



2017

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Precin, P. J. (2017). Past negative time perspective as a predictor of grade point average in occupational therapy doctoral students. *Open Journal of Occupational Therapy*, 5(2) [Article 10].

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3-31-2017


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DOI: 10.15453/2168-6408.1264

Recommended Citation

Precin, Pat J. (2017) "Past Negative Time Perspective as a Predictor of Grade Point Average in Occupational Therapy Doctoral Students," *The Open Journal of Occupational Therapy*: Vol. 5: Iss. 2, Article 10.
Available at: <http://dx.doi.org/10.15453/2168-6408.1264>

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Past Negative Time Perspective as a Predictor of Grade Point Average in Occupational Therapy Doctoral Students

Abstract

Time perspective is a fundamental dimension in psychological time, dividing human experiences into past, present, and future. Time perspective influences individuals' functioning in all occupations, including education. Previous research has examined the relationship between time perspective and academic outcomes, but the same research has not been done, to date, with occupational therapy doctoral students. This quantitative, cross-sectional study investigated the relationship between time perspective and academic success in occupational therapy doctoral students across the United States. Data from the Zimbardo Time Perspective Inventory (ZTPI) and grade point averages (GPAs) were collected from 50 participants via surveymonkey.com. Past Negative time perspective statistically predicted GPA in the negative direction ($p = .001$) for students in pre-professional OTD programs, but did not predict GPA for post-professional students. Age, gender, and learning environment did not significantly influence the prediction of GPA in either group. The method and results of this study demonstrate that the ZTPI, an instrument used in the field of psychology, may have value in the profession of occupational therapy and occupational therapy doctoral programs.

Keywords

academic outcomes, achievement, past negative, perception of time, student admissions, Zimbardo Time Perspective Inventory

Cover Page Footnote

Acknowledgements This research has been made possible by a grant from Touro College and through the following Touro College graduate students who contributed to this project: Nelli Bardanova, Svetlana Buencamino, Esther Heinberg, and Rochel Muskat. I would like to thank Joseph Indelicato for his statistical analysis and Nancy Fenton for her editing.

As the profession of occupational therapy has advanced to better address society's needs, so too has the education of occupational therapists. There has been an increase in occupational therapy doctoral programs in the United States, including the doctor of philosophy (Ph.D.) and occupational therapy doctorate (OTD) pre- and post-professional programs. The Accreditation Council for Occupational Therapy Education (ACOTE) does not require that entry-level occupational therapy programs be delivered at the doctoral level. However, after July 1, 2012, ACOTE required that the majority of full-time faculty members in occupational therapy master's-level education programs have doctoral degrees (Accreditation Council for Occupational Therapy Education of the American Occupational Therapy Association, 2006). The American Occupational Therapy Association's (AOTA's) Centennial Vision emphasized that the profession be inclusive and evidence-based: "We envision that occupational therapy is a powerful, widely recognized, science-driven, and evidence-based profession with a globally connected and diverse workforce meeting society's occupational needs" (American Occupational Therapy Association [AOTA], 2007, p. 614). This vision includes the education of occupational therapists, which also must be inclusive (Hansen & Hinojosa, 2009) and evidence-based (Bondoc, 2005).

Background

Many occupational therapy doctoral programs are new, having been recently developed in response to changing educational requirements and advancements in distance learning. Thus, there

is a gap in the literature regarding the outcomes of these programs. In 2012, Salls, Provident, and Dolhi published an outcome study of their online OTD program. Otherwise, there have been few evidence-based occupational therapy doctoral program outcome publications to date. It is known, however, that attrition rates for doctoral programs in general are high: 50% for traditional learners (Council of Graduate Schools, 2008) and 70% to 80% for distance learners (Flood, 2002). Programs cannot continue for long with that level of attrition; therefore, outcome studies examining reasons for attrition are important to the ultimate sustainability of occupational therapy doctoral programs.

An example demonstrates the importance of these studies. Gardner (2009) found that the attrition of students in doctoral programs could be attributed to different factors, depending on the perceptions of the students or faculty members studied. Gardner reported that the faculty members, unaware of specific problems, blamed the students, while the students more often attributed responsibility to the academic department. Gardner noted that personal problems, mentioned by both students and faculty members as contributing to student attrition, varied significantly in the types of problems cited. This misunderstanding, according to Gardner, further contributed to attrition rates among doctoral students and indicated the need for additional research. Gardner hypothesized that if students understood the reasons for attrition, they might be able to eliminate those behaviors or conditions and avoid attrition.

