektywę czasową. U „Chronicznie niezdecydowanych" wzorzec perspektywy postrzegania czasu zdominowany jest przez czynnik negatywnej przeszłości przy jednoczesnej niskiej orientacji na przyszłość. „Obawiający się wyboru" osiągnęli niższe rezultaty we wszystkich czynnikach TP (oprócz TP Negatywnej Przeszłości) niż którakolwiek z pozostałych grup.

Słowa kluczowe: typy niezdecydowania zawodowego, perspektywa czasowa, analiza skupień

Introduction

Career indecision is a problem that has been a major concern among career psychologists for many decades (e.g. Holland, 1975, 1977; Osipow, 1999). Career decision-making has become a vital problem for students who have to adapt their career aspirations to the demands of a complex and ever changing labor market. In today's societal context, high school students are under the pressure of career-related decisions which can have crucial potential consequences on their future. Nevertheless, adolescents' conceptualization of the future can also have an impact on their career-relevant decisions (e.g. Nurmi, 1991). That might be one of the reasons why previous and more recent research regarding career decisions mainly focused on the future dimension of time perspective (e.g. Crites, 1978; Savickas, Silling, Schwartz, 1984; Walker & Tracey, 2012). However, Zimbardo and Boyd's (1999) time perspective theory that was built on more comprehensive theoretical grounds (e.g. Lewin, 1951) allows researchers to investigate the link between a wider range of time orientations (past, present, and future), and career-related decisiveness. The goal of the present paper is to examine how career indecision is related to differentiated time perspective patterns of the past, the present and the future.

Since Holland's (1975, 1977) early definition, career indecision has been dealt with as a multidimensional problem consisting of emotional, social and cognitive factors. Career indecision means being undecided about the career path one wants to pursue and experiencing that a decision should be made at the same time. As such, career indecision is most common at transition points (e.g. high school to university, school to work, having to choose a new field of work etc.). A clear line must be drawn between the normal developmental state of career indecision and career indecisiveness which stands for the repeated trouble one has making decisions and is a state-like factor (Osipow, 1999). According to Chartrand, Robbins, Morrill and Boggs (1990), career indecision must be conceptualized along cognitive and emotional factors. On the basis of these cognitive and emotional dimensions, Cohen and Chartland (1995) created a classification including four main subtypes: (a) Ready to Decide, (b) Developmentally Undecided, (c) Choice Anxious and (d) Chronically Indecisive. The Ready to Decide group can be characterized by little or no career indecision or career choice anxiety, high self-esteem, positive career identity; they

have well-developed vocational identity and they possess the essential information about career perspectives. Individuals in the Developmentally Undecided group are emotionally stable, goal-directed, their anxiety level is between low and average, they have high self-esteem, have mature ego identity status and they need a lot of work-related information.[3] The difficulties of the Choice Anxious group were related mainly to anxiety, especially in decision-making situations; they have a low need for career information and they have less improved vocational identity. The Chronically Indecisive group reports the most difficulties in identity formation and career identity; they have low self-esteem but they are motivated to obtain career information and self-knowledge. These categories were revealed with slightly different names in several different studies (Cohen & Chartrand, 1995; Chartrand & Nutter, 1996; Fuqua & Hartman, 1983; Jones, 1989; Kelly & Pulver, 2003; Larson, Heppner, Ham & Dugan, 1988; Savickas & Jarjoura, 1991; Wanberg & Muchinsky, 1992).

According to Zimbardo and Boyd (1999), time perspective (TP) is a process whereby individuals make sense of the events happening to them by assigning these events to temporal categories or time frames. This process often is subconscious and it has influence on one's risky judgments, decisions and actions (Keough, Zimbardo & Boyd, 1999), career choice satisfaction (Ezen & Tezel, 2010), as well as on one's subjective well-being and happiness (Boniwell & Zimbardo, 2004; Drake, Duncan, Sutherland, Abernethy & Henry, 2008). Zimbardo and Boyd's (1999) TP theory includes five main dimensions: Past-Negative, Past-Positive, Present-Hedonistic, Present-Fatalistic and Future factors. The Past-Negative TP reflects negative, aversive attitudes when calling upon one's past. The Past-Positive TP represents the reverse attitude to this, with warm and sentimental attitudes of the past. The Present-Hedonistic TP can be characterized by an attitude to maximize enjoyment through a hedonistic, risk-taking attitude. The Present-Fatalistic TP unfolds as a hopeless and helpless position taken in life with strong beliefs about fate or other uncontrollable forces that disable any attempt made in the present. Future TP stands for planning for the future and being able to postpone immediate rewards in favour of goals one wants to reach in the future.

In the past, studies mainly focused on future and present time perspective, neglecting past orientation (Zimbardo & Boyd, 1999). This is particularly true if we look at the field of career psychology (Taber, 2013). Several studies have highlighted the importance of relative dominance of future orientation over that of the present in career planning. For instance, according to Super (1992), career maturity includes TP. In his Life Career Rainbow Model, TP consists of three elements: (a) reflection upon experience, (b) anticipation of the future, and (c) concepts of life

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[3] The label developmentally undecided can be a source of confusion as it may sound like a diagnostic category. We must clearly state that this group has favourable psychological correlates and does not fall behind in personal development from the Ready to Decide group. Developmentally undecided persons have all the means to form a decision once they are provided the information required to do so. Therefore, belonging to this type is considered a normal state along the development of career formation.

stages. Ferrari, Nota and Soresi (2010) also reported that adolescents with a high degree of future time perspective experience less career indecision. Janeiro (2010) investigated 9th and 12th grade students and found that self-esteem and internal attributions did not have a direct effect on career planning attitudes in her model (SEM), only future time perspective. In sum, these studies suggest that future time perspective (independently from its theoretical background) is positively linked to career decision.

Another branch of research focused not only on the future dimension. Marko and Savickas (1998) demonstrated that interventions increasing future orientation by means of improving subjects' sense of continuity between the past, present and future resulted in more highly developed attitudes toward career planning. However, the intervention did not directly influence university students' career planning outcomes. In a more recent study, Taber (2012) examined the link between TP pattern and career decision-making difficulties in an adult sample. According to his results, Past-Negative, Present-Fatalistic, and Present-Hedonistic TPs are linked to career decision-making difficulties. Additionally, high Future TP is associated with high motivation in career choice.

The construct of time perspective offers considerable potential for practical interventions in the field of career orientation but studies from this aspect are absent (Boniwell & Zimbardo, 2004). Therefore, our aim in this study is to investigate the relationship between TP dimensions and career indecision, as well as the link between TP patterns and career indecision types.

Based on Taber's (2012) previous work on an adult sample, we assumed that Past-Negative, Future and Present-Fatalistic time orientations will be closely related to career decision-making difficulties of high school students. We set up the following hypotheses:

H1: On the basis of variable-centered analysis, career indecision factors will be related to TP factors. Past-Negative and Present-Fatalistic time orientations will be associated with greater career indecision, while Future Time Perspective will be negatively related to career indecision. Furthermore, Past-Negative and Present-Fatalistic TPs will be associated with greater Generalized Indecisiveness.

H2: In the person-centered analysis, members of different career indecision types will differ on their use of temporal frames. Chronically Indecisive individuals might have a strong Past-Negative and Present-Hedonistic orientation, coupled with low Future TP. Ready to Decide and Developmentally Undecided people will have strong future orientation, while having low scores on Present-Fatalism (Taber, 2013).

Methods

Participants

Participants in the study were 683 high school students (388 women, 285 men, 10 persons did not indicate their gender). In Hungary high school studies typically

start at Grade 9 and end at Grade 12.[4] Students' age ranged between 14 and 21 years (M = 16.94, SD = 1.24). Their age distribution can be described by the following numbers: (N = 3) 14 years old, (N = 52) 15 years old, (N = 188) 16 years old, (N = 190) 17 years old, (N = 206) 18 years old, (N = 29) 19 years old, (N = 2) 20 years old and (N = 2) 21 years old students (N = 14 students did not report their age). While the age range was quite large, the majority (93%) of students were between 15 and 18 years old.[5]

Measures

Career Factors Inventory. The 21-item multidimensional measure (Chartrand et al., 1990) of career indecision has four dimensions, among them two emotional (career choice anxiety, generalized indecisiveness) and two cognitive factors (need for career information and need for self-knowledge). CFI uses a five-point rating scale ranging from 1 (strongly disagree) to 5 (strongly agree) on cognitive factors and has two adjectives assigned to them on emotional factors. The Career Choice Anxiety scale has six items (e.g. When I think about actually deciding for sure what I want my career to be I feel: 1 frightened – 5 fearless) and it captures the anxiety that subjects experience about career decision-making. The Generalized Indecisiveness scale has five items (e.g. For me decision making seems: 1 clear – 5 hazy; While making most decisions I am 1 quick – 5 slow) tapping how indecisive one generally is when it comes to decision-making. Need for Career Information has six items (e.g. Before choosing or entering a particular career area I still need to find out what present and predicted job opportunities are like for a certain career area or areas.). Need for Self-Knowledge has four items (e.g. Before choosing or entering a particular career area I still need to attempt to what type of person would I like to be.). CFI has good psychometrical features and has been used with high school samples before.

CFI was translated into Hungarian and translated back to English following the protocol of Beaton, Bombardier, Guillemin and Ferraz (2000). Exploratory (EFA) and confirmatory (CFA) factor analyses were carried out and reliability (based on Chronbach's Alpha) was measured to form the final version of the Hungarian CFI. We used Brown's (2006) guidelines about the values indexes have to take. The four-factor structure was proven to give the best model fit (N = 683, χ^2/df = 1.98,

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[4] years of studies is still the most common form of education in high schools despite having the opportunity of choosing from other arrangements. Hungarian children enter the public school system at the age 6 or 7.

[5] At the age of 16 important cognitive changes occur. We made a comparison between students aged 14–16 years and those who were above 16 years to see if these changes had an impact on our findings. Statistical analyses showed only 2 differences between the age groups (out of the 9 possible differences). Younger students (aged 14–16 years) scored significantly higher (t(664) = 2.49*, Cohen-d = 0.2) on the Present-Fatalistic Factor, while students above the age of 16 years scored significantly higher on the Career Choice Anxiety Factor (t(646) = -2.072*, Cohen-d = 0.17). The effect sizes were low in both cases, suggesting that the difference between age groups are not too great. Career indecision cluster membership is not affected by age group (crosstabs analysis based on memberships was not statistically significant).

RMSEA = 0.038, CI = [0.031, 0.046], CFI = 0.97, TLI = 0.97). On the basis of the results of EFA and CFA, the Hungarian version of CFI has 17 items on four scales; four items had to be dropped from the original version (career choice anxiety – item 2; general indecisiveness – item 7 and 9; need for career information – item 17).

Zimbardo Time Perspective Inventory. ZTPI (Zimbardo & Boyd, 1999) is a 56-item inventory measuring five time perspectives: Past-Positive, Past-Negative, Present-Hedonistic, Present-Fatalistic and Future. It uses a five-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). The Past-Negative factor has ten items (e.g. I think about the bad things that have happened to me in the past), Past-Positive nine items (e.g. I get nostalgic about my childhood), Present-Hedonistic 15 items (e.g. It is more important to enjoy life's journey than to focus on the destination), Present-Fatalistic nine items (e.g. I take risks to put excitement in my life), and Future TP has 13 items (e.g. I'm able to resist temptations when I know that there is work to be done).

We used the same method to adapt ZTPI to Hungarian as described previously with CFI. The five-factor structure was proven to give the best model fit (N = 683, χ^2/df = 2.46, RMSEA = 0.046, CI = [0.041, 0.052], CFI = 0.93, TLI = 0.91). Therefore, a shortened Hungarian version of ZTPI[6] was used which includes 21 items on five scales. In line with Zimbardo and Boyd's (1999) item structure they are the following: Past-Negative – ZTPI 22, 25, 34, 50, Past-Positive – ZTPI 2, 15, 20, 29, Present-Hedonistic – ZTPI 31, 32, 42, Present-Fatalistic – ZTPI 37, 38, 39 and Future TP – ZTPI 10, 13, 21, 40, 45, 51).

Procedure

Subjects were reached through schools and had been informed of the study being anonymous and participation voluntary prior to filling out a larger set of questionnaires. All students who volunteered to participate in this investigation received a packet that contained an instruction sheet, a demographic variable form and six questionnaires, two of which were used for this study. Students were not paid but feedback on their results was offered. Feedback was also offered to participating schools about the general findings of the investigation.

Results

Variable-centered analysis

The relationship between the variables of career indecision and time perspective was measured with Pearson's correlations. As it can be seen in Table 1, TP factors and Career Indecision dimensions are interconnected.

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[6] In this study and in one of the previous studies (Orosz & Roland-Lévy, under review) we aimed to find a factor structure in which there is no cross-loading and which has appropriate or nearly appropriate CFA model fit, not only taking into account RMSEA, but other model fit indices as CFI and TLI.

Tab. 1. Intercorrelations between Time Perspective and Career Factors Inventory dimensions

| Dimensions	M	SD	1	2	3	4	5	6	7	8	9
1. Career Choice Anxiety	2.78	.96	—								
2. General Indecisiveness	2.83	.90	.13**	—							
3. Need for Career Information	3.38	.79	-.11**	.12**	—						
4. Need for Self-Knowledge	3.20	1.02	-.04	.15**	.35***	—					
5. Past-Positive TP	3.56	.83	-.17**	.05	.24***	.17**	—				
6. Past-Negative TP	2.63	1.04	.03	.23***	.03	.19***	-.09*	—			
7. Present-Hedonism TP	3.20	.88	-.13**	-.03	.15**	.15**	.23***	.10*	—		
8. Present-Fatalistic TP	2.77	.88	-.05	.19***	.09*	.13**	.16**	.29***	.25***	—	
9. Future TP	3.25	.74	-.17**	-.11**	.28***	.18**	.20***	-.06	-.02	-.074	—

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Past-Positive TP was positively related to Career Choice Anxiety $r(649) = .17$, $p < .001$, Need for Career Information $r(661) = .24$, $p < .001$, and Need for Self-Knowledge $r(661) = .17$, $p < .01$. Past-Negative TP was positively associated with General Indecisiveness $r(650) = .23$, $p < .01$) and Need for Self-Knowledge $r(659) = .19$, $p \leq .001$. Present-Hedonism was negatively linked to Career Choice Anxiety $r(651) = -.13$, $p < .01$, and positively related to Need for Career Information $r(662) = .15$, $p < .01$, and Need for Self-Knowledge $r(662) = .15$, $p < .01$. Present-Fatalistic TP was positively associated with General Indecisiveness $r(655) = .18$, $p < .01$, Need for Career Information $r(663) = .093$, $p < .05$ and Need for Self-Knowledge $r(664) = .13$, $p < .01$). Finally, Future TP was negatively related to Career Choice Anxiety $r(643) = -.17$, $p < .01$) and General Indecisiveness $r(646) = -.11$, $p < .01$) and positively related to Need for Career Information $r(654) = .28$, $p < .01$ and Need for Self-Knowledge $r(654) = .18$, $p < .01$).

Individual-centered analysis

Career Indecision types were formed through hierarchical and K-means cluster analysis. First we conducted a hierarchical cluster analysis to determine the ideal number of clusters. Outliers and incomplete profiles were dropped from the sample resulting in 639 complete subject profiles. Hierarchical analysis suggested a four-cluster solution. K-means cluster analysis was carried out on the sample. In order to test if Career Indecision types significantly differ on Career Decision factors we conducted a one-way ANOVA with career indecision type as the independent variable. Significant differences were found between subtypes regarding all factors (Career Choice Anxiety $F(3, 635) = 323.34$, $p < .001$; Generalized Indecisiveness $F(3, 635) = 12.69$, $p < .001$; Need for Career Information $F(3, 635) = 119.83$, $p < .001$; Need for Self-Knowledge $F(3, 635) = 232.86$, $p < .001$).

The first cluster was named Path Seeker ($N = 154$, 104 woman, 48 men, 24.10% of the total sample). According to the LSD post hoc tests[7] Path Seekers have the highest score on informational factors: Need for Career Information and Need for Self-knowledge. Their score on Career Choice Anxiety is the lowest in the sample and they also score low on Generalized Indecisiveness. The second type was called Ready to Decide ($N = 249$, 114 woman, 132 men, 38.97% of the total sample). Their scores are below the sample means on all four career indecision factors. Career Choice Anxiety and Generalized Indecisiveness are low in this cluster. Need for Career Information and Need for Self-Knowledge scores range from low to moderate. The third type was labelled Choice Anxious ($N = 46$, 22 men, 24 woman, 7.19% of the total sample). Persons in this group have extremely high scores on career choice anxiety but score low on other scales of career indecision. The forth group was named Chronically Indecisive ($N = 190$, 64 men, 123 woman, 29.73% of the total sample). Individuals in this group score above sample mean on all four Career Indecision dimensions. This group is the only one that has above sample mean scores on Generalized Indecisiveness, indicating their lack of capability for the career-decision making process. Their scores on the Need for Career Information and the Need for Self-Knowledge scales are somewhat smaller than that of the Path Seekers.
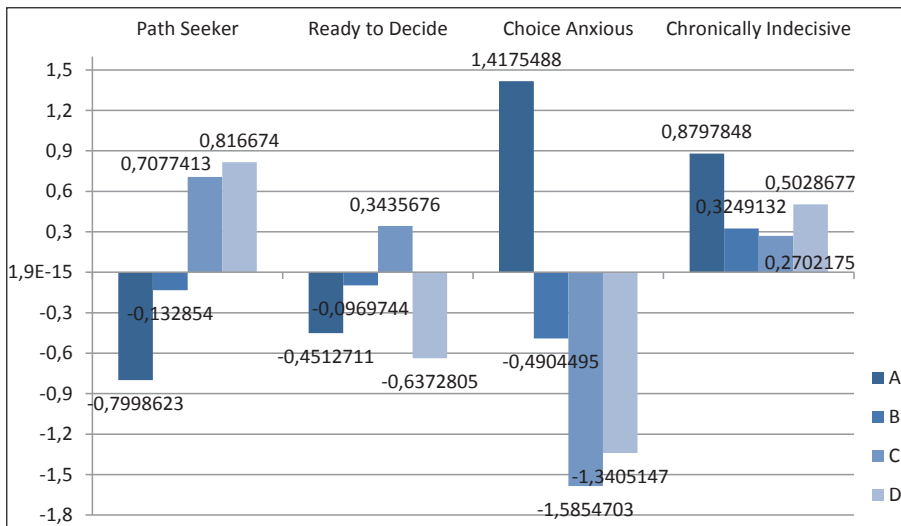
Note: A = Career Choice Anxiety, B = Generalized Indecisiveness, C = Need for Career Information, D = Need for Self-Knowledge (figure seen in standardized Z-scores)

Fig. 1. Career Indecision types cluster centroids

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[7] According to the LSD post hoc tests all differences were significant at $p < .001$ level, except differences between members of the group of Path Seeker and Ready to Decide in the dimension of general indecisiveness ($p = .72$) and between the groups of Path Seeker and Choice Anxious on the same dimension ($p = .029$).

In order to examine whether Time Perspective scale has different patterns in the four career indecision subtypes we conducted a one-way ANOVA with LSD post hoc tests with career indecision type as the independent variable. Significant differences were found on all factors (Past-Negative TP: $F(3, 628) = 2.69$, $p < .05$, $\eta^2 = .01$; Past-Positive TP: $F(3, 629) = 13.52$, $p < .001$, $\eta^2 = .06$; Present-Hedonistic TP: $F(3, 630) = 7.28$, $p < .001$, $\eta^2 = .08$; Present-Fatalistic TP: $F(3, 632) = 7.19$, $p < .001$, $\eta^2 = .03$; and Future TP: $F(3, 622) = 18.96$, $p < .001$, $\eta^2 = .03$). The pattern of differences is summarized in Table 2.

Tab. 2. Results of one-way ANOVA on TP factors with career indecision cluster membership as independent variable

	Sample average		Path Seeker (a)		Ready to Decide (b)		Choice Anxious (c)		Chronically indecisive (d)	
	M	SD	M	SD	M	SD	M	SD	M	SD
Past-Negative	2.63	1.04	2.68	1.14	2.52 d	.95	2.38 d	1.04	2.74 b, c	1.07
Past-Positive	3.56 a, c	.83	3.72 b, c	.80	3.55 a, c	.81	2.87 a, b, d	1.01	3.63 c	.78
Present-Hedonistic	3.20 c	.88	3.25 c	.90	3.21 c	.87	2.62 a, b, d	1.09	3.27 c	.80
Present-Fatalistic	2.77 c	.88	2.81 c	.94	2.77 c	.82	2.18 a, b, d	.94	2.81 c	.85
Future	3.25 a, c	.74	3.57 b, c, d	.72	3.16 a, c	.67	2.82 a, b, d	1.00	3.20 a, c	.67

Note: Small letters in each row stand for the cluster that's score differs significantly from the cluster in cells' column

Though effect sizes are rather small, there are some important significant differences between career indecision types on TP scales. The Choice Anxious group scores significantly lower on Past-Positive (all $p < .001$), Present-Hedonistic (all $p < .001$), Present-Fatalistic (all $p < .001$) and Future TP (all $p < .01$) scales than any other career indecision group and it has significantly lower scores than the Chronically Indecisive cluster on Past-Negative TP scale ($p < .05$). Chronically Indecisive individuals have significantly higher scores on the Past-Negative factor than Ready to Decide group members do ($p < .05$). Path Seekers have significantly higher scores on the Future TP factor than any of the other groups (all $p < .01$), furthermore, they score higher on the Past-Positive dimension ($p < .05$) than members of the Ready to Decide ($p < .001$) groups do.

Discussion

The purpose of the present study was to examine the relationship pattern between time perspective and career indecision among high school students. Vocational psychology theory and research has focused almost exclusively on future time orientation up to this date. However, results indicate career psychology can benefit in terms of theoretical and practical implications by taking into consideration present and especially past dimensions of time perspective.

Relationships between time perspective and career indecision dimensions

As Zimbardo and Boyd (1999) claim, past focus can affect the interpretation and response to the current decision situation. Recalling analogous prior situations, with memory of costs and benefits that accompanied the decision, might be nostalgic and positive or ruminative, aversive and negative. This past-related temporal influence might be one of the reasons why Past-Negative TP was positively linked to Generalized Career Indecisiveness and Need for Self-Knowledge. When prior to making a serious decision – such as career choice – an adolescent focuses on alleged or true bad decisions of the past, it can hinder him/her from being able to form a decision. Furthermore, before making a decision about one's career, recalling such negative experiences can induce negative self-reflections about one's personality and capabilities. These results are in line with Hypothesis 1. We found some unexpected results that can be of interest; in the following session we will interpret these findings.

Despite the absence of previous results about this link, Past-Positive TP score is negatively related to Career Choice Anxiety and positively linked to Need for Career Information and Need for Self-Knowledge. This result is somewhat surprising as we made no assumptions of Past-Positive TP being connected to career indecision, partly because Taber (2012) on his adult sample had not found any results to suggest otherwise. Nevertheless, as discussed earlier on, informational factors in most cases do not represent a ruminative way of searching, but rather an anxiety-free need for accurate information which can lead to a fruitful search of career-relevant information. Therefore, this result does not undermine the validity of Past-Positive TP as an important element of balanced TP that leads to positive consequences in important decisions.

Others use not a past-based, but another type of top-down decision-making, when they anticipate that the consequences of their decision, made in the present, may have an impact on their future in the form of costs to be paid or rewards to be reaped (Zimbardo & Boyd, 1999). Future time orientation has been widely associated with goal directness, decision-making etc. (e.g. Nurmi, 1991). Our results suggest that in line with our first hypothesis, emotional factors such as Career Choice Anxiety and Generalized Indecisiveness are negatively related to the construct. Apparently, if a person uses anticipated future rewards and punishments, goals, and means-ends relationships as reference points in his or her decision-making, Future

TP shields him or her from the negative emotional consequences of being undecided for the moment.

Finally, some may tend to use primarily "bottom-up" decision-making strategies based on the sensory, biological, and social salient elements of the present environment. Their actions are formed by forces of situational press, their biological state or social aspect of the situation (Zimbardo & Boyd, 1999). As for our results concerning present TP, both Present-Hedonistic and Present-Fatalistic TPs were positively related to informational factors (Need for Career Information and Need for Self-Knowledge). Present-Hedonistic TP was, however, negatively related to Career Choice Anxiety, while Present-Fatalistic TP – as stated in Hypothesis 1 – is positively related to Generalized Indecisiveness. The ability to enjoy the moment works as a protector against anxiety about one's career aspects in the future, but the thought that outside forces determine our fate, increases the feeling of indecisiveness in adolescents.

In summary, our first hypothesis was mainly supported. Past-Negative and Present-Fatalistic time orientation focus does increase generalized indecisiveness. Future TP however, "only" shields individuals from emotional indecision and does not guarantee that one has all the relevant information to make a career choice. These correlational results suggest that high school students who plan extensively to the future, experience less general career indecisiveness, whereas those who have strong beliefs about fate have more career decision-making difficulties. To our surprise, Past-Positive TP can not only be linked to cognitive factors of career indecision (Need for Career Information and for Self-Knowledge), but also to Career Choice Anxiety. Higher Past-Positive score is accompanied by less anxiety. To detect the reason for this further investigation is needed, but we suspect that if a person has good memories of the past and decisions made by him/her, it increases confidence in one's decision-making abilities, which decreases anxiety.

Time Perspective patterns in light of Career Decision typology

After the discussion of variable-centered results, individual-centered results will be interpreted, namely how groups of Ready to Decide, Path Seeker, Choice Anxious and Chronically Indecisive persons prefer to balance time. Ready to Decide individuals are known to have mature vocational and personal identities, to be highly extraverted and to have high scores on agreeableness, to experience positive affect, to seek out social contact and to prefer a high activity level (Kelly & Pulver, 2003). Little is known, however, about their preferences of temporal frames. Our results indicate that Ready to Decide adolescents have a "balanced" distribution of TP dimensions. They score highest – but not significantly higher than the sample average – on Past-Positive and Present-Hedonistic dimensions, closely followed by Future TP score, and have lower – but again not significantly lower than the sample average – scores on Past-Negative and Present-Fatalistic TP dimensions. The Ready to Decide group has scores close to the sample average on each TP scale. In sum, to

be ready to make a career related decision is accompanied by the ability to flawlessly switch between past, present and future time frames.

The Path Seeker group is characterized by a focal need for career information and information about the self, little career choice anxiety, goal-directness, mature ego identity, and the absence of negative affect in career psychology literature (e.g. Kelly & Pulver, 2003). Moreover, they have strong verbal and mathematical skills (Kelly & Pulver, 2003) and have good grades (adjoining study Lukács, 2012). In our adolescent sample they have above sample average scores on Past-Positive and Future TPs. They also score higher on Present-Hedonism than on Present-Fatalism and Past-Negative TPs when we look at the pattern of their time orientation in itself. We assume that having good memories of the past, accompanied with anticipation for future goals, as well as the capability to enjoy present environment ("balanced" TP, Zimbardo & Boyd, 1999) results in being capable of making career-related decisions if provided with sufficient information.

Choice Anxious individuals are extremely anxious about making a career decision. As for their use of temporal frames, the pattern of their scores across TPs is like that of the Path Seeker's (with Past-Positive, Future and Present-Hedonistic TPs being slightly higher than Past-Negative and Present-Fatalistic TPs). What tells the two groups apart is the range of these scores. Choice Anxious individuals have lower scores on all TP factors (except Past-Negative TP) than any other group and as a result the sample means. It is as if their high anxiety level made it harder for them to relate to temporal frames, but the reason behind this finding needs to be further investigated.

The Chronically Indecisive group is systematically found to be in need of career information, highly anxious, lacking decision-making confidence; they have low self-esteem and poorly developed identity (Jones & Chenery, 1980; Larson et al., 1988; Wanberg & Muchinsky, 1992; Chartrand et al., 1994). Kelly and Pulver (2003) found that people belonging to this type (they called them "neurotic indecisive information seekers", p. 451) had a reserved interpersonal style, a desire to avoid social contact and a cautious approach to life. Our results suggest that chronically indecisive people have past-negative dominance (their Past-Negative scores were significantly higher than Path Seekers' scores). Their TP scores did not differ significantly from the sample mean but they can be characterized with a lower Future time orientation than Path Seekers'. Results suggest that the difficulties they face (high anxiety, indecisiveness) might stem from bad memories of past decisions and a relative lack of anticipating the future.

In summary, our second hypothesis was fairly supported. The Chronically Indecisive group does have a relative Past-Negative dominance and lower scores on Future TP (when looking at the five TP's pattern between subjects of the group; although its score does not differ significantly from the sample average). Ready to Decide individuals do not have a higher level or the sample average of future orientation than others, but their time perspective pattern is similar to the

"balanced" TP. Path Seekers not only have a Future dominance, but also score higher on the Past-Positive Factor than the Ready to Decide and the Choice Anxious group.

Limitations

It is important to mention some of the limitations of this study. Our data was based on self-reports and we used shortened scales that, despite having good psychometric properties, may narrow the interpretation area of the utilized dimensions. This is especially true in the case of the Hungarian version of ZTPI. Furthermore, gender differences were not dealt with in the present work, further studies should take this into account. Finally, our sample was not a representative one. Therefore, it might be misleading to draw far-reaching conclusions regarding differences between means of sample average and the different career decision groups.

Practical implications

Career indecision typologies were from the very beginning (Holland, 1975, 1977) made to help practitioners better understand obstacles one has to overcome in his career path. The present study sheds light on some important data about temporal frames used by people in different career indecision types. In the following sections we suggest ways of intervention for different types based on previous research (Cohen & Chartrand, 1995) and taking into account our results on a sample of 638 high school students.

The results of the present study suggest that members of the Ready to Decide and the Path Seeker groups had low career indecision and a "balanced" pattern of TP factors. They might not need to engage in career orientation services at all, as they have what it takes to form a good decision. Path Seekers may need some more information about the world of work or themselves. Should some of the individuals in these groups need assistance when making their career-decision, informational or web-based counselling will suffice that need entirely.

Chronically Indecisive students would surely benefit from career counselling interventions as they have high scores on all career indecision factors. Individual or group sessions should include the reframing of or coping with past bad memories – most importantly the ones concerning decisions made – as well as increasing future orientation (normally already included in career counselling sessions as career goals are usually related to the future).

Members of the Choice Anxious group should be taught anxiety management techniques. Future studies should address the question of impact of TP intervention (future, past and present) when working with clients who have high levels of career indecision.

Conclusions

The present study aimed to measure the relationship pattern of time perspective dimensions and career indecision with variable- and individual-centered methods. Zimbardo and Boyd's (1999) inventory made it possible to compare time perspective

patterns (including past, present and future dimensions) of youngsters who are ready to decide on their career, who seek their profession, who are anxious due to this decision, and those who are chronically indecisive. On the basis of the results six main conclusions can be drawn: (a) Past-Negative and Present-Fatalistic time orientation focus is in relationship with generalized indecisiveness. (b) However, Future TP shields individuals from emotional indecision and hand in hand with positive views on past, it is linked to Need of Self-Knowledge and information to make a career choice. (c) Path Seeker students – who have high need for self- and career information, with low anxiety level without generalized decisiveness – have a time perspective pattern which is similar to Zimbardo and Boyd's (1999) balanced Time Perspective. (d) Ready to decide individuals – with mature vocational and personal identities – have similar balanced patterns as Path Seekers with subtle differences. (e) Chronically indecisive youngsters – who lack decision-making confidence and have low self-esteem – have a time perspective pattern which is dominated by the Past-Negative factor and they are less future-oriented. (f) Choice Anxious students – who are extremely anxious about making a career-decision – have lower scores on all TP factors (except Past-Negative TP) than any other group. Students who belong to these different groups need different career orientation services because while one is suffering from anxiety and the negative experiences of the past, the other is looking forward to the future by searching career- and self-relevant information.

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Time in the Context of Deafness

Abstract

Hearing impairment is the factor influencing individual experience and development. However, as it influences the identity development, it might also impact the temporal processes. The article analyses the three levels of psychological time in the context of contemporary research. The results are discussed in the frame of particularly crucial factors such as communication, language and culture. Temporal perspective is described in the context of world representation understood as a system of knowledge comprising an individual's beliefs. This system, which plays a regulative role in making choices, building attitudes towards the real world and solving problems, develops as the individual gains experience. However, hearing-impaired adolescents concentrate on the present events more than their hearing peers.

Keywords: deafness, time processing, temporal perspective

Czas w kontekście głuchoty

Streszczenie

Uszkodzenie słuchu jest istotnym czynnikiem wpływającym na doświadczenie i rozwój jednostki. Może też w sposób znaczący wpływać na proces kształtowania się tożsamości oraz na przebieg procesów temporalnych. Artykuł prezentuje trzy poziomy czasu psychologicznego w świetle współczesnej literatury. Wyniki dyskutowane są w odniesieniu do takich czynników, jak: komunikacja, język, kultura. Perspektywa temporalna została opisana w kontekście reprezentacji świata, rozumianej jako system wiedzy odzwierciedlający indywidualne przekonania jednostki. Jest to system pełniący regulacyjną rolę w procesie podejmowania decyzji, formowania postaw wobec rzeczywistego świata oraz rozwiązywania problemów, a rozwijający się w toku indywidualnego doświadczenia. Młodzież z uszkodzonym słuchem częściej od swoich słyszących rówieśników koncentruje się na bieżących zdarzeniach.

Słowa kluczowe: głuchota, procesy temporalne, perspektywa czasu

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Introduction

The life of every human being, regardless of age and health conditions, is immersed in time. All activities which are undertaken to fulfil human personal needs are related to the chronosystem, which is defined as the pattern of environmental events and transitions over time. It is the chronosystem that includes normative and non-normative events in the context of the timing of events, number of events in a given time, the duration of events, and perceptions of time over time (Bronfenbrenner & Morris, 1998, 2006).

The orientation in chronosystem events requires a few specific psychological time abilities which might be described according to Block (1990) as:

1. Time as succession – reflects the sequential structure of events from which humans perceive (or infer) succession and order of events. It is fundamental to attempt to uncover the preconditions by which humans can make judgements of simultaneity, temporal order, and event succession by invoking sensory and perceptual processes.

2. Time as duration – refers to the temporal (durational) attributes of events, the encoding and retention of such attributes, and their subsequent retrieval upon inquiry. Duration timing, or time estimates, is an important ability that regulates and organizes much of our day-to-day activities, especially when we execute an action and expect a response.

3. Time as temporal perspective (or temporal orientation) – refers to the experiential and conceptual understanding and interpretation of the past, the present and the future, and how they vary across normal and pathological populations. Temporal perspectives can vary within an individual or across individuals due to disease or impairment states (e.g. schizophrenia), pharmacologic interventions, or due to cross-cultural variance (e.g. individual versus collective cultures).

While the above mentioned psychological time conception is coherent, other proposals might be found. Janeslatt et al. (2010) thought that the "time-processing" ability (TPA) might be conceptualized as including the following three subcategories:

1. Time perception – defined as the experience of time; specifically the mental functions related to the subjective experiences of the length and passage of time. It is usually measured by internal time estimation (event time duration);

2. Time orientation – related to the ability to orientate in the passage of time in relation to events taking place in natural and social environments. Time orientation includes three detailed characteristics (Friedman, 1990; Nelson, 2002; Kylen, 1984; Eisler, 2003 in Janeslatt et al., 2010): (a) awareness of the day, date, month and year, to understand our relative location in time ('What day is it today?'), (b) temporal concepts of units such as day and month frequency ("How often?"), (c) sequence (e.g. knowing the temporal order of activities in a morning routine), (d) awareness and understanding of physical time and reading the time on a clock;

3. Time management (TM) – understood as one executive function related to the ability to identify which tasks to do, plan appropriate time to do them, and the ability to order events and activities in a chronological sequence and allocate appropriate amounts of time to them.

Research by Janeslatt et al. (2010) showed that children with developmental and intellectual disabilities are often reported to have problems in all three aspects of the time-processing ability (TPA). It was found that the time-processing ability development was significantly delayed in many cases of developmental disabilities (e.g. intellectual disability, cerebral palsy, autism) in comparison to typically developing (TD) children at the preschool and school developmental stage. Children with disabilities had the same pattern of TPA as typically developed children, however, at a significantly older age. The result indicates that children with disabilities might mature in TPA at a slower pace, with a larger variance in functioning in TPA within the group than for TD children. The largest difference was obtained in the time management category. This might be related to functional or anatomical impairment of the neural structure (as is the case of developmental disability) localized in the frontal or prefrontal lobe, responsible for behaviour control processes.