A study by Doyle and Jacobs (2013) addressed this question. They found that

occupational therapy students enrolled in a post-professional OTD program wanted to learn more about reasons for attrition and discover more about their own learning needs to avoid the risk of attrition. Doyle and Jacobs concluded that the students should be provided with the tools to do so.

In one of two other explorations into causes for attrition, Pritchard and Wilson (2003) found a link between attrition and emotional support, coping skills, social health, and self-esteem. In another, Jacobs, Doyle, and Martin (2013) mentioned writing skills, motivation to acquire new technology skills, and time management.

The connection between time management and attrition can be easily drawn. Time is intimately connected to the occupation of being a student because students structure and organize their daily lives around time. Time management skills can be taught, yet some students are more successful managing their time than others. This has significant implications for the attrition of students in doctoral programs, all of which demand highly sophisticated time management skills.

The Zimbardo Time Perspective Inventory (ZTPI) and Time Perspective

Analyses of time use can contribute to our understanding of occupational balance and engagement and be an important tool for assessing well-being, health, and productivity (Pentland & McColl, 1999). Time is not just objective (e.g., clock time, uses of time) but also subjective, with individuals each having a unique perception of time (Zimbardo & Boyd, 2008). Time perception, to date, has never been studied in relation to occupational therapy academic outcomes at the

doctoral level. Lack of publications in this area may be due, in part, to the absence of a standardized, psychometrically sound, quantitative measure of the subjective experience of time specifically for the profession of occupational therapy.

The field of psychology, however, has such an instrument and a model of time perspective, evolved from more than 35 years of research. This instrument, the Zimbardo Time Perspective Inventory (ZTPI), has been used by psychologists to predict students' academic outcomes (Adelabu, 2007; Horstmanshof & Zimitat, 2007; Zimbardo & Boyd, 1999) and develop interventions for at-risk students (Ferrari, Nota, & Soresi, 2012; Horstmanshof & Zimitat, 2007). Can that instrument and the Zimbardo and Boyd model of time perspective also be used effectively in the profession of occupational therapy?

Zimbardo and Boyd's research (1999) proposed that time perspective is a very important, yet mostly unconscious, dimension that influences and predicts more than 30 human behaviors. According to Zimbardo and Boyd, time perspective is the method by which individuals subjectively conceptualize time. They do so by dividing their experiences into past, present, and future time categories. This method develops out of, and is modified by, societal, individual, and cultural influences, helping people to organize, clarify, and attribute meaning to experiences. Time perspective influences behavior and has been found to be a stable personality trait; thus, knowing how to handle temporal context is crucial to maximizing positive and minimizing negative behaviors. The ZTPI was

developed as a way of identifying individuals' time perspective profiles and biases.

Zimbardo and Boyd (1999) identified five main time perspectives in their research and their psychometric examination of the ZTPI: (a) Past Negative, (b) Past Positive, (c) Present Hedonistic, (d) Present Fatalistic, and (e) Future. When combined, these constitute an individual's time perspective profile. Individuals scoring high in one of these time perspectives and low in the others are said to have a bias toward that time perspective. Zimbardo and Boyd's theory asserts that previous events and expected future experiences, while in the abstract realm, affect present decisions. An individual's time perspective bias becomes predictive of how he or she will continue to make life choices. Someone with a more balanced time perspective uses the ability to adapt between past, present, and future temporal contexts depending on circumstances, availability, and individual or societal factors.

Zimbardo and Boyd's research (1999; 2008) demonstrated the characteristics of each time perspective. People with a bias toward Past Negative exhibited pessimistic views of previous events, often had experienced a traumatic past, or retained a negative perception of a previous neutral event. High scores on Past Negative were associated with less consideration of future consequences, less emotional stability, loneliness, poor self-esteem, depression, anxiety, sadness, and poor motivation toward achieving goals. Individuals with biases toward Past Positive tended to have a positive and warm attitude toward the past. High scores on Past Positive were associated

with a sense of security, optimism, well-being, and resilience. High scores in Present Hedonistic correlated with pleasure and risk-seeking attitudes, impulsivity, and lack of concern about future consequences of actions (Keough, Zimbardo, & Boyd, 1999; Zimbardo & Boyd, 1999; 2008). People with Present Hedonistic time biases were found to be adventurous, enjoyed a good time, consumed a lot of fast food, practiced unsafe sex, and tended to use alcohol and drugs. Present Fatalistic individuals had a pessimistic attitude toward the present and future because of the belief that the future is predetermined, cannot be influenced by someone's actions, and the present must be left unchanged and accepted. People who scored high in this time perspective tended to have depression, anxiety, aggression problems, and were less emotionally stable.

Finally, those with a Future time bias were found to be focused on achieving future goals and rewards. The core characteristic of Future time perspective orientation was found to be gratification delay—the ability to postpone instant gratification in favor of future rewards and actions. Future time perspective was associated with positive behaviors, including conscientiousness, higher levels of well-being, less risk taking, greater wealth, long-term goal achievement, advanced education, and greater amounts of time spent studying (Boniwell, Osin, Linley, & Ivanchenko, 2010; Zimbardo & Boyd, 1999; 2008). Individuals with Future time orientation also showed higher levels of student engagement; they maintained consistent study behaviors, placed a high value on learning, demonstrated a deeper understanding of class

material, and spent more hours preparing for class (Horstmanshof & Zimitat, 2007).

Time Perspectives and Academic Achievement

Literature has shown a strong correlation between different time perspectives and academic achievement (Adelabu, 2007; Horstmanshof & Zimitat, 2007; Zimbardo & Boyd, 1999). In previous studies, academic achievement has had a positive correlation with a Future time orientation bias and a negative correlation with certain Past and Present orientations (Boyd & Zimbardo, 2005; Harber, Zimbardo, & Boyd, 2003; Zimbardo & Boyd, 1999). Boyd and Zimbardo (2005) found that people who were the most academically successful tended to have a Future orientation, allowing them to see ahead, delay gratification, set goals, and manage their time effectively.

Individuals who scored high in Future orientation were more punctual for class, more apt to complete homework before due dates, more inclined to begin assignments on time, and more skilled in time management than their classmates (Harber et al., 2003). Advancements in technology have introduced online learning environments, which demand an even greater level of self-motivation. This is another factor highly correlated with a Future time perspective (Zimbardo & Boyd, 1999), and students lacking Future time perspective may have even less of a chance of success in online learning environments.

While there is much evidence of an association between Future time perspective and success in academics in general, there also exists evidence that a Past Negative time perspective is associated with a variety of negative behaviors and

personality traits that can pose barriers to academic success. These barriers include low self-esteem, depression, anxiety, poor impulse control, few friends, and unhappiness, as identified through quantitative studies (Zimbardo & Boyd, 1999). In addition, Zimbardo and Boyd's qualitative case studies noted that these individuals had few interpersonal relationships—usually unsatisfactory in nature—a lack of pleasure in activities of life, and poor motivation to achieve future goals. Past Negative time perspective bias showed a negative correlation with level of satisfaction with university/college experience (Horstmanshof & Zimitat, 2007) and overall life satisfaction (Boniwell et al., 2010). Past Negative time perspective showed a positive correlation with mental health problems (Laghi, D'Alessio, Pallini, & Baiocco, 2009), including gambling addiction (Hodgins & Engel, 2002). Past Negative time perspective also was related to low energy and high tension and was the strongest predictor of negative moods when compared to other time perspective biases (Stolarski, Matthews, Postek, Zimbardo, & Bitner, 2014).

Through intervention, Past Negative time perspective bias can be changed to a healthier profile, such as Future, or a more balanced time perspective overall. For example, individuals diagnosed with posttraumatic stress disorder (PTSD) were found to be heavily influenced by previous traumatic negative events that invaded their present thoughts and resulted in a strong Past Negative time perspective bias (Zimbardo, Sword, & Sword, 2012). Sword, Sword, Brunskill, and Zimbardo (2014) developed a successful

intervention strategy that helped move people diagnosed with PTSD out of their negative past and into the present with more time spent thinking about a positive future. This intervention also was helpful for other individuals with Past Negative time perspective bias. Horstmanshof and Zimitat (2007) found that college students could increase their Future time perspective through intervention, thereby improving academic outcomes. Ferrari et al. (2012) created and implemented a successful intervention to shift students with a Past Negative bias toward a Future orientation.