In the context of the above mentioned findings related to time-processing ability in cognitive impairment and functional disability, it seems to be crucial to analyse the effect of hearing impairment on time processes. Hearing impairment is the fundamental condition affecting individual development at any level since its beginning, so it might also influence the time-processing ability. The hearing impairment outcomes and results might be differentiated, however, because the deaf population is extremely heterogeneous with respect to individual characteristics, the type of hearing loss (conductive versus sensorineural or mixed), deafness aetiology (congenital versus acquired), the onset (prelingual hearing loss (before the process of speech system development is finished in its basic fundaments) vs. perilingual hearing loss (during the process speech system development) vs. postlingual hearing loss (after the development of the improved ability to communicate verbally), severity of hearing loss, and social developmental experience within the family context (native signers versus late signers).

Deafness as the particular developmental factor of time experiencing

Deafness is a special context of development, considering the occurrence of very unique developmental situations. The impact of deafness may be analysed both in the broad, as well as in the narrow context. The broad context is revealed when development is analysed from the perspective of understanding the process of developmental system adaptation in a situation of sensory deprivation, brought on by hearing impairment. The narrow context is adopting deafness from the individual, single, personal human perspective, experienced as a particular situation in which cultural and linguistic traditions provide the deaf person with

a unique developmental richness, contributing to the diverse formation of temporal information processing. Deafness presented both in the broad and the narrow context might be a factor modifying the course of development of multiple processes and phenomena connected with time reference, as a physical and social dimension of the life environment.

Deafness has historically been viewed as a physical impairment associated with functional disability, and losing one type of sensory information at specific developmental times may lead to deficits across all sensory perception systems with widespread cognitive and perceptual breakdown.[2] Referring to H. R. Myklebust (1964) – a pioneer of the psychology of the deaf – it may be stated that the lack of reception of auditory sensations significantly modifies the hierarchic process of cognitive development achieved by gradual attainment of more complex activities; from sensual reception to the formation of a complex perception process, attention, learning, memory processes, up to the level of abstraction. This author suggests that the lack of an auditory channel in deaf people alters their perception. This generalised-deficiency hypothesis proposed that an auditory deficit may affect the neurological development and organization of other perceptual systems so that total reactivity of the organism is affected. There is some contemporary evidence to support this hypothesis because sound provides an "auditory scaffolding" for time and serial order behaviour, which seems to be fundamental for all mental and pragmatic activities. When there is the lack of auditory stimulation, auditory scaffolding is absent, resulting in neural reorganization and disturbance to cognitive sequencing abilities (Conway et al., 2009). However, the basic consequence of hearing impairment is the reduction of verbal language development possibilities, both considering generating and understanding speech, and in connection with the mediation function of speech; complex processes of logical thinking in deaf children develop in a specific way. Still, the great variety of hearing impairment causes and diverse scope of developmental changes following from that impairment must be emphasised. Congenital deafness is related to the loss of hearing present at birth or the loss that may develop later, but is due to genetic causes or other influences that affected the fetus while it was in the uterus (in the womb). It is fundamental that individuals with pre-lingual hearing impairment differ from post-lingual in their psychological functioning, but there is also an environmental factor such as a family mode of communication according to parental hearing status.

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[2] This is the background of the medical model of deafness which focuses on the aetiology of hearing disorder and its impact to individual life. The other concept is the socio-cultural deafness model which states that a hearing impaired person is the member of a linguistic and cultural minority due to sign language usage. According to this model the Deaf community uses the term of "Deaf" (in opposition to "deaf") to delineate their separateness from the community that communicates orally (Lane, 2000). Deaf children of Deaf parents are Native Signers because of early access to sign language, but deaf children of hearing parents are late signers because they usually get access to sign language at school. This extension is fundamental for communication skills development.

So does the limited ability to receive sounds and understand verbal messages significantly influence the ability to experience time? Let us try to analyse this issue on the basis of the most recent research results.

Temporal perception comprises subjective phenomena such as simultaneity, successiveness, temporal order, subjective present, temporal continuity, and subjective duration. According to the hierarchical model proposed by Pöppel (1997), at the fundamental level, identification of basic events and successiveness are provided by the mechanism implemented by neuronal oscillations of functional system states with a duration of 30 ms. At the next level, time tags are responsible for sequential representation of several events. Memorising and then reproducing from memory events as successive is possible due to the fact that they are coded simultaneously with data referring to the time of their occurrence. Events may be temporally tagged (encoding of temporal content) and re-ordered in the elaboration of a percept and the subjective appreciation of its temporality. At the third level, the automatic and pre-semantic mechanism of temporal integration binds successive single events into one complex perceptual unit of a 3 s duration, which is also operative in movement control and other cognitive activities.

Time properties of objects and events such as temporal synchrony, rhythm, tempo, and duration seem to be amodal (Bahrick, 2009) and might be independent of the auditory deprivation. However, a typical sensory development, as well as specific language impairment or delay related to it, may affect different aspects of time experiencing. Processing in deaf children seems to be deprived of their direct experience within the physical and social context, as well as input from others which is essential in the development of time conceptualization and understanding in children.

The study outcomes will be analysed due to fundamental assumptions:

Firstly, time perception – one of the most important audio stimuli parameters is duration of events, so the hearing impairment might be followed by the reorganisation of time experiencing at the fundamental level (neuronal and perceptual).

Secondly, time orientation – the time experience focuses on the awareness of the time periods and understanding their relative location in time with the cognitive ability of naming those time categories and ordering them in the context of time line. The development of time concept understanding as reverse to sequential time, defined as one in which the numbers form a naturally growing sequence (Piaget, 2011), might be disturbed by hearing impairment.

And thirdly, the pattern of environmental events and their transitions over time – which includes the individual time perspective and might be affected by hearing impairment.

Although there is only limited research done in this field, the revision of the results is presented to find the final conclusion about the influence of hearing impairment on psychological time in the deaf.

High- and low-frequency temporal processing in the deaf

The problem of time perception seems to be interesting and of high importance, but the results are confusing and dependent on many crucial factors: experimental procedure, temporal characteristics, level and time of hearing impairment.

Results of experimental research that measure the fundamental high-frequency processing level identification of basic events successiveness within the duration of 30 ms may be divided into three groups.

Firstly, there is some evidence to argue that deaf persons, in comparison to hearing ones, obtained poorer temporal processing capacity when the auditory modality surpasses the visual one in detection of temporal change. They also need a longer interval between two stimuli to detect them, and also have difficulties with the perception of temporal order (Levine, 1958; Blair, 1957; Hanson, 1982; Withrow, 1968 in Poizner & Tallal, 1987). What is interesting, the Morse code perception is five times faster with an auditory than with a visual signal (Henneman & Long, 1954 in Poizner & Tallal, 1987).

Investigating tactile and visual temporal processing by means of a simultaneity judgement task, Heming & Brown (2005) showed that perceptual thresholds were significantly higher for the deaf group than for the controls. This study with adults who suffered from early hearing loss suggests that an impairment of temporal processing follows early deafness in the profoundly deaf compared to hearing controls.

Secondly, there is some evidence that there are no differences between the deaf and hearing in time processing. Other studies (Bross, Sauerwein, 1980 in: Poizner & Tallal, 1987) showed similar performance between deaf participants and controls. However, when visual perception was absorbed, no significant differences between the deaf and control groups were obtained. In an experiment presenting a series of flashes examining temporal processing in profoundly deaf individuals in the range of milliseconds, no differences were found in the processing of rapidly changing visual stimuli between congenitally deaf and normally hearing adults; that is in temporal processing at the high-frequency level to detect the stimuli as non-simultaneous.

Poizner and Tallal (1987) tested congenitally deaf signers in four experiments comparing rapid temporal analysis at the three different levels of information process complexity: sensation, perception and memory. The research showed that hearing impairment did not affect the significant difference between deaf and hearing adults in any of the three measured aspects of time information processes. There were no differences in the critical flicker frequency thresholds nor the two-point discrimination (two-point threshold). Perception of the temporal order as combination of two stimuli, as well as combination of stimuli triplets, was not significantly affected by the group effect. The same result was found in serial memory with a long fixed interstimulus interval (ISI).

The analysed results conclude that deaf individuals did not show any deficits in the perception of simultaneity versus non-simultaneity, nor in the perception of temporal order. These results may indicate that in different kinds of visual tasks,

the acuity of temporal resolution may be similar in deaf and in hearing individuals. Similar results were found by Mioni et al. (2012), who concluded that deaf adults performed as accurately as controls in the time reproduction and the time production of visual stimuli when engaged with short durations (milliseconds). Deaf adults were more accurate than controls when tested with the time production task with long durations (3, 4 and 5 s) and with the time discrimination task.

Finally, there is some evidence to argue that deaf persons, in comparison to hearing ones, obtained better results because of sensory compensation for the lack of auditory input (Neville et al., 1983; Neville, 1984; Bross & Zubec, 1975; Bross, Harper & Sicz, 1980 in Poizner & Tallal, 1987). Deaf native signers show enhanced temporal processing of visual stimuli, due to the auditory cortex subserving visual functions. They also show enhanced detection of movement in peripheral visual fields. It was also found that the visual temporal resolving power measured by critical flicker frequency thresholds was progressively enhanced, even in hearing individuals with short-term auditory deprivation. Native signers are born in a deaf family and are brought up in the sign language context. They are generally involved in bilingual education with sign language as the mother tongue and the national language as a foreign one.

Elena Nava and colleagues (2008) in tricky experiments found that the deaf group did not differ in temporal order thresholds and points of subjective simultaneity for the two visual stimuli, however discrimination responses were faster in deaf individuals than in hearing controls, especially when the two stimuli appeared at peripheral locations. This result of fluent performance in deaf participants is explained by the authors as by higher attentional resources in visual space, which are fundamental for fluent communication in sign language.

At the fundamental level of temporal processing abilities in the millisecond range, identification of basic events and successiveness is provided by a mechanism implemented by the neuronal oscillations of the functional system, which might be impairment, as well as a factor differentiating results.

Due to that special characteristic of high-frequency temporal processing presented by the deaf group, it might be also expected that a similar pattern will be present at the low-frequency (3-second duration) level of temporal integration of successive single events into one complex perceptual.

Although confusing evidence might be expressed in the field of time perception of high-frequency changes, the results of deaf perception of low-frequency changes in the range of seconds are more coherent. The findings by Kowalska and Szeląg (2006) presented that congenitally deaf adolescents found the accuracy of interval duration judgement difficult. Independently of the experimental task and in comparison with hearing peers, deaf adolescents judged accurately intervals of around 3 s, as well as overestimated standards shorter than 2 s and underestimated those above 3 s.

A similar pattern of time processing was found by Tirinell et al. (2009) in an experiment when participants had to listen to the auditory pattern of the conga

timbre and/or to feel the pattern haptically and reproduce its overall duration. This was done by pressing a button in order to mark the start and end of an equal time interval. This experiment confirmed that there was a difference between the hearing and the deaf in time reproduction variability, but no difference in accuracy. Reproductions of congenital deaf adults showed a greater variability in judging the duration of the structure events. Independently of the hearing status, however, regular patterns improved accurate reproductions more than irregular ones; a single item counting strategy was used rather than a multiple one. Sharing attention between temporal and non-temporal information reduces accuracy in the time reproduction task in both deaf and control groups. Completing specific tasks by deaf subjects was combined with a global underestimation of the duration of events. This was found in both hearing and deaf subjects, this is a typical influence of an individual's expectation, it is not a specific pattern of time processing related to deafness.

Nowadays, cochlear implants seem to be a good remedy for developmental problems of deaf people. What might be the cochlear implants' effect on time perception? Research in adults with cochlear implants as a result of post-traumatic deafness (Szeląg et al., 2004) indicates that there is a reduced capacity for temporal integration in the tested group. This study showed that even after implantation done in adulthood, when speech memory might be the background for audition stimuli, temporal integration was poorer particularly for lower metronome frequencies, in comparison to normally hearing. These observations point to deficits in auditory comprehension after cochlear implantation and to a specific temporal processing delay. Even short lasting auditory deprivation, however supported with the cochlear implant, seems to reduce low-frequency (2–3 second range) domain of stimulus in adolescents with post-lingual deafness.

While auditory perception seems to be appropriate for time processes, still a close relationship between temporal information processing within auditory stimulation (TIP) and speech might be found. Both temporal ranges of auditory stimulus appear to be fundamental for verbal language. Firstly, a high-frequency level of a microseconds range (30 ms) is related to single units of language-phonemes, and secondly a low-frequency domain of a second range (2–3 s) is related to phrases of words production and understanding. In comparison, sign language, which was first described by Stokoe in the 1960, seems to engage mainly the low-frequency level of visual stimulation because it engages a lot of manual characteristics; not only the number of hand shapes used, but also the movements the hands can make and the positions in which signs can be made. On the other hand, non-manual characteristics (e.g. movements of the face, eyes, eyebrows, cheeks, mouth and forehead, the head, and/or body) are also important components of all sign languages: grammar, and/or lexicon, as it was previously analysed in the Polish Sign Language (Tomaszewski, 2010). Native signers seem to compensate auditory deprivation by improving the accuracy of detecting visual stimuli in the peripheral visual field.

Time conceptualization and understanding in the deaf

However, although hearing impairment affects the accuracy of duration judgement, the effect might be differentiated and difficult to control. At the upper level it is also possible to divide the question of time into two complementary concepts: (1) sequential time, which is defined in a range of days, weeks, months and years with regard to these ranges order in sequence, as an order of events, or as a relation of the type 'now', 'earlier', 'later'; (2) the development of concepts of time, that is, an abstract mental process involving reasoning.

The process of time concept development is gradual and transmitted by language skills and it occurs only after acquisition of the concept of space (Stokoe, 2001). In deaf children, however, the abstract thinking component of deaf intellectual structure appears later than that of hearing peers (Zwiebel & Mertens, 1985). In deaf children, the understanding of time and related concepts might be inadequate, incomplete and often virtually non-existent.

Many studies give evidence for the hypothesis on the developmental difficulties in time understanding that are affected by deafness (Robert & Jay, 1975; Kaiser-Grodecka & Cieszyńska, 1991; Eden, 2008), however sequential time perception might be also stimulated and enhanced by using specific teaching procedures (Ingber & Eden, 2011), the effects of which are moderated by three factors: 1) early diagnosis and early intervention for deaf and hard of hearing, 2) hearing loss aetiology (the type of hearing device a child used); the child with cochlear implants showed greater improvement.

Robert and Jay (1975) conducted experiments in which deaf and hearing subjects decided the temporal order of events in picture series and in sentences. Deaf children aged 8 and 11 years performed similarly to hearing peers on a nonverbal picture task. Children from both groups identified the left-hand picture as starting the sequence and the right-hand picture as finishing the sequence. They also described most picture series in the natural left-to-right order in which they were shown. The verbal task was much more difficult for the deaf because of their delay in linguistic skills. This delay results in the general use of a sequence of simple sentences to describe the events shown in a picture series, and a response to most multiple-clause sentences presented as though the events being described had occurred in the order they were mentioned.

In Kaiser-Grodecka and Cieszyńska's (1991) research done in Poland in the late 80s' it was found that adolescents aged 12 to 15 faced difficulties in time event ordering at two separate levels. The primary time level, related to personal individual experiences, is the fundamental base for development of structures of historical secondary time. These time dimensions might be interpreted in categories of the bio-ecological developmental model where time is constituted at three levels: micro-time refers to specific episodes of proximal processes, meso-time refers to the events occurring in the person's environment, such as over the course of days, weeks or years, and macro-time focuses on the shifting episodes

occurring in wider culture and historical perspective (Bronfenbrenner & Morris, 2006). The results were coherent to Eden's results (2008), even if sustaining to the elder population, 6–10-year-old children with hearing impairments experienced very significant difficulty arranging pictures in temporal order to produce a story. Language seems to be involved in acquiring temporal concepts in deaf children. The stages at which children acquired concepts of clock, calendar, historical time, and chronology are affected by language acquisition (Senior, 1988; Bylholt, 1997). However, it must be pointed out that deaf native signers have no developmental delay in the assessed function; in other cases the reasoning powers of the deaf and hard-of-hearing are stunted. The problem is what language is their mother tongue. Any language development deficit makes the learning of time concepts even more difficult. Deaf children of hearing families have limited exposure to conversational situations. Without hearing, the deaf children are deprived of direct experience with the environment and input from others, which is essential in the development of concepts of time in children.

Temporal perspective in the deaf

Temporal perspective is a fundamental process in both individual and societal functioning (Zimbardo & Boyd, 1999; Zimbardo & Boyd, 2008/2011). It is defined as a non-conscious process in which temporal categories (past, present, future) play a leading-connective role in the relationship between personal and social experiences. These categories help us give meaning and order to everyday life events. Temporal cognitive frames are the core background for encoding, storing and recalling personal and societal events, as well as for building personal expectations, goals and imaginative views. Individual time perspective is a learned frame for many human cognitive processes as judgement, decision and actions.

Based on Zimbardo's temporal perspective theory, it might be assumed that deafness, understood as a culture – an idea that has recently emerged and considers deafness as a personal trait and not a disability (Lane, 1997), creates a specific context for temporal perspective learning process. Deaf people belong to the Deaf Culture, which according to Brislin's (1990) definition, refers to the widely shared ideals, values, formation and uses of categories, assumptions about life, and goal-directed activities that become unconsciously or subconsciously accepted as 'right' and 'correct' by deaf people, who identify themselves as members of a sign language minority group.

Within the Deaf Culture, the time orientation is polychromatic and more focused on the past or the present in relation to the hearing one (Mindess, 1999 in Slife, 2007). Polychromatic orientation means more contextual orientation towards time that takes in multiple reference points from the past, present and future. Stories that are told are carriers of history, ways of repeating and reformulating the past for the present (Padden & Humphries, 1988). There is awareness of time and schedules within the deaf community, but there is a difference in the degree of importance of

the schedule in comparison to the hearing one. People in the field of deafness or the deaf community often refer to "Deaf Time": meaning that deaf people do not start events "on time". This may be because deaf people put more emphasis on people and relationships than on clock time. If a meeting is scheduled to start at 8:00, people may arrive and greet each other at that time, but often the formal meeting does not start until 8:30 (Padden, 1980).