Context of Study

With this understanding of doctoral program attrition, time management, time perspectives, and the possibilities for altering those time perspectives, the author posited that a Past Negative time perspective bias was related to certain behaviors and personality characteristics that might pose barriers to academic success in occupational therapy students. The studies in the literature reviewed were performed on students other than occupational therapy students, and they did not include doctoral students. Therefore, to begin to close this gap, this study focused on the relationship between a Past Negative time perspective and the educational achievement of post-professional and entry-level students enrolled in traditional and online OTD and occupational therapy Ph.D. programs.

Method

This nonexperimental, quantitative, cross-sectional survey study was designed to answer the following five research questions. Grade point average (GPA) was defined as the current cumulative doctoral GPA at the time of study.

Research Questions

1. What is the strength and direction of the relationship between Past Negative time perspective and GPA in occupational therapy doctoral students in the United States?
2. What is the strength and direction of the predictive nature of Past Negative time perspective on GPA in occupational therapy doctoral students in the United States?
3. What is the strength and direction of the predictive nature of Past Negative time perspective on GPA in occupational therapy doctoral students enrolled in preprofessional programs in the United States?
4. What is the strength and direction of the predictive nature of Past Negative time perspective on GPA in occupational therapy doctoral students enrolled in post-professional programs in the United States?
5. How do the variables of age, gender, and type of learning environment influence the prediction of GPA?

Participants

A purposive sample of 50 participants was obtained from a pool of 34 accredited occupational therapy doctoral programs in the United States. Each program gave permission to recruit volunteers from its occupational therapy students. All students from the pool of 34 programs were invited to participate if they satisfied the inclusion criteria.

The sample comprised a heterogeneous group of occupational therapy doctoral students currently enrolled in Ph.D. or OTD programs (both pre- and post-professional). Online, traditional, and

hybrid learning environments were included.

Participant inclusion criteria were: (a) English-speaking students, (b) 18 to 60 years of age, and (c) enrolled in an OTD or occupational therapy Ph.D. program in the United States for a minimum of one semester at the time of data collection.

Procedures

The author's Institutional Review Board granted a status of "Exemption" prior to contacting participants and data collection. The investigators emailed flyers that contained a brief explanation of the study, inclusionary criteria, purpose of the research, online survey access information, and completion directions to the occupational therapy department chairperson(s)/directors from around the country, with a link to the electronic survey on surveymonkey.com. The occupational therapy department chairperson(s)/directors posted the flyers where their students could see them and/or emailed their students. All of the participants who volunteered for the study gave informed consent and were told they could stop the survey at any time.

Data were gathered for 4 months (with follow-up reminders to encourage participation), after which the participants' time perspective scores were coded and calculated by using the instructions for calculating the specific variables as explained by Zimbardo and Boyd (2008). No personal identifying details were collected from the participants. The email addresses of those participants who wished to receive their time perspective score were only retrieved by and available to the principal investigator.

Instruments

The survey in this study consisted of two items: an assessment to measure time perspective and a questionnaire designed by the author to obtain basic demographics and the participants' GPAs. Both the assessment and questionnaire were self-report instruments; together, they took approximately 15 min to complete via an online survey.

The assessment, the ZTPI (Zimbardo & Boyd, 1999), measures the subjective experience of time using a quantitative 5-point Likert scale—ranging from 1 (*very untrue*) to 5 (*very true*)—to determine the extent to which participants agree or disagree with each statement. There are 56 statements/questions in total that address five different time perspectives: Future (13 questions), Present Hedonistic (15 questions), Present Fatalistic (9 questions), Past Positive (9 questions), and Past Negative (10 questions), producing a sub-score for each as well as an overall score. Some questions are reverse coded to minimize compulsive answering and encourage thoughtful responses. Each sub-score is orthogonal in nature so it can stand alone and be administered with or without the others, depending on the research question(s).

In the current study, all 56 questions were administered to the participants. However, because the study was concerned specifically with examining the relationship between a Past Negative time perspective and GPA, only the Past Negative questions were calculated to obtain the Past Negative sub-score. No other sub-scores were examined.