Comprehensive studies of Deaf Culture were done in an American minority, so it was interesting to find out if the temporal perspective conclusions were universal and present in Polish hearing impaired adolescents. In Kossewska's (2012) research, deaf adolescents aged between 15 and 17 were compared to controls. The testing method applied was the so-called "Map of My World", used to assess general cognitive structures of individuals. It did not only allow the learning of the perception of various constructs, but also the assess elements that a person uses to construct their representation of the world. Cognitive representation of the world was described in categories proposed by Gurycka (1994), among which the most important to previous research was time orientation. Each subject was shown a set of signs and symbols and asked to use them to draw their world on a clean sheet of paper. Subjects were asked to include in their picture all significant objects, persons, ideas, objectives and values, their own relation towards each of them and relations between the elements. Maps were analysed both from the quantitative and qualitative points of view. Quantitative analysis is the first stage that allows us to find elements characteristic of specific types of representations, such as temporal perspective. The results show that deaf adolescents present significantly fewer time categories in their world representation than the hearing ones do. They are usually related to present real objects, such as school, peer and family relationships, and dating. The world of hearing adolescents includes more future time perspectives which are related to both vocational, as well as social and personal goals.

The results gained in Polish deaf adolescents might be reflected by specific social and educational contexts. Time perception of the low-frequency changes pattern described by Kowalska and Szeląg (2006) might reflect disruption in the judgement process related to congenital deafness, however, it might be also affected by environmental factors. It is fundamental to point out the existing model of deaf children education in Poland which is incomparable to bilingual education (Grosjean, 2001). The assumption of education and therapy model in Poland is that oral speech should be the primary mode of communication in deaf children. The subjects reported the use of both modes of communication – sign language as well as speech – in both environments (in school and at home). Polish deaf adolescents used to be diagnosed relatively late, so neither the output of speech therapy nor sign language communication skills might be satisfactory if they did not develop in the deaf family context.

Polish deaf adolescents attend segregated schools and usually live in a dormitory outside their family. Social life and realisation of interests have moved out of the family. For deaf and hard of hearing youths, institutions of the real world perform

complex functions: socialisation, education and upbringing. Institutions create a controlled environment where young people may develop and satisfy their needs. They give them a chance to realise the need of influence, which is very important in the development of a mature, responsible personality. Present time perspective may limit the range of deaf adolescents' judgements, decisions and actions. Only few deaf youths in the research by Kossewska (2012) pointed out extended education and profession as important values and goals within the future context, while according to Zimbardo and Boyd (1999), a more future-based time perspective could help students study and progress to higher education. Adolescents in general, however deaf teenagers specially, experience negative feelings living in relatively less secure environments, which may be followed by present oriented behavioural strategies that reflect an orientation towards immediate outcomes and little concern for future consequences.

This finding may result from the fact that the deaf population is very heterogenous – 95% of deaf children are born to the hearing (Mitchell & Karchmer, 2004), and these children may not have received any usable language input during critical language acquisition periods of brain development. Lacking language input during a child's earliest years and the underdevelopment of a formal language system can result in an adult without fluency or competence in any language, including sign language (Sacks, 1989). A hearing family usually creates the low-stimulating developmental environment. Possession of a language system, either verbal or sign, is necessary to facilitate abstract thinking, mature personality development and future goal orientation. Without such a system, some deaf persons may suffer from the lack of ability to think abstractly or to generalize concepts. The development of future time perspective might be also limited by the low level of verbal communication skills.

Temporal perspective is linked to health problems in the general population. Many studies found more mental health problems among hard of hearing and deaf adults than in the general population. It was demonstrated that the greater the degree of hearing loss, the more mental health problems experienced (e.g. Tambs, 2004). The higher amount of mental health disorders, such as depression, might be related to the low level of future time perspective in deaf persons because this sort of temporal organisation is usually related to low subjective well-being and a higher level of depression in the general population as well (Coudin & Lima, 2011). Mental health problems might be more complex and serious when there are common impacts of many developmental factors, such as lack of safety and low communication – all a lack of fulfilment of psychological personal needs.

Conclusions

Hearing impairment seems to affect time information processes as well as temporal perspective development. The following general statements might be formed in reference to analysed research, however, there is no found fundamental

differentiation between Native and Late signers which might be due to linguistic access and early mental development. In deaf perception, the external stimulation is reduced mainly to one exteroceptive receptor within the visual modality. Time duration perception is differentiated in reference to the perceptual unit duration, as well as the perceptual mode, however the process of compensation might be observed in the threshold of visible stimuli. Focusing attention on direct visual perception and a significantly lowered capacity of receiving simultaneous auditory stimuli, the sensual modality leads to difficulties in the scope of sequencing events in time. Limited access to social and communication exchange within episodes of mutual engagement may cause an asynchronism in the time flow of event reception, and as a further consequence, difficulties in the formation of language time concepts. Time is an abstract concept, so conceptualization and understanding may be made difficult both in the dimension of ordering personal events and constructing primary time concepts, as well as historic events, due to the limited access to secondary time concepts. The range of experienced events limited to visual space influences the subjective feeling of time flow and the domination of present temporal perspective.

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Time Perspective in Healthy Individuals and Patients Suffering from Cancer and Diabetes

Abstract

Introduction: Time orientation can significantly improve health-related prevention behaviour and influence disease outcome through boosting health-oriented behaviour. This study aims to compare time perspective between diabetic and cancerous patients, and healthy people.
Methods: A cross-sectional descriptive study was conducted on 300 patients (105 healthy, 195 patients: 108 type 2 diabetes and 87 breast and digestive system cancer) aged 20 to 70 years (average age of 45.4 years). The samples were separated into three groups based on a convenience sampling method and were matched in terms of gender, age, education and monthly income. Data was collected through the Zimbardo Time Perspective Inventory (ZTPI-56) questionnaire and then evaluated with analysis of covariance (F test) followed by Fisher's Least Significant Difference (LSD) test.
Results: The three groups showed different time perspectives (F = 4.213, p < 0.05) and different ranking in time orientation.
Conclusion: Our findings show that the disease and its type can significantly impact the time orientation of patients. Therefore, to prevent potential subsequent outcomes, the patients' time perspective towards disease should be improved, especially under disease conditions.

Keywords: time orientation; digestive system cancer; breast cancer; diabetes mellitus type 2

Perspektywa czasu u osób zdrowych i pacjentów cierpiących na raka lub cukrzycę

Streszczenie

Wprowadzenie: Orientacja czasowa może znacząco wzmacniać zachowania prewencyjne dotyczące zdrowia i wpływać na wynik choroby przez wspomaganie zachowań prozdrowotnych. Celem badania jest porównanie perspektywy czasowej wykorzystywanej przez pacjentów z cukrzycą, chorobą nowotworową oraz ludzi zdrowych.

Metody: Opisowe badanie przekrojowe zostało przeprowadzone na 300 pacjentach (105 osobach zdrowych, 195 pacjentach: 108 z cukrzycą typu 2 i 87 z rakiem piersi i układu trawiennego) w wieku od 20 do 70 lat (średnia wieku to 45,4). Próby zostały podzielone na trzy osobne grupy na podstawie przypadkowego doboru i dopasowane pod względem płci, wieku, wykształcenia i miesięcznego dochodu. Dane zebrane zostały za pomocą kwestionariusza ZTPI-56, a następnie ocenione analizą kowariancji (F test) po przeprowadzeniu testu najmniej znaczącej różnicy Fishera (LSD).
Wyniki: Trzy grupy wykazały różne perspektywy postrzegania czasu (F = 4.213, p < 0.05) i odmienny ranking w orientacji czasu.
Wniosek: Wyniki pokazują, że choroba i jej rodzaj w znaczący sposób wpływają na preferowaną orientację czasową pacjentów. Dlatego w celach prewencyjnych, należy poprawiać perspektywę postrzegania czasu u osób funkcjonujących w warunkach choroby.

Słowa kluczowe: orientacja temporalna, nowotwór układu pokarmowego, nowotwór płuc, cukrzyca typu 2

Introduction

Time perspective is a main dimension in soul time structures, putting an individual's cognitive experiences in past, present and future time frameworks. These frameworks facilitate experiences to be consistent, meaningful, orderly, and are used in decoding, storing and recalling events. Following learning, these experiences have a dynamic influence on judgments, decision making and performance of individuals (Zimbardo & Boyd, 1999; Anagnostopoulo & Griva, 2011). Individual difference in time orientation is brought from cultural factors, common religious features, values, and the economic level (Liniauskaite, 2007).

Zimbardo and Boyd (2008) believed that emphatic tendencies of an individual's time categories influence his/her decisions. In this regard, the time vivid effect, that for some people originated in the past, gets along by recalling previous similar conditions and the loss or profit they had. Such concentration on the past can significantly influence interpretation and response in present conditions. On the other hand, focusing on the future along with evaluating optimal rewards, real and potential obstacles and challenges, influence present decision making. In both cases, past reconstruction abstract process and function construction in the future and influence present decision making, enabling a person to go beyond binding driving forces in life, the person delays satisfying sources leading to adverse consequences. Individuals are always turning between past, present and future time perspectives regarding condition, demands, values and sources evaluation or cognitive and social evaluation. A balanced time orientation is essential to keep balance between past experiences, present time propensities and future consequences (Zimbardo & Boyd, 1999; Zimbardo & Boyd, 2008). Osin et al. (2009) demonstrated that confining different categories of an individual's attitude to a time category reduces performance.

Zimbardo and Boyd (1999) considered five dimensions of the time perspective structure: Past-Positive (PP), Past-Negative (PN), Present-Fatalistic (PF), Present-Hedonistic (PH), and Future (F). The goal behind the past-oriented time structure is

that not good or bad events occurred. For instance, a positive attitude towards the past may reflect the positive events individuals experienced or a positive attitude that allows them to efficiently smooth tough conditions. Psychologically speaking, what individuals believe happened in their past life influences their present thought, feeling and behaviour more than what really happened. Orientation towards present is determined by two factors – Present-Hedonistic and Present-Fatalistic. PH is characterized as enjoyment, risk taking, little attention to future outcomes, pleasance, excitement, and lack of today dedication for a reward tomorrow. The PF factor shows if the individuals possess a fatalistic attitude towards life and believe that the future is destined. In other words, an individual's actions to change do not work, thus they have to resort to their destiny. Future dimension is also accompanied by planning, striving for future goals, and achieving success. Future outcome predictors are conscience, dependence, priority, consistency, rewards, low levels of exploring freshness, and excitement desire (Zimbardo & Boyd, 2008).

Health related studies indicated that diverse temporal perspective dimensions influence sleep and dream problems, style coping and quality, health-oriented behaviour, prevention and screening related behaviour, and high-risk behaviour such as alcohol abusing and illegal sexual affairs (Zambianchi, Bitti & Paola, 2010; Pelard, Apostolidis, Ben Soussan & Goncalves, 2008; Fieulaine & Martinez, 2009; Zimbardo & Boyd, 1999). In addition, some studies indicated that sensitivity to behavioural prevention and an extreme behaviour system are accompanied by lower future orientation that results in unhealthy behaviours and psychological injuries (Bejornebekk & Gjesme, 2009).

Diabetes is one of the most complicated chronic diseases resulting in various psychological dysfunctions particularly stress, anxiety and depression (Hamid, 2011). Didarlou et al. (2011) reported that attitudes of diabetic patients are associated with their behavioural intention. They showed the higher the patients' beliefs in self-care behaviours, the higher the probability of health-improving behaviour adaption.

Despite medical advancements in cancer treatment and control, it is still one of the most leading causes of mortalities worldwide with no definite treatment. During the advanced stages of cancer, patients experience extreme pains that influence various aspects of their lives. They struggle to cope with the conditions of disease. This stage is demanding and stressful for many patients. Studies on cancer-stricken children revealed that future time perspective (forward-looking) is associated with optimism (Zimbardo & Boyd, 1999). The studies conducted on cancerous disease have implied that screening people with family history of cancer is a significant factor in reducing the cancer-stricken death danger. Diagnosing life threatening disease like cancer has various effects on life quality (Ghadimi et al., 2011).

Some studies indicated that time perspective influences disease preventive behaviours so that forward-looking people demonstrate disease preventive behaviours like cancer screening and maintain higher health level (Anagnostopoulo & Griva, 2011; Fieulaine & Martinez, 2009; Wanger et al., 2010). Furthermore, in

patients with chronic diseases like diabetes, higher negative perception of past is accompanied by higher levels of depression and anxiety (Anagnostopoulo & Griva, 2011). Health-related studies demonstrated that time perspective is effective in disease outbreak by influencing preventive behaviours. On the other hand, time perspective affects a disease's psychological consequences. Therefore, concurrent analysis of time perspective in different groups of patients and healthy individuals can reveal mutual relationship between disease and time perspective. This can clarify possible damages and prevent destructive actions under disease conditions. Diabetes and cancer as the two high prevalent diseases were selected. Of different types of diseases, type 2 diabetes and breast and digestive system cancers were evaluated in this study. The study aims to compare time perspectives between healthy individuals and diabetic and cancerous patients.

Material and methods

This was an Ex-Post Facto type study conducted on 195 patients (108 type 2 diabetes, 64 breast cancer, and 27 digestive system cancer) and 105 healthy subjects. 86% percent of the sample subjects were women and the rest were men. 79.3% of the individuals had a monthly income of less than 700 dollars and the rest had more than 700 dollars. The patients were aged 20 to 70 years, the average age was 45.4 years. The participants were selected from patients referring to the Tooba Specialized Center and Imam Hospital Center from Sari (in Iran) during September 2011 to January 2012. Samples were selected by the convenience sampling method, diseases were selected because of their outbreak age. Sample size was determined according to previous studies (Hatamloy-sadabad, Babapour-karedin, Porsharifi, 2011) and the three groups were matched in terms of age, gender, education, and monthly income. The inclusion and exclusion criteria of the study for the three groups are presented in Table 1. Data were collected through one criterion self-reporting Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999).

Tab. 1. The inclusion and exclusion criteria of the study

Group	Inclusion	Exclusion
diabetes patients	1. at least one-year diagnosis of type 2 diabetes 2. involved in medical therapy 3. conscious inclination and consensus about participating in the research	1. suffering from other types of diabetes 2. use of insulin 3. current experience acute complications associated with diabetes 4. suffering from other chronic maladies
cancer patients	1. at least a six-month diagnosis 2. at least one session of chemotherapy 3. individual's knowledge about his/ her disease 4. conscious inclination and consensus about participating in the research	1. currently undergoing chemotherapy 2. suffering from other chronic diseases
healthy individuals	1. no chronic or acute diseases 2. written consent form	having any kind of disease results

Zimbardo Time Perspective Inventory (ZTPI)

The Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) is a 56-item measure consisting of five subscales, each including 9 to15 items. Participants responded to the items using a 5-point Likert-type scale (1 = very uncharacteristic; 5 = very characteristic). Its developer reported internal consistency estimates for subscale scores based on Cronbach's Alpha coefficients ranging from 0.74 to 0.82. Test–retest reliabilities (over a 4-week period) of the five subscales ranged 0.7 to 0.8.

Results

30.8% of the individuals had academic education. The three groups were matched in terms of age, gender, monthly income, and education. The demographic features of the participants are presented in Table 2. To confirm the groups matching level in age ($F(2, 288) = 2.83$, $p < 0.05$) and monthly income ($F(2, 288) = 1.47$, $p < 0.05$), Fisher's Least Significant Difference (LSD) test was performed. The homogeneity of the education ($\chi^2(10) = 5.48$, $p < 0.05$) and gender ($\chi^2(2) = 5.26$, $p < 0.05$) was evaluated with the Chi squared test.

The results indicate significant homogeneity of the three groups in age, gender, monthly income, and education features. To analyse and compare the differences of various dimensions of time perspective between the three groups, the normality of covariance matrix was first evaluated. The probability level is rejected, as per the Mauchly's test of sphericity to analyse covariance matrix equality, because the probability level of variance equality is less than 0.05 ($\chi^2(9)$, $p < 0.05$, $w = 0.68$). Therefore, time perspective was analysed with the Huynh-Feldt method.

Tab. 2. Overview of demographic characteristics of the participants

	Parameter	Number (%)
Age	20-40	79(26.33)
	41-50	110(36.66)
	51-60	65(21.66)
	>60	39(13)
	Noun character	7(2.33)
Sex	Female	257(85.66)
	Male	42(14)
Education	Illiterate	141(47)
	Junior high school	105(35)
	High school and college	49(16)
	Noun character	5(2)
Subject	Diabetes Mellitus type II	108(36)
	Breast cancer	64(21)
	Digestive system cancer	27(9)
	Healthy individual	105(35)

The results indicated that mean scores of various aspects of time perspective were significantly different so that the group and the counter effect among them is significant (Tab. 3). In other words, healthy, diabetic and cancerous groups had a different mean score in each factor as well as in general. This implies that each of the three groups ranked time perspective factors unequally. This has led to a significant group as well as a significant counter effect. Therefore, the hypothesis based on the existence of differences in groups is accepted.

Tab. 3. Analysis of differences among aspects of time orientation in three groups

	Source	Mean Square	df	Type III Sum of Squares	F	Sig.
Tests of Within-Subjects Effects	Time perspective	12.288	3.401	35. 660	134. 087	.000
	Time perspective and Group	7.622	6.802	1. 120	4. 213	.000
	Error	26.700	972.748	0. 266		
Tests of Between-Subjects Effects	Group	8.039	2	4. 020	9. 149	.000
	Error	125.654	286	0. 439		

In next step, each of the time perspective components in the three groups was compared using Fisher's least significant difference (LSD) test ($p \leq 0.05$). The results showed that in the healthy group, the time perspective dimensions were ranked as follows: a) F, b) PP, c) PN, d) PH, and e) PF. In the diabetic patient group, the order was a) F, b) PP & PN, c) PF, and d) PH. In the cancer patient group, the order was F & PP, PN, PF, and PH. The average and standard deviation of all dimensions are presented in Table 4.

Tab. 4. Comparison of the time perspective subscales using the LSD test in three groups

Fisher least significant difference (LSD) test .p-value											
Source	Healthy(H)		Diabetic(D)		Cancer(C)		Total		H vs D	D vs C	H vs C
	M	SD	M	SD	M	SD	M	SD			
Past-Negative	3.31	.57 c	3.59	.57 b	3.48	.56 b	3.46	.58 c	.001	ns	.043
Past-Positive	3.65	.63 b	3.70	.50 b	3.77	.47 a	3.70	.54 b	ns	ns	ns
Present-Hedonistic	3.05	.43 d	3.09	.46 d	3.06	.43 d	3.07	.44 e	ns	ns	ns
Present-Fatalistic	2.90	.57 e	3.33	.55 c	3.26	.64 c	3.16	.61 d	.000	ns	.000
Future	3.79	.44 a	3.83	.45 a	3.80	.43 a	3.81	.44 a	ns	ns	ns

Discussion

Data analysis revealed a significant difference in time perspective between the three groups. In all three groups, future-oriented time perspective shows the highest priority. It is the focus on future influences of present decision making by the evaluation of optimal reward probability and the real potential of obstacles and challenges (Zimbardo & Boyd, 2008). In addition, the cancerous group ranked the Past-Positive time orientation in first place followed by the forward-looking feature. The other two groups ranked the Past-Positive time orientation as the

second, indicating the existence of time equilibrium among the participants of the cancerous patients. Past-Positive experiences can increase happiness, self-esteem, and are considered a health factor in life with a negative relation with depression and anxiety (Zimbardo & Boyd, 2008; Anagnostopoulo & Griva, 2011; Osin et al., 2009). The studies on cancerous children demonstrated that forward-looking is associated with optimism (Zimbardo & Boyd, 1999). Future goals influence both approach-based and avoidance-based motivation, resulting in various performance levels (Bejornebekk & Gjesme, 2009). Furthermore, this feature influences health orientation through promoting the patient life quality (Gao, 2011). Men have the potentials to take steps by creating a symbol of positive past to have effects on optimal future (Leboric, 2010). Thorne et al. (2009) concluded that time is a symbolic and meaningful structure for patients, as well as a major factor in shaping cancer-related psychological experiences. In supporting this conclusion, it seems high scores of the positive past and future orientations in cancerous patients improve life quality, enabling them to create novel meaning in life. In the Past-Negative dimension, diabetic and cancerous patients showed a higher score compared with the healthy individuals. The diabetic group had the highest score. This finding is inconsistent with the studies indicating the association of negative perception of the past with high levels of depression and anxiety (Anagnostopoulo & Griva, 2011). It seems that ruminating over past negative memories (realistic or fancy) activates negative emotions that are related to hope in life, life style, low-spirits and despair in incurable patients (Bitsko, Stern, Dillon, Russell & Clifton, 2008; van Laarhoven, Schilderman, Verhagen, Vissers, Prins, 2011). In the Present-Fatalistic time dimension, the two patient groups showed different scores than the healthy group. The healthy individuals revealed the lowest score followed by the cancer patients and diabetics. Individuals with a fatalistic attitude believed that the future is pre-destined, thus individual measures cannot change them and they have to accept their destiny. Previous studies have indicated that Present-Fatalistic is negatively related with self-confidence, joy and attention to action consequence (Anagnostopoulo & Griva, 2011; Zimbardo & Boyd, 1999). This orientation negatively correlated with social acceptance and social participation (Zambianchi & Bitti, 2008). Diabetes has no definite treatment and the affected patients have to apply some control over their lifestyle (diet, medication etc.). Therefore, these patients probably adopt fatalistic temporal orientation. As chronic diseases have their own special physiological features, there are common conditions among these patients like pain, exhaustion, as well as behavioural responses, such as depression, anxiety, fear, and decreased attention (Hatamloy-sadabad, Babapour-karedin, Porsharifi, 2011). Therefore, tolerating everlasting pain and suffering has probably led to this orientation. Paying attention to repairing time orientation in these patients is of significant importance.

This study was conducted on type 2 diabetes and breast and digestive system cancers. Generalizing the results to the other diseases should be done carefully. The samples were selected from individuals referred to public centers; research on individuals referred to private centers seems necessary. It is proposed that future

studies focus on the interaction between temporal orientation, disease acceptance and health-oriented behaviours.

Conclusions

Our findings revealed that patients have a different time perspective compared with healthy people. Therefore, it can be concluded that disease can influence the adopting of different time orientations. Furthermore, the difference observed between the two patient groups implies the importance of the disease type on modulating time perspective. In conclusion, health and treatment programs can reduce individual vulnerability in tough conditions by concentrating on how time perspective is shaped in various groups of the society.

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Changes in Time Perspectives Resulting from Psychotherapy

Abstract

Constructed for clinical use and based on the concept of the feedback and feedforward systems in "cybernetic-psychology," the Time Perspective Scale (TPS) was administered to three clients in order to assess the effects of psychotherapy. Two clients were withdrawn, suffering from a condition known as *hikikomori* in Japan; the other client was diagnosed with PTSD after suffering a major personal loss as a result of the Eastern Japan earthquake and tsunami in 2011. The TPS was administered at pre-, mid-, and post-interventions. In addition, the Hildreth Feeling-Attitude Scale (F-A Scale) and the Kumamoto University Competence Scale (KUCS) were also administered to compare the results of the TPS. Results from the TPS indicated that at the end of the intervention, clients' thoughts were positively focused on the present and the future. In comparison to their negative thoughts concerning the present and the future during the pre-intervention period, two clients displayed positive feedback regarding the past, and all clients displayed positive thoughts about the present as well as positive feedforward thoughts for the future. Similar to the TPS, the F-A Scale and the KUCS indicated that the clients had more positive and more constructive cognitions after the intervention. Therefore, the TPS is a useful questionnaire for assessing the therapeutic efficacy of the time perspective.

Keywords: Time Perspective Scale, memory therapy, *hikikomori*, competence

Zmiany perspektyw postrzegania czasu jako skutek psychoterapii

Streszczenie

Opracowana w celu zastosowania klinicznego i oparta na konstruktach systemów sprzężenia zwrotnego i feedforward w psychologii cybernetycznej Skala Perspektywy Postrzegania Czasu (TPS) zastosowana została w przypadku trzech klientów w celu oceny skutków ich psychoterapii. Dwaj klienci byli wycofani, cierpieli na schorzenie zwane w Japonii *hikikomori*; u innego klienta zdiagnozowano PTSD po stracie osobistej w wyniku wielkanocnego trzęsienia ziemi i tsunami w Japonii w 2011 r. Skala Perspektywy Postrzegania Czasu (TPS) została zastosowana przed, w trakcie oraz po psychoterapeutycznych interwencjach. Zastosowano

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także Skalę Uczuć i Postaw Hildretha (F-A Scale) oraz Skalę Kompetencji opracowaną na Uniwersytecie Kumamoto (KUCS). Wyniki uzyskane w Skali Perspektywy Postrzegania Czasu wykazały, że pod koniec terapii myśli klientów były pozytywnie skupione na teraźniejszości i przyszłości. W porównaniu z negatywnymi myślami dotyczącymi teraźniejszości i przyszłości w okresie poprzedzającym terapię, u dwóch klientów pojawiła się pozytywna informacja zwrotna dotycząca przeszłości, a wszyscy klienci wykazywali pozytywne myśli dotyczące teraźniejszości oraz pozytywne myśli wyprzedzające w stosunku do przyszłości. Podobnie jak w odniesieniu do TPS, skale F-A i KUCS wykazały u klientów po interwencji terapeutycznej wzrost nastawień o charakterze pozytywnym i konstruktywnym. Skala TPS okazuje się zatem narzędziem przydatnym do ceny terapeutycznej skuteczności zmiany perspektywy postrzegania czasu.

Słowa kluczowe: Kwestionariusz Postrzegania Czasu, terapia pamięci, *hikikomori*, kompetencje

Introduction

The concept of time perspective

In order to apply the concept of time perspective to clinical use, Katsumata (1995a) proposed the concepts of past time perspective (including feedback), present time perspective, and future time perspective (including feedforward). Details regarding the time perspective are displayed in Table 1. Katsumata (1995a) also graphically represented the time perspective using the ribbon model, which is shown in Figure 1. The terms of feedback and feedforward in "cybernetic-psychology" were adopted to explain the ribbon model of the time perspective. In this paper, negative feedback is a reduction of the error signal to zero (like a thermostat) or as a negative perception of the result. Positive feedback is regarded as a positive reception of the result, even if the result is negative or an error. Positive feedforward includes individuals' cognitions regarding their positive pre-estimations of future goals and events. On the other hand, negative feedforward are cognitions in which individuals make negative or restrictive pre-estimations of the future. Time perspective is defined as the totality of individuals', groups', and/or society's views of the past, present, and future.

Tab. 1. The concept of time perspective

Dimension	Time perspective	Control system
past	Past time perspective	feedback (negative & positive)
present	Present time perspective	
future	Future time perspective	feedforward (negative & positive)

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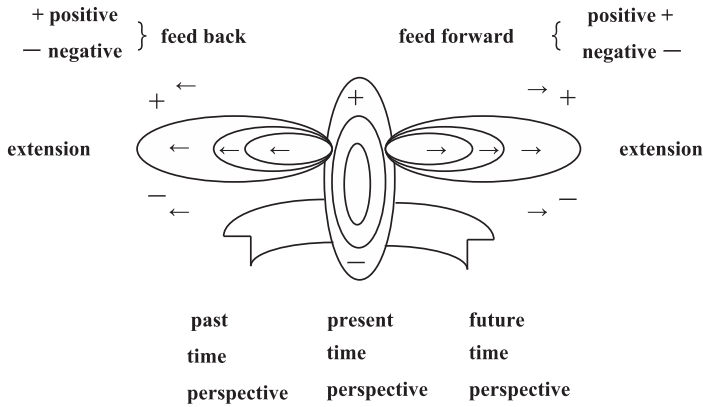Junko Watanabe & Teruchika Katsumata

Fig. 1. Ribbon Model of Time Perspective (Katsumata,1995a)

Model of adaptive and maladaptive time perspective

Lens and Moreas (1994) conceptualized differences in our temporal orientations. Past-oriented people relive traumatic or rewarding past events. In contrast, recent-oriented people are completely absorbed in the present, and do not think much about the past and the future. Such individuals do not learn from previous experiences, nor do they take into account the consequences of their behaviours. The final type is exclusively future-oriented people, who forget to enjoy the present because everything they do is in preparation for the future. Generally, it is healthier to perceive and experience continuity among one's past, present, and future. Such thinking provides temporal integration or time competence. The past and future are integrated within the present as the past (as a positive or negative example) and that is directed towards the future.

Katsumata (2007) proposed a model of adaptive and maladaptive time perspectives. The adaptive model includes two features. The first feature is that time perspective is in the process of being integrated with appropriate boundaries between each time dimension. The second feature suggests that positive feedback control concerning the past, positive views of the present, and positive feedforward control (including goal setting, expectation, and hope) are linked. The maladaptive model also has two features. The first feature is that all time dimensions are not integrated. In this case, the mode of time perspective is negative feedback dominance of the past time perspective, and negative feedforward in future time perspective. Therefore, time is stagnant, and individuals may perceive it as unchangeable, resulting in depression and suicidal behaviours. The second feature is when the time perspective is restricted to the present only, without a feedback system from the past and a feedforward system regarding the future. In this case, individuals will engage in maladaptive behaviours, such as asocial or antisocial behaviours. Juvenile delinquents are likely to be present-oriented.

Katsumata (1973) developed the Time Perspective Test for clinical use. Clients list up to twenty-five events within the last two weeks, which include thinking or talking to other people. Although the interview provides a wealth of information, listing so many events is time consuming, resulting in the fact that the interview takes an hour and a half to complete. In 2000, Katsumata also developed the Time Perspective Scale (TPS) as an alternative to the Time Perspective Test. The TPS consists of fifteen items based on Katsumata's (1995a) ribbon model. This scale uses a 5-point Likert scale (1 = very uncharacteristic; 5 = very characteristic), and assesses whether the client's time perspective is positive (more than 3 points) or negative (less than 3 points). To interpret the TPS, the concepts of feedback regarding the past, and feedforward concerning the future are applied. These concepts are based on the theory of "cybernetic-psychology" (Toyoshima, 1993).

Tab. 2. Question Items and Time Perspective in the TPS by Sakuma

Question No.	Question items	Posi./ Nega.
Past Time Perspective		
01	In the past, I had many unpleasant experiences.	-FB
04	Bad experiences in the past are influencing my life at present.	-FB
07	Bad experiences in the past teach us a lot.	+FB
10	I understand my past bad experiences in a positive light.	+FB
13	In the past, I expected everything to work out.	+FB
Present Time Perspective		
02	Currently I have many unpleasant experiences.	-Cog
05	Currently I have few pleasant experiences.	-Cog
08	Currently I have many pleasant experiences.	+Cog
14	I am satisfied with my life right now.	+Cog
11	Now I am enjoying a full life.	+Cog
Future Time Perspective		
03	When I set goals or make plans, I often become apathetic because I feel anxious.	-FF
06	Whenever I think about my future, it makes me feel unpleasant.	-FF
09	When I try to do something, I always make concrete goals and plans.	+FF
12	Even if there is some possibility of failure, I expect to be successful in the future.	+FF
15	If things do not go as expected or as planned, I think we only need to change direction.	+FF
Time Dominancy		
16	Usually I am thinking and concerned about my past.	Past
17	Usually I rarely think about my past or my future.	Present
18	Usually I like looking forward to my future.	Future

Note: – (Negative), + (Positive), FB (Feedback), FF (Feedforward), Cog (Cognition)

The purpose of this study

The purpose of this study is to confirm the effectiveness of three different therapies from a time perspective point of view by using the TPS.

Methods

Participants

Client A was an unmarried, unemployed 43-year-old man, who holds a master's degree in art and design. He described himself as "not good at speaking with others." Before being unemployed, Client A worked as a newspaper deliveryman and a part-time factory worker for several years. During the past 16 years, he has often experienced severe anxiety around people. He received treatment for anxiety at the medical hospital for eight years, but he has discontinued treatment because he believes that the psychotropic drugs were not effective. Recently, Client A experienced severe anxiety about a female co-worker, resulting in quitting his job as a factory worker. He believes that his condition is getting worse. Client A was referred to our office by his pet's veterinarian, who recommended that Client A should meet with a psychological counsellor.

Client B was a 20-year-old high school graduate, living with his father (age 58), mother (age 49) and brother (age 18). According to his father, Client B is interested in video games more than his studies. His lack of interest in studies became greater after his high school graduation. Over the last few years, he has been staying at home, not working or going to school, which resulted in his mother taking him to a public consultation room operated by the city. Although Client B saw the counsellor, he did not answer any questions and refused to go back. One year later, he came to our counselling office with his father. He explained that he had no plans or ideas for his studies and was confused concerning his life goals. Furthermore, he also reported that he had sleep difficulties, such as waking up in the middle of the night, sleeping during the day, and frequently using the restroom on tense days.

Clients A and B were diagnosed with *hikikomori*. *Hikikomori* is a Japanese term which refers to the phenomenon of adolescents or the middle-aged who withdraw from social life. The Ministry of Health, Labour, and Welfare, Japan (2012) defines *hikikomori* as people who refuse to leave their homes, and as those who isolate themselves from society for a period exceeding six months. *Hikikomori* is a new social problem emerging in Japan. Hattori (2013) conceptualized *hikikomori* as the following:

> By the beginning of 2000, this syndrome had spread at almost epidemic proportions. Psychiatrist Tamaki Saito, who coined the term, estimated that there may be over one million cases of hikikomoris, which is about 1% of Japan's total population. In 2010, the government stated that over 1.5 million people suffer from symptoms of this syndrome.
>
> Hikikomori is believed to be the result of an absence of maternal bonding and insecure attachment. When the mother rejects her child, the child responds by splitting into two selves. One self conforms to the mother in order to avoid further abandonment, whereas the other self hides the child's true identity for emotional survival. The syndrome is characterized by individuals craving their mothers' love, being tormented by the ghost of their mother, and as having chronic fear, and distrust of people.

The focus on the relationship between a mother and her child may be the result of typical Japanese parents who are generally passive and use a soft approach with their children. Grubb (2013) explained that, "If my child was inside that door and I didn't see him, I'd knock the door down and walk in. Simple. But in Japan, everybody says give it time, it's a phase or he'll grow out of it."

According to a survey taken by individuals from 15 to 19 years of age by Cabinet Office (2010), the number of individuals with *hikikomori* in Japan is estimated to be about 696.000. Various organizations, including the public employment service, *HellowWor*k, assist *hikikomori* individuals with finding employment (Ministry of Health, 2012). Despite the availability of employment services, there are many people with *hikikomori* who are unable to find employment. These organizations are a secondary step for helping such people, whereas individual therapy should be the first step. Therefore, individuals with *hikikomori* should receive therapy in an effort to help them form, direct, and pursue their goals.

Client C, a 60-year-old Japanese female, attended therapy after the loss of ten relatives in an earthquake and tsunami which struck eastern Japan in 2011. She reported that she is unable to stop crying each night before going to bed. Client C was diagnosed with PTSD.

Measures

The Time Perspective Scale (the TPS; Katsumata, 2000), the Hildreth Feeling-Attitude Scale (the F-A Scale; Hildreth, 1946), and the Kumamoto University Competence Scale (the KUCS; Katsumata & Shinohara, 2000; Katsumata, 2005) were used to assess clients' progress during and after therapy. The TPS assesses whether the client's time perspective is positive or negative in the past, the present, and the future. The KUCS investigates a client's ability to deal with the environment. The KUCS consists of 35 items including five competence factors (i.e. cognitive competence, physical competence, social competence, survival competence, general self-esteem competence). Higher scores indicate relatively constructive competencies, whereas lower scores suggest that some dysfunctions may be included. The F-A Scale is used to evaluate the current psychological condition of the client. This scale consists of eight items including those that assess feelings, mental activities, future perspectives, mental state, attitude towards work, and attitudes towards other people. Higher scores indicate a more positive state of mind.

Sessions for Client A were conducted using Ivey's micro-counselling method (Ivey, Ivey & Zalaquett, 2010). Therapy consisted of five stages, including relationship, story and strength, goals, re-story, and action. In the process of this five-stage interview, the client clarified goals and thoughts with the therapist.

It was estimated that Client B's withdrawal was caused by some dysfunctional competence. Memory therapy (Katsumata, 1993; 1994) was used as a catalyst for activating his contracted competences. The therapist assisted and promoted the client's competences through memory training using mnemonic strategies.