The ZTPI is part of the public domain. It has been published (Zimbardo & Boyd, 1999; 2008) and can be found on Zimbardo's website (<http://www.thetimeparadox.com/zimbardo-time-perspective-inventory>). The author gained permission from Zimbardo to use the ZTPI in an online survey.

The psychometric properties of the ZTPI have been measured during the last 30 years. The ZTPI had high test-retest reliability over a 4-week period (based on Cronbach's alfa coefficients) in students who are psychology majors, as reported in Zimbardo and Boyd's (1999) seminal paper on their model of time perception. Zimbardo and Boyd also reported satisfactory internal consistency, with Cronbach's alfa coefficients that ranged from 0.74 to 0.83 for each time perspective. Horstmanshof and Zimitat (2007) verified this consistency and reported coefficients ranging from 0.74 to 0.84. Interscale correlations were generally low in factor analyses used to examine structural validity, as reported by Zimbardo and Boyd. They also reported that the ZTPI had predictive and construct validity. Time perspectives correlated with 12 other indexes of temperament, coping skills, and personality, including the Rosenberg Self-Esteem Scale (.90) and the State-Trait Anxiety Inventory (.89). The ZTPI has proved to be valid and reliable across 23 countries, including the United States (Sircova et al., 2014). Boniwell et al. (2010), in their study of British and Russian populations, indicated that the intercorrelational structure of the ZTPI was similar to the norms reported by Zimbardo and Boyd in 1999.

The second item in this survey, the questionnaire, consisted of nine questions. Three questions—age, number of semesters attended in their current program, and program type (OTD or Ph.D.)—were asked to determine inclusionary criteria. Additional questions addressed variables used in the study: current cumulative GPA, age, type of learning environment (online, classroom/traditional, or hybrid), gender, and type of school (pre- versus post-professional). A final question was asked regarding whether the participants would like to know their results.

Data Analyses

When the time established for the study expired, the participants' time perspective scores were calculated and the data were exported to IBM SPSS 21 (2012) for analysis. Multiple linear regression analyses using the Enter method were performed to determine characteristics about the predictive nature of the independent variables—Past Negative time perspective, age, gender, type of school, and learning environment—on the dependent variable of GPA. Three different models were run. Model 1 included all participants. Model 2 included only participants in pre-professional programs. Model 3 included only participants in post-professional programs. Assumptions of normality, homoscedasticity, and little to no multicollinearity must be met to have a robust multiple linear regression analysis. Analyses of variance (ANOVAs) were performed to test for normality. Levene's tests were used to check if homoscedasticity existed in that variance of errors was the same for all levels of the dependent variable. Correlation analysis was used to test for

multicollinearity. A post-hoc Bonferroni correction was used to adjust the *p* value to account for inflated error from multiple comparisons.

Results

Demographics

Demographic variables related to gender, program type, degree seeking, and learning environment for the 50 participants in this study are reported in Table 1. GPAs ranged from 2.80 to 4.00, with 4.00 being the highest. The mean was 3.74 for the 50 participants.

Table 1

Demographics of Participants (N = 50)

Demographics	Variables	<i>n</i>	%
Gender	Female	45	90
	Male	5	10
Type of school	Pre-professional	34	68
	Post-professional	16	32
Degree sought at time of survey	OTD	49	98
	Ph.D.	1	2
Learning environment	Traditional	23	46
	Online or Hybrid	27	54

Correlations

The survey data were analyzed by using a bivariate Pearson two-tailed correlation coefficient test set at a .01 level of significance to calculate the statistical significance of the relationship between variables. The Pearson Correlation found a statistically significant (*p* = .005) negative correlation (*r* = -.395) between Past Negative time perspective and GPA. There was a tendency for GPAs to decrease as Past Negative time perspective

scores increased. The more a participant spent time thinking about his or her past in a negative manner, the lower his or her GPA tended to be. The less time a participant spent thinking about his or her past in a negative manner, the higher his or her GPA tended to be. Therefore, the null hypothesis was rejected for research question #1. There were no significant correlations between any of the other variables (i.e., independent variables), so the assumption of little to no multicollinearity was met for the multiple linear regression analysis (see Table 2).