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There are various mnemonic strategies such as the link system, the peg system, the phonetic translation system, the loci system, the first letter mnemonics, the SQ3R method (Survey, Question, Read, Recite/Write, Review), the PORST method (Preview, Question, Read, State, Test), and so on. The link system is the most basic mnemonic strategy (Katsumata, 1995b). While proactive linking from a stimulus item to a response item indicates the client's prospective, facilitating, active, and released behavioural traits, retroactive linking from a response item to a stimulus item indicates their regressive, stagnant, passive, closed, and persecute behavioural traits. We used the four rules proposed by Lorayne and Rucus (1974) to help the trainees form effective visual images, which thereby enabled the clients to extend and activate their reduced tendencies. Katsumata used memory therapy, and experienced that such therapy was effective for treating clients who presented with school refusal, selective mutism, stuttering, tics, depression, enuresis, psychogenic stomach ulcers, irritable bowel syndrome, psychogenic convulsions, juvenile delinquency, and underachievement. Once a week, 45 minute memory therapy sessions were performed, with memory training using the link system. The objectives of the sessions were to assist Client B in developing clearer goals for the present and the future, making him ready to continue his studies and promote changes in his life.

Client C received Zen-Counselling. The original purpose of Zen-Counselling is spiritual enlightenment. This type of counselling helps an individual make a direct experience of his/her true nature. The therapist provides suggestions based on the spirit of Zen to the client. In every session, the therapist told Client C to think about the past with a positive outlook, while suggesting that the client realize the doctrines of Buddhism. The client was asked to understand that past events and other people are unchangeable, and that *shou-rou-byou-shi* (i.e. birth, ageing, illness, and death) are inevitable for everyone. The therapist recommended the *arugamama* (as it is) state for Client C. The client was filled with positive feedback and positive feedforward thoughts.

Results

Client A

The client stated in the middle of the therapy: "I can now clarify my real desires. Writing novels will give me a feeling of satisfaction and accomplishment. That would be a real reason for living. When I am writing a novel, I feel relaxed and I do not get worried about relationships with other people as much as I did before." The client decided on a goal and tried to achieve it by attempting to publish his writing in a magazine. Moreover, he talked to the therapist about volunteering in his community by cleaning the walkways to a shrine. His social competence of social interchange was enhanced.

TPS. This questionnaire utilized a 5-point Likert scale, and consisted of eighteen items. The mid-point of 2.5 was used to determine positive (i.e. 2.5 or higher) or negative states (i.e. lower than 2.5). The mean scores of the client's past perspectives

were assessed at the pre- and mid-interventions, revealing that the client had negative states. However, Client A's emotions became more positive during the post-intervention. In addition, the client's scores on the TPS for his present and future perspectives also became more positive during the post-intervention.
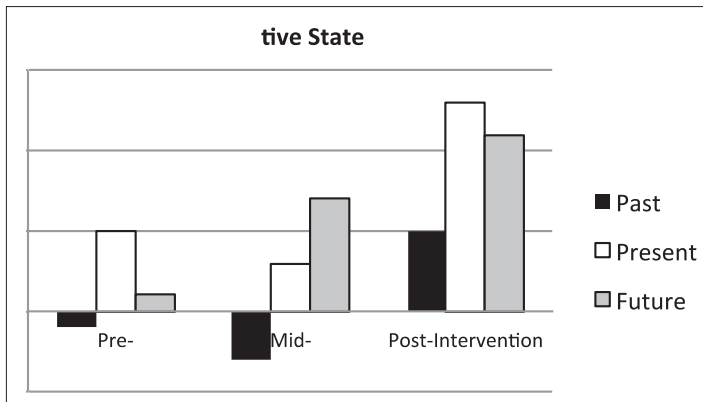

Fig. 2. The TPS for Client A

F-A Scale. The client's feeling and attitude mean scores showed an increasingly positive trend as well. His responses to two items: "I am irritated by most people" and "I always get angry with everyone" changed during the post-intervention stage to "I am unconcerned with most people" and "When I like the person, I have relationship with him/her. And if I dislike the person, I have no relationship with him/her".
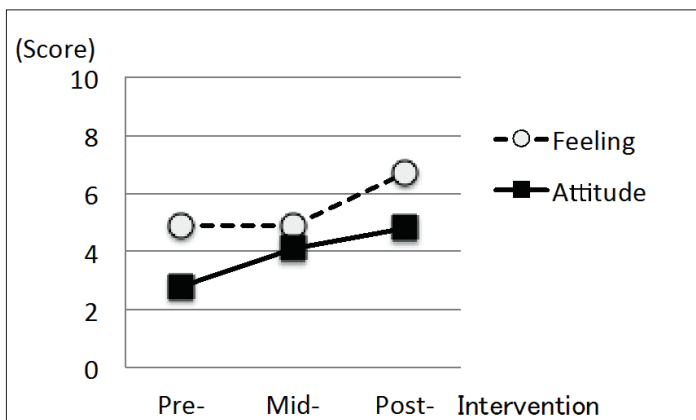
Fig. 3. The F-A Scale for Client A

KUCS. Figure 4 shows the result of the KUCS at each intervention. Although his social competence scores were low at each intervention interval, his score for general self-esteem competence increased gradually from the pre-intervention ($M = 1.7$) to the mid-intervention ($M = 2.4$), as well as from the mid-intervention

to the post-intervention (M = 2.9). There were considerable changes in Client A's responses to the emotional stability and being needed by others items.

At the follow-up stage, conducted one year after post-intervention, the KUCS was administered. Competences were nearly identical to the post-intervention stage. Specifically, cognitive, survival and general self-esteem competences were positive.
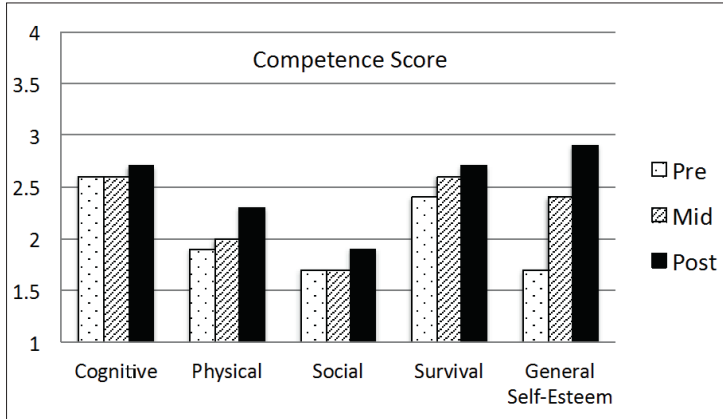

Fig. 4. The KUCS for Client A

Client B

He reported that he experienced the memory training as fun. After the memory therapy, he decided to take a university entrance exam, and to study both mathematics and English. He also went to a coming-of-age ceremony, and reconnected with friends that he had not seen in two years. They all play table tennis every week.

TPS. The TPS score for Client B at the pre-intervention stage was negative for the past (see Fig. 5). At the mid- and post-interventions, this score changed to positive. The scores for the present were positive across each intervention, gradually increasing by the post-intervention.
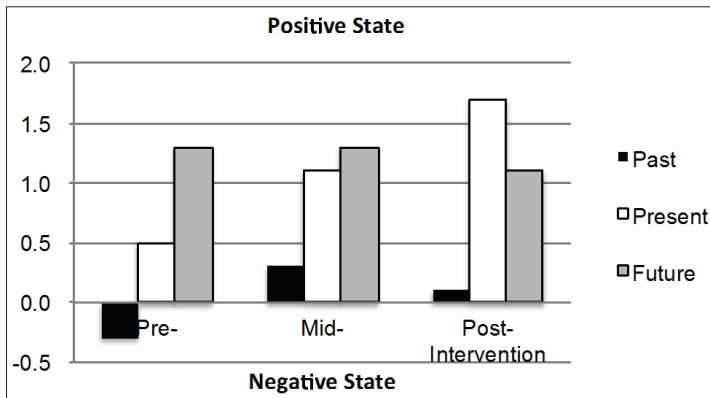

Fig. 5. The TPS for Client B

F-A Scale. At the intake interview, the mean scores of feelings and attitudes were both low and each were under the mid-point of 5 (see Fig. 6). Mean attitude scores rose at the mid- and post-interventions, but they were still under the mid-point. In addition, mean feeling scores were above the mid-point at the mid- and post-interventions.
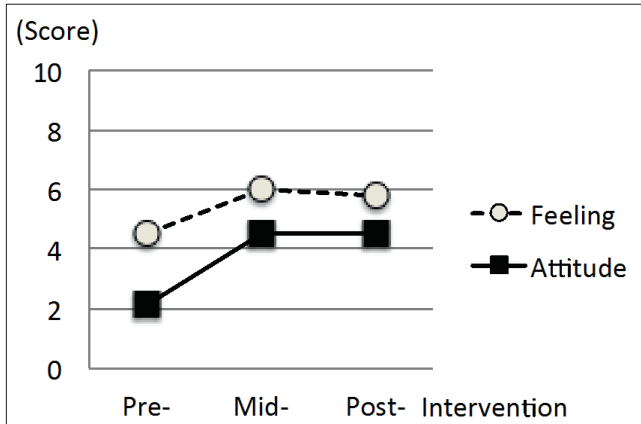

Fig. 6. The F-A Scale for Client B

KUCS. The client did not recognize his own changes in competences in the middle of therapy. However, by the end of therapy, he felt the enhancement of survival competence and general self-esteem competence (see Fig. 7). Client B's mother filled out the KUCS regarding her son. She also reported that he had increases in the survival and the general self-esteem competences.
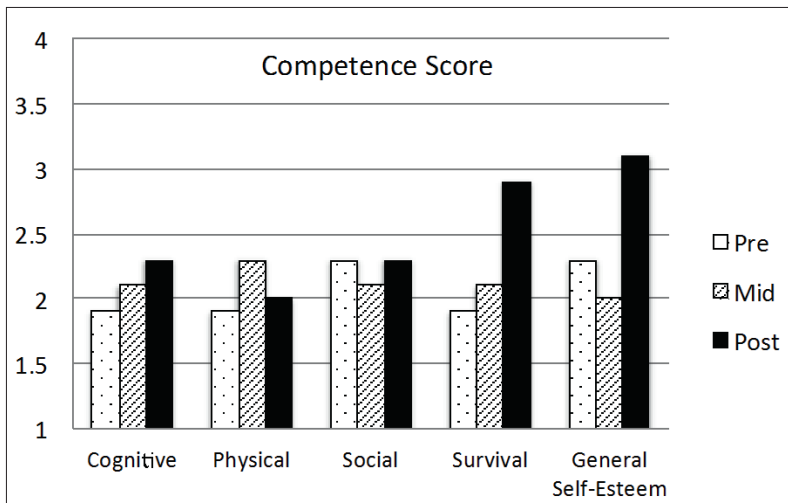

Fig. 7. The KUCS for Client B

Client C

Zen-Counselling changed Client C's negative cognitions for the past to positive ones. By accepting some Buddhist doctrines, she gradually began to think about the good memories of the past and the gratitude she felt toward her relatives. She did not express grief, but instead thanks toward her relatives.

TPS. Soon after the earthquake, the TPS scores of Client C were "slightly positive" for the past, and "negative" for the present and the future. After therapy, these scores became "extremely positive" for the past, and "positive" for the present and the future (see Fig. 8).
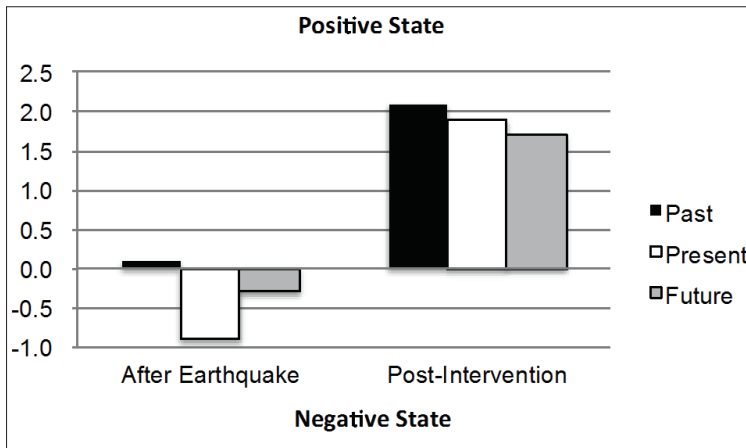

Fig. 8. The TPS for Client C

F-A Scale and KUCS. At the end of therapy, the scores measured by the F-A Scale (see Fig. 9) and the KUCS (see Fig. 10) had increased to more positive and more constructive states.
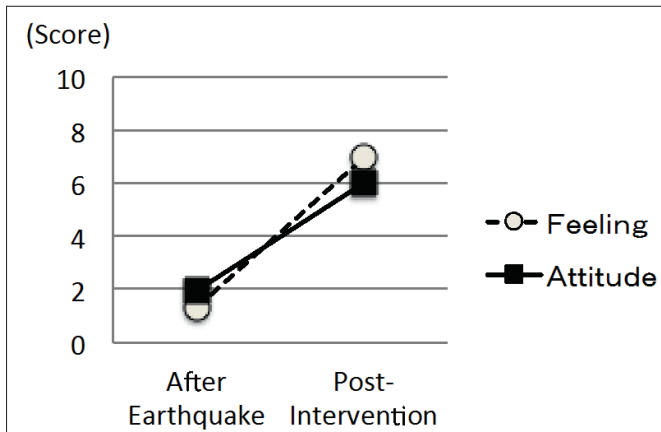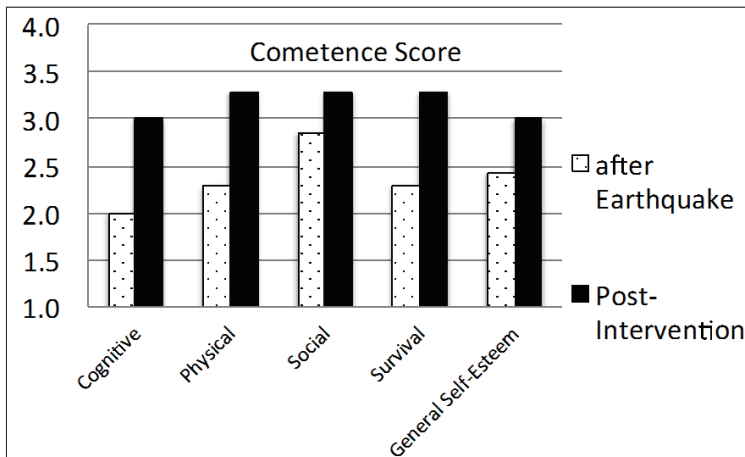

Fig. 9. The F-A Scale for Client C

Fig. 10. The KUCS for Client C

Discussion

In this paper, the TPS was administered to three clients, along with the KUCS and the F-A Scale. In addition, the three clients received different therapeutic approaches, including the five-stage interview, memory therapy, and Zen-Counselling.

The TPS scores for the past perspectives of Clients A and B changed, reflecting a renewed focus on the present. At the post-intervention interval, both Client A and B clarified their present goals. At the end of therapy, their scores on the F-A Scale showed a positive mental state. From the KUCS, their general self-esteem competences were especially enhanced, which may be due to positive changes in their time perspectives. Client C lost many of her relatives in a major earthquake and its aftermath. Her time perspective was strongly influenced by her present negative cognitions. One year after her loss, she underwent Zen-Counselling, and began to report positive perspectives as a result of the therapy. Furthermore, her past perspective became extremely positive. She was able to engage in meaningful mourning because of her focus on positive feedback through the "*arugamama*" state. The higher scores of the KUCS and the F-A Scale support the effectiveness of the therapy, especially the general self-esteem competence, which consists of the three As (i.e. affection, acceptance, approval) of emotional stability and self-confidence.

All clients made changes in their time perspectives, which brought about positive changes in their future time perspectives. The TPS was useful for assessing clients' feedback and feedforward thinking, which contributed to their adaptation for life. We recommend that the TPS be utilized in future research focused on the time perspective.

Conclusions

It is important for therapists to assess the time perspective of clients as many clients may have a maladaptive time perspective. The TPS provides valuable information to the therapeutic process regarding the client's positive and negative feedback about the past, their positive and negative cognitions about the present, and their positive and negative feedforward thoughts concerning the future. We conclude that the TPS is useful for assessing the therapeutic efficacy of the time perspective.

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"In Eighty Stories Around the Human Life". The Psychological Time Binding Strategies in the (auto)BIOGRAPHICAL Narrative GAME

Abstract

The theoretical construct of balanced time perspective provides a valuable context for the process of searching the possibilities of its psychological applications. The possibilities could be connected not only with the therapeutic, but also with the preventive and educational fields of psychology. Some of the tools for achieving a balanced time perspective belong to existentially-oriented narrative psychology. This article presents one of them, created by myself, a narrative psychological tool for supporting adult development, which is titled *Eighty Stories around the Human Life. The (auto)BIOGRAPHICAL Narrative GAME*. This method is composed of such elements as a box of 100 coloured copyright playing cards with a dice, *The Book of Stories*, *The Manual* with exercises, and *The Hypertextual Life-Story Map*. All these interconnected game parts had been prepared for the purpose of supporting the receivers' ("players'") decisions about the content and sequence of an auto-narrative reconstruction of their lives. One of the most important strategies behind organizing this process during (and through) the game, is to practice and improve cognitive-emotional skills of recognizing, enriching, and harmonizing different time perspectives. The deliberate binding of *the daily time* context of actual experience with the past and future dimension of biographical *time of life,* connected with the transcendent perspective of *life itself,* leads the players to construct rich, multidimensional, and personally meaningful life story accounts. Selected important psychological functions of such a beneficial story construction and narrative abilities are described. The article is illustrated by presenting selected "game card exercises" proposed as the "narrative stimuli" for examining human lives in the time perspective context. From this point of view, *the psychology of time* meets the *narrative psychology* in the potentially meaningful cooperation, leading to the relatively new field of "applied psychology of time".

Keywords: time perspective, time binding strategies, supporting adult development, narrative psychology, applied psychology

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Harmonizowanie wzorców doświadczania czasu w narracyjnej grze (auto)BIOGRAFICZNEJ „W osiemdziesiąt historii dookoła życia"

Streszczenie

Artykuł prezentuje autorskie narzędzie wspomagania rozwoju człowieka dorosłego zatytułowane „*W osiemdziesiąt historii do-o-KOŁA ŻYCIA*. Narracyjna GRA (auto)BIOGRAFICZNA". Narzędzie to skonstruowane zostało w celu udzielania pomocy w procesie takiej rekonstrukcji indywidualnych narracji autobiograficznych odbiorców, które wzmacniają osiąganie tzw. zrównoważonej perspektywy czasowej. Indywidualne decyzje „graczy", dotyczące zawartości treściowej oraz sekwencji procesu autonarracyjnej rekonstrukcji biografii, wspierane są przez dostarczanie tzw. bodźców narracyjnych przyjmujących postać zebranych w *Księdze Opowieści* fabularnych narracji-historii oraz opisanych w *Przewodniku metodycznym* zadań--ćwiczeń do wykonania. Intencjonalne „wiązanie" aktualnie doświadczanego *czasu codzienności* z przeszłym i przyszłym wymiarem biograficznego *czasu życia* wzbogacone zostaje o transcendentną perspektywę uniwersalnie ujmowanego *życia ludzkiego*, w czym pomocna może się okazać tzw. *Hipertekstowa Mapa Opowieści o Życiu*. Uruchamianie szerszego kontekstu biograficznego, z jednoczesnym doskonaleniem umiejętności plastycznego przemieszczania się pomiędzy poszczególnymi wymiarami czasowymi w założeniu intensyfikuje bogactwo i wielowymiarowość konstruowanych o życiu opowieści, czyniąc je zarazem dla odbiorców osobiście znaczącymi. Artykuł został zilustrowany wybranymi, wchodzącymi w skład gry, ćwiczeniami stanowiącymi propozycję konkretnych oddziaływań pomocnych w zgłębianiu indywidualnych biografii w perspektywie temporalnej. W tym obszarze zakres zainteresowań i potencjalnych oddziaływań *psychologii czasu* zbliża się do *psychologii narracyjnej* oraz *psychologii egzystencjalnej*, wskazując na potencjalną możliwość współpracy w ramach relatywnie nowego obszaru „stosowanej psychologii czasu".

Słowa kluczowe: perspektywa temporalna, strategie „wiązania czasu", wspieranie rozwoju człowieka dorosłego, psychologia narracyjna, psychologia stosowana

Introduction

The necessity of taking into consideration the way of experiencing and making use of time by a patient/client appears in a psychologist-practitioner's field of activity either in circumstances of already existing disturbances, when they require therapy (e.g. in the way of *time line therapy* – James, Woodsmall, 1988; O'Connor, Seymour, 1990; 1996), or as an aim of deepened education, achieved by allowing for the so-called *time ecology* (Sztumski, 2010). While the off-therapeutic option already has diverse solutions in the scope of daily life time management (hierarchy of goals, setting priorities for undertaken activities etc.), the need of taking into account in everyday practice a broader perspective of "the time of life" (not "time management" but rather "managing self in time") still needs multiple improvements (Covey, 1989).

The task of providing an effective work tool to a psychologist, an educator, or a group trainer focused on supporting personal development, or directly to interested adults searching for self-analysis and the restructure of individual experience allowing for "the time of life", is set by an author's method of a narrative. The autobiographical game *In Eighty Stories around the Human Life* is the subject of

interest within this article. In line with varied, interdisciplinary theoretical context close, among other things, to the phenomenological-personalistic, existential and narrative trends in modern psychology, it is aimed at the achievement of multifaceted and mutually interrelated pro-developmental targets of a *narrative prevention of existential problems* nature (Tokarska, 2002b; 2009; 2010a; 2011a).

The title issue of time experiencing patterns is one of the main constructional keystones of the whole presented method, as well as one of many crucial thematic plots raised within it. The time dimension is present in many card games in a direct way (like in the card game number 68, titled "TIME") or creates the context of other important human existence issues recalled and elaborated within the game.

Time in psychological considerations and applications

Psychological considerations most often allow for three basic dimensions of human time experiencing – defined as "body time", "mental time" and the so-called "existential time" (Tucholska, 2007; Nosal, 2010). Referring to bio-psychological establishments, the interest in *body time* is centred around experiencing cyclicity and rhythmicity ("inner rhythms") and the strategies of subjective time estimation (so-called "inner clocks" of biological nature). In *mental time* researchers study the human experience of time duration and passage, the subjective feeling of event continuity and temporal segmentation within attention, perception, memory, speech as well as movements control. The field of their interests also involves, among others, the reconstruction of human life experiences, coding patterns in a spatial way (so-called strategies "*in time*" and "*through time*" – James, 1989), and the consequences of linear time experiencing by man functioning within the culture of the West (Sztumski, 2008).

The subject of particular interest within the presented method of the narrative autobiographical game, remains *existential time*; the experience of the phase character, and a "finiteness" of time in the life cycle, simultaneous experience of the respective time dimensions, particularly the human-specific tendency to "bind" (*time binding*) into personally meaningful entirety. Specificity of human existence in time is both defined by pursuing integrity of the past, the present and the future, as well as by the ability to overcome what is given to him in direct experience (Kinget, 1975). The cognitive-existential fact that man is not a simple sum of life experiences, but has been equipped with the skill to process them constantly and distance himself in his awareness (restructuring past experiences and planning the future), is used as a basic interaction mechanism in all varieties of therapy. Language is treated here as a fundamental tool – "time architect" (Fraser, 1987) – preserving the consciousness of limited frames of individual life. It enables the spread of the temporal horizon, not only beyond "here and now", but also over the period "before birth" and "after death", including inner temporal dialogues about "Me – at the time flow" (Sobol-Kwapińska, Oleś, 2010). The diversity of human orientation towards particular time dimensions expresses itself, among others, in a dissimilar *attitude* towards one's

own past/present/future and in the richness of content of cognitive representation (so-called *content saturation*), depth of retrospective and prospective in time, and separation strategies of the whole time continuum (*scope*). It also expresses itself in a diverse level of *consistency* – the proportion between what in an individual's opinion has happened in his life and what can still happen in the future (Nawrat, 1981; Sobol-Kwapińska, 2007).

Most researchers of human time experiencing in the existential dimension emphasize the relation of openness to all temporal dimensions and capabilities to optimally (not necessarily proportionally) balance references to particular time dimensions with the optimal development of an individual, and even with his mental health. Zimbardo and Boyd (1999, 2008), Boniwell and Zimbardo (2004) apply the concept of "optimally balanced temporal perspective" (*optimally balanced TP*) in this scope, defined as an ability to move smoothly and flexibly among diverse time perspectives, depending on the need following from a given task situation, situation circumstances and personal resources. In a specific situation, fixation on a definite time dimension, unrelated to others, is considered by them as non-adaptive. These authors attribute an extremely vital pro-developmental role to the ability of harmonizing particular time dimensions – simply taking the position that it is one of the conditions of complete realization of human potential (cf. Popiołek, Chudzicka-Czupała, 2010; Śleszyński, 1998). Edwards (2002) also proposes a thesis that temporal balance (*time balance*) enables man to maintain continuity in change and development processes. Thomae (1981) indicates a close relation between reaching a dynamic balance within orientation at particular time dimensions and finding the sense of life. Shostrom (1972) recognizes dimension: *time competence/time incompetence* (apart from *internal/external locus of control*) as important indicators of adequate functioning of an individual. Hulbert and Lens (1988) additionally stress a close relation between the possibility of effective use of all time dimensions of one's own biography and having proper access to them, the possibility to freely "move" among them – without feeling the pressure or tension of any of them. Supporting (stimulating and enriching) such cognitive-emotional access to particular time areas of one's own biography and the abilities of their personally meaningful integration, is one of key goals set for the presented method. These areas are described not only as the past, present and future, but are reached by the more extended context of the transcendent dimension of time flow (Zimbardo & Boyd, 2008) named previously by Keen and Valley-Fox (1989) as "cosmic time". Freedom from denial or memory rejection mechanisms of the past, conscious and complete participation in the present, trust and active anticipation of the future, and consideration of a broader context and review of particular experiences are considered crucial elements of the *time perspective* approach (Tokarska, 2010b). Such an attitude supports searching for the "complete and rich theoretical picture" of the subject, guarded that no loss of important elements will occur while using the time dimension in the applicative psychological enterprises. All those capabilities and psychological skills facilitate the final process of meaningful integration of

all the "time rooted plots" into individual *life stories*. Searching for the sense of continuity, distinction and coherence of one's own story and constructing the identity of oneself as a "co-author and character", simultaneously are usual ways of work within the narrative approach in psychology. We could say that in this field *the psychology of time* meets the existentially-oriented *narrative psychology* in the potentially meaningful cooperation, leading to a relatively new field of "the applied psychology of time".

Tab. 1. Adaptive vs. dis-adaptive capabilities and selected pro-developmental goals in the context of time perspective (the modified version of Tokarska, 2010b)

time dimension	area of mental functioning	adaptive or dis-adaptive capabilities and psychological skills	selected goals and pro-developmental tasks
past "You are trapped in the life that you decided to remember" (S. Musgrave)	**memory** cognitive-emotional access to one's own past which is free from denial or rejection mechanisms	**acceptance versus negation** feeling guilty or blaming people and external circumstances	→ activation of gratitude; making use of one's own experiences; forgiving oneself and other processes
present "Life is not a company to manage, but a mystery to contemplate" (G. Burkhard)	**conscious participation** access to the present and complete participation in it	**utilization versus dissipate** feeling guilty of "wasting time" understood as: thoughtlessness leading to the loss of crucial plots of biography and/or lack of activity effect or the loss of energy and the feeling of sense as a derivative of life under constant pressure of "using the time" well enough	→ ability to harmonize two fundamental types of spending time: acting and being (refraining from acting to "existing/being in the world")
future "The experience is a comb you get from life when bald" (J. Clare)	**anticipation** considering the type of expectations: trust in the future, balancing active – task – attitude and "surrendering" to the course of events	**activation versus passivity** apathy or distrust; fear; seeing the future "in dark colours"	→ positive implication in the mutually related scopes: general emotional climate and the psychological cognitive skills, like: specifying dreams, hierarchizing goals and planned strategies of their achievement
"transcendent time" "Keep calm. In a hundred years, you will not care" (W. Emmerson)	**consideration** of a broader, meaningful perspective as a context of particular expe-riences review and biography as potentially mean-ingful entirety	**trust versus distrust** distrust in the supporting powers of the universe limited to the rational dimension of self-perception and outer reality	→ transcending the dilemma whether we act in light of future prospects rather than being driven by past forces; broadening the frames (boundaries) of one's own biography by the period "before birth" and "after death"; searching for important individual and universal connections with the Nature, Universe, Sacrum

integration	identity	sense versus meaninglessness	→
"One who has no time – is poorer than a beggar …" (a Nepali proverb)	gaining the sense of continuity, distinction and coherence of one's own story and oneself as a "co-author and character" simultaneously	feeling of distraction and/or inner chaos in the scope of thoughts, emotions, decisions and activities; loss of the feeling of meaningfulness and sense	perceiving the own biography as the multiple, complex and meaningful entirety and making attempts to connect it in a valuable way with other people's biographies; write it in the "story of the world"

Re-telling life stories in the search of meaning

"Serious games"? The modern ludology perspective of education & therapy

Games strengthen their position in modern culture, becoming a phenomena that pervades almost all spheres of human life. This could be well understood within the framework of a variety of a relatively new branch of humanistic studies called *ludology*, interested in diverse types of commonly popular games and plays, with emphasis on computer games (cf. Caillois, 1962, 1997; Frasca, 1999; Huizinga, 1955, 1998; Juul, 2003; Szeja, 2004; Surdyk, 2007). Ludological research allows the perspective of using plays (*paidos)* and games (*ludos*) in education in a broad sense; "playing in order to learn and learning as a form of play" or "education through entertainment" (cf. Rodriguez, 2006). Such a perspective opens new possibilities to construct psychological methods of human development support at particular stages of life that refer to the formula of play and game. Some of them, like in Frasca's (1999) concept – that most serious pursuits exhibit playful aspects – called for games that could "make a difference in people's lives", and in such a context, so-called "serious gaming" is considered a medium of deep education and sometimes also a medium for a social change. According to some concepts "playing is the medium of where lived experience is organized as a structured situation […] and the core aim of play becomes the organization of experience" (Rodriguez, 2006, p. 30). All therapies searching for the similar purpose as facilitating the process of re-constructing the individual life experience have prescribed to gain it in a decisive "serious way". The narrative therapy is one of the rare between them, that claims that play-like activities and humour could be, in some cases, effective strategies supporting the healing mechanisms – not losing the seriousness dimension of a human existence at the same time (Chrząstowski, de Barbaro, 2011). Narrative therapy refers to the metaphor of life compared to a story ruled by narration, and the man experiencing it, to a subject (author) who tells the story and is its co-author (Bruner, 1986; McAdams, 1985, 1988; Sarbin, 1986). It focuses on the reconstruction and comprehension of the story told by people about their own lives. Assistance in cognitive separation to gain real independence of one's own way of life – type of story – from stories (patterns, narrative scenarios) is offered to an individual from the outside (Dryll, Cierpka, 2004; White, 1990, 1999). The main help is in finding and reconstructing

the thread that links particular elements, as well as exploring opportunities to tell the already known stories in a new way (switching over the "genres": e.g. choosing a *comedy* or a *grotesque* pattern of telling the life story instead of a *tragedy* or *irony* pattern [Gergen & Gergen, 1983]).

Telling life stories "before"...

Encouragement and giving help in the process of telling one's own life story "before" or in the face of a breakdown or crisis (when it will be necessary to meet a professional therapist), is the main way of conduct within psychological (achieved at workshops or trainings) proposition of human development support throughout life (Tokarska, 2000, 2002a, 2004, 2006). Off-therapeutic assistance in the process of self-cognition and ordering individual experience fulfilled by narrative methods originally leads, among other things, to such results (Tokarska, 2007) as: significant deepening of self-reflection in people who are not oriented at this kind of cognitive activity in everyday life, specifying thoughts through their verbalization allowing more complete use of one's own experiences, narrative ordering of experiences that facilitates verbalization of "life and development strategies", providing the development of "biographical competence" (Pietrasiński, 1993; Tokarska, 2011a). Supporting the insight into one's own past and acquainting conditions of one's own development, as well as finding the leading topic (life direction that enables to standardize and consolidate various experiences), can bear fruit in the form of an increased feeling of meaningfulness and sense, bringing positive effects on particular levels of an individual's functioning in turn. Knowing the strategies of regaining control over one's own awareness, equipping with the ability to retrieve the state of balance by oneself (described in the concept of "flow/optimal experience", Csikszentmihalyi, 1992) is expressed in the growing independence of outside conditions and in the increase in the general sense of high quality of life, and as a result, in the growth of probability of a positive life balance. Gaining distance to the content of one's own biography, is, on the other hand, connected with a cognitive separation of the teller from the contents of speech, which is a favourable starting point to co-author one's own story (subjective feeling of achievement) and the sense of responsibility for one's own life that is related to it. These effects also refer to levels of functioning as motivational-decision-making, efficiency of actions, dealing with problem situations and communication (Trzebiński, 2002) either.

Narrative ordering of time flow experience

Logo-therapeutic results, expressed in the ability to give sense to particular experiences of one's own life and autobiography as separate, personally meaningful entirety (that also belongs to the whole richness of human stories), seem to be particularly promising. Some of the narrative strategies refer to the identification, analysis and dynamic balancing of the main threads of human existence (*love, suffering, death*), along with image confrontation with those of them that have not yet been dealt with by the teller (Tokarska, 2010d, 2011b, 2011c; cf. Seligman et al., 2013). Comprehending successive areas of one's own biography with self-reflection,

confronts the already gathered experience, but also those plots (topics) of human existence that so far have remained inaccessible. As a basis for a practical narrative approach in psychology, an assumption on the significant influence of narrative ordering of the autobiographical experience, as a form of supporting human development, has already been used during preparation of a range of diverse forms of work that initiate and maintain this process. Sets of treatments on biographical material, deserving the status of *narrative methods*, most often take the form of interview models, questionnaires or "guides" which are supposed to make it easier for the storyteller to freely move within one's own experience, understood as "space-time of the story of one's own life". Acknowledged sets of tools of narrative ordering of autobiographical experience within this area include, among others (cf. Tokarska, 1999): D. McAdam's (1985, 1988) and J. Fowler's narrative autobiographical interviews (1981), a guidebook entitled *Your Mythic Journey* written by S. Keen and A. Valley-Fox (1989), as well as the method of a board, autobiographical game proposed by an Italian adult education specialist D. Demetrio (1999).

The narrative autobiographical game *In Eighty Stories around the Human Life* as the tool for harmonizing diverse patterns of time experiencing

The method's basic structure and main activities

The presented method of an autobiographical narrative game is a part of a larger project in which purposeful narrative influences are used to activate and support a narrative way of understanding self and the world, self-reflection and autobiographic awareness. The previously mentioned Keen's idea of *a mythic journey* and Demetrio's *autobiographical game* have led me (as the author) into developing my own proposal for a holistic and open-ended form of supporting personal growth in adults. The method had been composed of such elements as a box of 100 coloured copyright playing cards with a dice, *The Book of Stories*, *The Manual* with exercises and *The Hypertextual Life-Story Map* (which plays the role of a graphic proposal of possible interconnections between all the thematic issues inside the game). Diverse elements of the method have been prepared for the purpose of supporting the receivers' ("players'") decisions about the content and the sequence of an auto-narrative reconstruction of their lives. From another point of view, this could serve as "the table of contents" or "the map" for psychological investigations reconstructing the human paths of cognitive ordering of biographical experience (the sequence of decision-making and content selection).

In both fields of use (psychological research & practice) one of the most important strategies organizing the process of "storying the experience" during (and through) the game, is the practice and improvement of participants' cognitive-emotional skills of recognizing, enriching and harmonizing different time perspectives. The deliberate binding of *the daily time* context of their actual experience with the past and future dimension of biographical *time of life,* connected
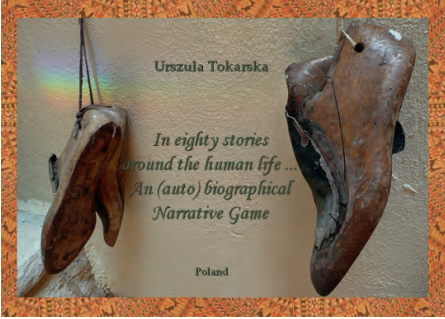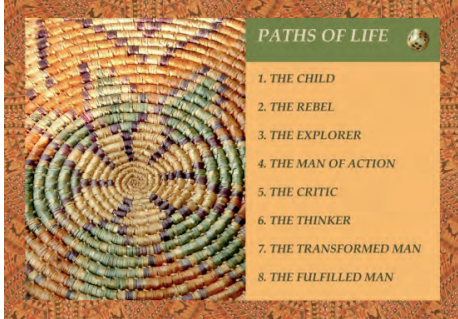
with the transcendent perspective of *life itself*, leads the players to the construction of the multidimensional, rich and personally meaningful life story accounts.