Table 2

Summary of Intercorrelations (N = 50)

	Model 1	Model 2	Model 3
1. PN	-	-.395*	-.248
2. GPA	-.395*	-	.24
3. Age	-.248	.24	-

Note. PN = Past Negative time perspective score; GPA = grade point average.

* *p* < .01.

T Tests

T tests were used to compare the averages of the Past Negative sub-scores when the survey grouping variables had only two levels; in this case, that included gender and type of school. When the sample size is 50 or more, the *t* test is robust to even large departures from normality. Therefore, it was necessary to perform a Levene's test of homogeneity of variances. The Levene's test results were not significant for any of the variables. There were no significant associations between gender and Past Negative time perspective or

between type of school and Past Negative time perspective.

Analyses of Variance

Analyses of variance were used to compare the averages of the Past Negative sub-scores when the survey grouping variables had three levels. The results of these ANOVAs showed that there were no significant differences in Past Negative sub-scores between participants enrolled in online, traditional, and hybrid learning environments. The results of the ANOVAs also demonstrated that the assumption of normality was met for the multiple linear regression analyses.

Multiple Linear Regressions

Three different multiple linear regressions were performed using the Enter method to identify predictors of GPA. The first model included all 50

participants. The second model included only participants in pre-professional programs ($n = 34$). The third model included only participants in post-professional programs ($n = 16$). Independent and dependent variables were the same across models. GPA was used as the dependent variable. The Past Negative sub-score of the ZTPI, age, gender (male/female), program type (pre-professional/post-professional), and learning environment (traditional, online, hybrid) were entered as independent variables. The independent variables were entered into the models. This method allowed the author to determine which independent variables were significantly associated with the dependent variable, controlling for the effects of the other independent variables in each model. The results are shown in Table 3 and summarized below.

Table 3

Multiple Linear Regression Analyses of GPA Predictors in Pre-professional, Post-professional, and Combined Occupational Therapy Doctoral Programs

Variable	Model 1 <i>B</i>	Model 2 <i>B</i>	Model 3 <i>B</i>
Constant	4.19	4.41	3.90
Gender	-0.19	-0.23	-0.06
Age	-0.00	-0.00	0.00
Learning environment	0.11	0.15	0.08
Program type	0.16	-	-
Past Negative	-0.20*	-0.22*	-0.06
R^2 adjusted	.19	.26	-.27
F	3.25	3.84	0.21
ΔR^2	.27	.35	.07
p value	.014	.013	.930

Note. Model 1 included students in both pre- and post-professional programs ($N = 50$). Model 2 included only students in pre-professional programs ($n = 34$). Model 3 included only students in post-professional programs ($n = 16$).

Categorical variables for all models were labeled as follows. Gender: male = 1, female = 2. Learning environment: online = 1, traditional = 2, hybrid = 3. Program type: entry level = 1, post-professional = 2.

* $p < .05$.

Model 1: Participants from both pre- and post-professional programs. This regression model, which included participants from both pre- and post-professional programs ($N = 50$), statistically predicted GPA (see Table 3). The independent variables accounted for 27% of the variability of GPA, but only Past Negative time perspective was significantly associated with GPA ($p = .003$). Therefore, the null hypothesis was rejected for research question #2. Age, gender, program type, and learning environment did not significantly influence the prediction of GPA in this model (research question #5).

Model 2: Participants from pre-professional programs. This regression model, which included participants from pre-professional programs only ($n = 34$), statistically predicted GPA (see Table 3). The independent variables accounted for 35% of the variability of GPA, but only Past Negative time perspective was significantly associated with GPA ($p = .001$). Therefore, the null hypothesis was rejected for research question #3. Age, gender, and learning environment did not significantly influence the prediction of GPA in this model (research question #5).

Model 3: Participants from post-professional programs. This regression model, which included participants from post-professional and Ph.D. programs only ($n = 16$), did not statistically predict GPA (see Table 3). The independent variables accounted for only 7% of the variability of GPA. Therefore, the null hypothesis was not rejected for research question #4. Age, gender, and learning environment did not

significantly influence the prediction of GPA in this model (research question #5).