In a cooperative activity, which takes the form of a board game, the participants are led through the successive stages of human life: eight decades from the cradle to the grave (cf. their sequence, p. 10)*.* While playing, the participants work with a range of stories following the paths of universal human experience in their remembered past, actual commitments and the imagined future, looking for the possibilities of eventually symbolizing and transcending them. The narrative base for the original game exercises described in *The Manual* has been collected in *The Book of Stories* composed of 222 narrations written by many authors representing diverse cultures and time periods. Some of the tasks to complete are illustrated with additional pictures and objects creating the whole "narrative stimuli". The participants have to define by themselves the scope to which the particular story and exercise refers to in their own life by choosing either the so-called *hot path* (a deeper kind of work with their individual experience) or the *cold path* (a kind of work relatively not so close to their own life). The narrative character of the method manifests itself on two different, interconnected levels; simultaneously working with the particular biography – *life story* ("internal" narrative) and using some "external" narratives (e.g. *tales*, *fairy tales*, *myths*, *parables*, *novels* or *movies*). The players' activities are a process of reading texts, listening to stories told by others, composing their own narratives and creating new, untold stories. Following the paths of universal human experience in the remembered past and the imagined future, participants learn – via play-like activities – psychological skills like using the broad context to perceive their actual activities, relations and problems, flexibly switching between diverse time frames as the most appropriate to the demands of the current behavioural setting and, finally, avoiding the over-use of some time perspectives while under-using others (cf. Table pp. 12-15). The other important purpose of the method is supporting the process of searching for the "flesh of transcendence" in the current, experience of the players. This seems to be an appropriate prevention against the trivialization of the "daily" experience (experienced often habitually as boring and/ or banal) and it could be regarded as support for the psycho-existential meaning making process.

Selected illustrations of the deliberate tool

The selected game cards below are presented according to their visual expression, their thematic content and the potential psychological functions facilitated by each of them.

Tab. 2. The illustration: some selected game cards by their graphic solutions

a) the covered card with the title:

a)

b)

b) the periodization card with eight following stages of human life cycle (based on Mary & Nordholt concept of the *inner myth scenarios*, 2004):

THE CHILD (aged 0-10);
THE REBEL (aged 10-20);
THE EXPLORER (aged 20-30);
THE MAN OF ACTION (aged 30-40);
THE CRITIC (aged 40-50);
THE THINKER (aged 50-60);
THE TRANSFORMED MAN (aged 60-70);
THE FULFILLED MAN (aged above 70)

c) the example of one of the games cards (from the *TRANSFORMED MAN* phase):

c) card number 68, entitled *TIME* (cf. pp. 197–198)

Tab. 3. The illustration: selected game cards by the content and potential psychological functions facilitated by them (in some relations to Zimbardo's time perspective concept, 2008)

the name and the number of the card	the content of the card	the potential psychological function facilitated by the card
41. THREE CHESTS * [integration] * see illustrative exercises in the appendix	looking for the interconnections and possible coherence between our past, present and future experiences symbolized by "three chests" containing our memories, current commitments and future dreams and expectations	* opening the spheres of different time contexts; * experiencing the "phase" character of the time flow and the separation strategies of the whole life continuum; * the mental integration of past, present and future perspectives; * pursuing integrity
42. TOO LATE? * [consciousness] * see illustrative exercises in the appendix	considering how to manage in everyday life decisions, discovering the value of something being "on time" rather than too late, being "on time" with important things, relations and values	* the delayed knowledge prevention; * applicability to the real life circumstances
47. WALKING BACKWARDS [cf. Zimbardo's concept: *Past-Negative*]	the illustration of how the lack of forgiveness of some past experiences brings about many internal and interpersonal problems and blocks our actual or future actions and relationships	* practicing the acceptance of troubling and painful experiences ("wounds"); from the past; * "the past period closing" as a strategy for making space for some new things in life
50. THE NEW STAIRWAYS [cf. Zimbardo's concept: *Future*]	discovering the new possibilities unavailable in the last parts of life, which might be open and available in its next parts	* opening for future possibilities; * gaining the hope that the future will not simply be a "reproduction" of the past only, but a period for new possi-bilities (in terms of quality and space)
52. THE MOMENTS OF BEING [cf. Zimbardo's concept: *Present-Hedonistic* and *Past-Positive*]	recalling this life experiences, in which we were "flying with the world" and stayed "where we were supposed to stay" versus the boredom of some daily experiences and the senselessness of others	* intensification of the experience of the time flow and looking for its deep-er understanding (the "essence"); * "capturing" the passing moment to experience it fully and feel the real joy of life
61. THE THREAD OF LIFE * [consciousness and integration] * see illustrative exercises in the appendix	considering the consequences of human need to "skip" life's unpleasant, painful events vs. the acceptance of the process of the flow of a life itself	* the acceptance of natural rhythm of time flow and the unpleasant expe-riences as the natural part of the life; * enhancing the skill of being more patient and not "in a hurry" all the time (according to the *Bible* words: "there is the time for everything, and a season for every activity under heaven", *The Book of Ecclesiastes, 3*, 1-8)
62. MRS NIGHTINGALE * [cf. Zimbardo's concept: *Present-Fatalistic*] * see illustrative exercises in the appendix	considering the consequences of the lack of acceptance of the signs of passing time in one's present stage of life (acting younger than one really is and searching for "youth elixirs" for the body)	* inducing the natural acceptance of the body and mental symptoms of growing older and, finally, of the time passing flow

68. TIME * [integration] * see illustrative exercises in the appendix	examining important life plots across the time flow; harmonizing the patterns of spending everyday time and giving account of all the time within one' s life course; the prevention of over-using some of the perspectives when under-using others (searching for time balance)	* simultaneous experiencing and binding the different patterns of time experiencing: *the daily time*, *the time of life* and *the life itself*; * harmonizing the technical possibilities of "management of the time" skills with time contemplation and "being"
75. PUT IT TOGETHER * [integration] * see illustrative exercises in the appendix	putting together different plots of our life story in the meaningful pattern of the whole created by us; "switching over" one life story pattern to the other – practicing the distance skills	* practicing the integration of different life story plots (e.g. *love*, *friendship*, *suffering*, *life difficulties*, *activity*, *creativity* or *looking for the meaning*) into the coherent whole ("the own life")
76. FOOTPRINTS ON THE EARTH * [cf. Zimbardo's concept: *Future* and *Transcendent*] * see illustrative exercises in the appendix	considering the ways people can cross the boundaries of the human condition leaving behind irremovable traces forever; *the generativity dimension* of an individual life course in needs and actions	* managing the whole life review from the perspective of its end; * practicing the ability to overcome what is given in direct experience
77. EARTHLY & HEAVENLY * [cf. Zimbardo's concept: *Transcendent*] * see illustrative exercises in the appendix	recalling the ways people have for ages got used to the thought of their own *death*; longing for *after-death life* proofs; the possibilities to see "the flesh" of transcendence in the daily life experience	* practicing the skills of extending the life-review process above the individual earthly existence beyond "here and now" and over the periods "before birth and after death"

Conclusions

According to the principles of deepened education and psychological prevention, the issue of time experience and organization with reference to diverse age and problem groups – so early as to counteract the necessity to work with particular dimensions within a therapy – is undoubtedly worth undertaking. There are many possible ways of achieving this type of target set for practical psychology. The starting point for the realization process of this kind of task can become R. Schafer's statement (1981, p. 17), referring to the idea of narrative psychology, that "[…] development of an individual can be determined by the change of questions to which he searches answers in his self-narration". In this article, the author's method of a narrative autobiographical game "*In Eighty Stories around the Human Life*", is suggested as one of the potential tools of pro-developmental psychological work in this scope. The "narrative journeys in time and through time" aimed at recovering, applying and integrating dispersed elements of individual human biographies, are mostly supported in the way of multifaceted stimulation to think about self, taking the time category into account. This method allows for the necessity to inter-pervade dissimilar, often seen as mutually exclusive, patterns of time experiencing: comprehended in a broader biographical context of *the*

time of life, *the daily time*, and *the life itself* focused on possible interconnections between effective, measurable use of time and its reflective experiencing. The article presents selected original "narrative stimuli" for examining human lives in the time perspective context connecting Zimbardo's *Past-Negative and Positive*, *Present-Hedonistic and Fatalistic*, *Future and Transcendent time perspectives* with *continuity*, *consciousness*, *integration* skills and their applicability to the real life circumstances. Philip Zimbardo's concept that "[…] a balanced time perspective is not only the state but an ongoing process", demands looking for the appropriate psychological solution that would allow receivers to not only practice this kind of attitude and skills during the educational/training activities, but to use them to stimulate the frequent ("habitual") auto-reflection considering time dimension. The idea of play-like narrative "navigation inside the inner space and time" of individual lives seems to serve the balanced time perspective well. Evaluating tools of such an activity are still under the construction, but up to now, we have received enough positive reports encouraging the continuity of this kind of psychological enterprise. From this point of view *the psychology of time* meets the existentially-oriented *narrative psychology* in the potentially meaningful cooperation leading to the relatively new field of "applied psychology of time".

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Appendix

Illustrative game exercises corresponding to some selected cards:

game card number 41 – *THREE CHESTS*
The hot path   THREE CHESTS ACTIVITY – 1. [based on: Lasocińska, K., & Stasiak, M. K. (2010)]. Imagine that there are three chests in front of you. One houses your past, the other your present and the third one your future. Study the way they look like.   *THE PAST: Come up to the first chest and try to open it. What can you see inside? Take a piece of paper and draw what you saw. Mark what you consider the most important.*   *THE PRESENT: Come up to the next chest, take the lid up, what can you see? Anything that was not in the previous chest? Perhaps some things are the same, some are missing. Take a piece of paper and draw what you see. Is there anything you would like to put in here?*   *THE FUTURE: What have you found in the third chest? Is there anything that you saw in the previous chests and that you would like to put here?*   Now that all the chests have been opened, say what has changed in their content and in yourself? How can you see your life now that all three chests are open?   MAKE A STORY OF YOUR OWN LIFE taking into consideration basic connections between the past, the present and the future. What makes your story different from the autobiographical stories of other people? What do the past, the present, and the future look like now?   *The cold path*   THREE CHESTS ACTIVITY – 2. Imagine a man in front of three opened chests. They house his past, present and future respectively. He studies the way they look. He is now telling you the story of his own life. Write it down and re-tell to the audience.
game card number 42 – *TOO LATE?*
The hot path   "THE INTERVIEW" ACTIVITY. Imagine that a young journalist wants to conduct an interview with you on the following subject: *WHAT HAVE YOU LEARNT TOO LATE?*   • *What will you tell him? How will you counter the consequences of "belated knowledge" in the future?*   • *To what extent do you agree with the following words: "THE EXPERIENCE IS A COMB YOU GET FROM LIFE WHEN BALD"?*   • *In what type of personal experience have you managed to discover the value of something "in time" rather than too late? Tell about them.*   *The cold path*   Read B. Ferrero's (1989) story *The Door to Happiness* about a mysterious disappearance of an old garden door, which had not been opened by the "hurry up" man. Imagine what might have been behind the door which never appeared once again and attracted this way the protagonists' attention for so long.   • *Make up two different stories: one about „following the impulse" & making spontaneous discoveries within a new area of experience and the other one about postponing the discovery of the secrets of life for some other time.*   • *What, and for what reason, do people normally "leave for the time being"? How many of the activities and experiences can actually be realized "later"? What is it, in your opinion, that should not be left to be done later in life?*

game card number 61 – *THE THREAD OF LIFE*
The hot path "A MAGIC THREAD" ACTIVITY – *1.* Listen to a story *A Magic Thread* by B. Ferrero (2007). • *Imagine, you have met an Old Woman from B. Ferrero's story. Similarly to the protagonist of the story, you get a box with a golden thread symbolizing the time of your life. Each time you pull it, it shortens the unpleasant, troublesome and painful time of life events and experiences of your life. You "jump" to the good time then… Are you going to use it? If so, in what circumstances? REMEMBER THERE IS NO POSSIBILITY OF GOING BACKWARDS (!).* • *Evaluate the potential gains and losses connected with jumping over certain life events.* *The cold path* A MAGIC THREAD ACTIVITY – *2.* Listen to a story *A Magic Thread* by B. Ferrero (2007). Attach to the cardboard some colourful threads symbolizing the life of: *A TEACHER/ A HAT -MAKER/ A BEDOUIN/ A HOUSEWIFE/ A CROCODILE.* • *Consider – how are they different and what makes them similar?* • *Think of the circumstances in which these characters could wish to pull the magic thread symbolizing their lifetime. What could they gain and what could they lose by doing it? Why?*

game card number 62 – *MRS NIGHTINGALE*
"IN A MIRROR" ACTIVITY. Listen to a story of a mysterious disappearance of a woman named Mrs. Nightingale. Recall some other stories similar to the one told by K. Vopel (2001). Imagine why *Mrs. Nightingale* did not show up? Tell about the further discoveries of the story protagonist. Concern where the secret mixtures and wonder elixirs lead in these stories? (e.g. *Alice in Wonderland*). Try to answer the following questions: • *Have you ever met a person who could not accept his or her present stage of life? What did he or she look and act like?* • *Which signs of passing time, do you think, will be most difficult to accept for you? Will you use this kind of awareness now?* • *Whom could you see, looking yourself, in a mirror?*

game card number 68 – *TIME*
"THE LIFE LINE" ACTIVITY – *1.* Sketch symbolically your life span (presenting it horizontally, vertically, diagonally or spirally) from the birthday till the death. Mark your present place. Try to answer the following questions: • *How much time has passed? How much time is left? How have you used the time passed?* • *Have you ever been in the same place before? Would you like to return here?* • *What do you look forward and expect in the further part of your life?* "THE TORTE OF TIME" ACTIVITY – *2.* Sketch symbolically your daily time (presenting it in the circle mode & divided into some separate "pieces"). Try to answer the following questions: • *How much time and energy did you use to spend on the different daily activities?* • *Are you satisfied with such a pattern? What kind of changes would you need (or dream about) in the potential reconstruction leading from your "real torte of time" to your own "ideal torte of time"?*

- *Is there something personally important to you, which you consider to be missing in your current "torte of time": something – you "have no time" to realize and fulfill? Are there any activities which seemed to be not so personally important to you to keep them habitually in your daily "torte of time" continuously?*
- *How much of your real "torte of time" are you able to name: "this is my own time"? What does it mean to you?*

"TIME INTERCONNECTIONS" ACTIVITY. Now when these two sketches have been completed, try to combine them into the interconnected whole – searching an answer for following questions:
- *How much of the personally & biographically important parts from your "life line" is really present in your current "torte of time"?*
- *Which of your daily activities are not congruent with the broader perspective of your whole biography, the imaginary experienced entity of your life? Could you decide to move them outside the daily "torte of time" circle – preparing the clearer space for the personally important values, relations and activities, instead?*
- *Whom do you regard to be the decision-maker and the agent of realizing the personally valuable pattern of spending the time of your daily life and the life as the whole (biography)?*

game card number 75 – *PUT IT TOGETHER*

THE WHOLE ACTIVITY. Listen to the story about how many things can be made of a few pieces of wire and a piece of wood. Choose three out of the important (light) motifs of your life. Give them a name (e.g. *LOVE–SUFFER–FIGHT–CREATIVITY*) and put them together in a whole which could not be created without any of these elements.
- *Give it a name (title). A similar effect can be achieved by joining together a number of colorful paper clips, which gives an additional advantage of showing the links between the particular motifs: the elements of one colorful stand for the given motif, the motifs are clipped together at the sides by the crucial spots of the biography.*
- *Try to put the motifs of your life in a different way.*

game card number 76 – *FOOTPRINTS ON THE EARTH*

THE CIRCLES ACTIVITY. Think – how far, in your imagination, are your footprints on the earth to go? Draw the circles you will have left in the future on the cardboard.
Tell the story about them.

game card number 78 – *EARTHLY & HEAVENLY*

<u>The hot path</u>
"AT SAINT PETER'S DOOR" ACTIVITY (based on exercise by Jacobs, 2004). Archangel Gabryel dips his pen in an ink pot, ready to inscribe three sentences of your greatest deeds in the big book. You crane over his shoulder and read… What could you recognize? How far his description is from your own view of your greatest deeds?
<u>The cold path</u>
"THE SHORTEST BIOGRAPHY OF THE WORLD – MY OWN EPITAPH" ACTIVITY (based on exercise by de Mello, 1984). Think of an imaginary protagonist who is surprised to discover that the epitaph put on his grave by his relatives differs much from his own vision of his life on earth. Say how these two differ. What might have caused the differences?

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- Carmi, N. & Bartal, E. (2013). *Perception of Environmental Threat in the Shadow of War: The Effect of Future Orientation*. Human & Environmental Risk Assessment. DOI: 10.1080/10807039.2013.798217.

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9.

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Significant publications:
- Kossewska, J. (2000). *Uwarunkowania postaw – nauczyciele i inne grupy zawodo- we wobec integracji szkolnej dzieci niepełnoprawnych* [*Determinants of attitudes – teachers and other professionals towards school integration of disabled children*].
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- Kossewska, J. (2011). *Theory of mind in deaf children in the context of inclusive education.*

10.

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Significant publications:
- Razipour Jouybari, A., Nozari, M. & Nozari, A. (2013). Spiritual Intelligence in Prisoners and Non-Prisoners of Mazandaran Province. *J. Am. Sci., 9*(6), 578-580.
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11.

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Significant publications:
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12.

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Significant publications:

- Tokarska, U. (2008). Reaching narrative unity inside the inner plurality in the dialogical context. In: M. Pourkos (Ed.), *Perspectives and limits of dialogism in Mikhail Bakhtin: Applications in psychology, art, education and culture* (pp. 141-154). Crete: University of Crete.
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