Discussion

In this study, Past Negative time perspective significantly predicted GPA in two of the three models: Model 1, which included participants from both pre- and post-professional programs, and Model 2, which included only participants from the pre-professional group. In these two models, students who had stronger biases toward thinking negatively about their past and focused on the past instead of the present or future tended to be less successful academically than their peers. Specifically, students who spent most of their present time focused on previous negative memories and/or events, had lower GPAs in their occupational therapy doctoral programs when compared to their peers who did not do so. This may be because they spend less time focused on learning in the present (Zimbardo & Boyd, 1999; 2008) and/or are inattentive to setting and obtaining future goals (Horstmanshof & Zimitat, 2007; Zimbardo & Boyd, 1999; 2008), all of which are necessary for the occupation of being a successful student. These results support other studies, which have revealed a negative relationship between Past Negative time perspective and academic success (Ferrari et al., 2012; Horstmanshof & Zimitat, 2007).

Past Negative time perspective did not significantly predict GPA in Model 3, which included only post-professional occupational therapy doctoral students. This nonstatistically significant finding may have been due to a small sample size; when both groups (pre- and post-

professional) were combined in Model 1, the prediction was still significant. However, this significant effect in Model 1 was apparently due to the pre-professional group. When the pre-professional group (i.e., Model 2) was omitted from Model 1, the post-professional group was no longer significant on its own. Therefore, a reason other than sample size may have accounted for the nonsignificant prediction in the post-professional group. This might have to do with differences between the types of students enrolled in pre- versus post-professional programs and/or with program differences.

There are many differences between pre- and post-professional OTD programs. Pre-professional OTD programs are accredited through ACOTE if they meet ACOTE's rigorous educational standards (ACOTE, 2006). Post-professional programs are not accredited by ACOTE, and therefore vary widely. Thompson (2008) has verified a lack of consistency among post-professional OTD programs, identifying numerous differences between them. The main difference between pre- and post-professional OTD programs is that pre-professional programs were constructed for students who had not yet begun to work as licensed occupational therapists. Post-professional OTD programs were developed for students who had worked as licensed occupational therapists prior to applying to a program. Therefore, occupational therapy work experience is a consistent variable of difference between the two programs.

Students in the post-professional programs included in this study had, by definition, previous

occupational therapy work experience. This may have nullified the predictive effect of Past Negative time perspective on GPA in this group of subjects. Life experience also could be a factor that was different between the pre- and post-professional program students, and life experience was not measured in this study. A new study that examines the mediating effect of years of licensed occupational therapy work experience and life experience on the predictive nature of time perspective on GPA may be of interest.

Limitations

There were several limitations in this study. The survey design required the participants to self-report data. Therefore, the researcher was unable to control for the truthfulness of the data collected. The participants were currently enrolled in an occupational therapy doctoral program. Because of the need for confidentiality and the participants' protection, the investigators could not obtain the contact information for students who dropped out of the programs and, therefore, could not analyze their time perspective data in relation to their GPAs. A bias may have been introduced because participation was voluntary. Different personality characteristics that could be associated with one or both variables studied may have influenced a student's decision to volunteer. There are other variables besides time perspective that may be associated with GPA; these were not examined. The author may have inadvertently increased the chance of statistical errors being introduced by running multiple regression models on the data. Finally, as noted, there are differences between pre- and post-professional OTD programs and

differences among post-professional OTD programs. These differences might have introduced variables not controlled for in this study that may have influenced or mediated the relationship between Past Negative time perspective and GPA.

Use of ZTPI in Occupational Therapy Doctoral Programs

The ZTPI has several possible uses in occupational therapy doctoral programs. In this study, Past Negative time perspective predicted GPA in 34 of 50 occupational therapy doctoral students (i.e., participants in pre-professional programs). This indicates that academicians might be able to use the ZTPI to identify “at-risk” students with high scores in Past Negative time perspective. Ferrari et al. (2012) reported a positive relationship between being able to set and obtain future goals and academic success in a group of 50 adolescents. Horstmanshof and Zimitat (2007) found the same result in a group of 347 first-year undergraduate college students. Thus, academicians may choose to develop interventions to change at-risk students’ time perspective more toward a Future orientation.

For example, Ferrari et al. (2012) created and implemented a successful intervention to shift students with biases in Past Negative and Present toward a Future orientation. The intervention was conducted in ten 2-hour sessions during school time. The method consisted of skills acquisition in goal setting, work, self-awareness, writing, and increasing social skills and supports.

Sword et al.’s (2014) intervention for developing a balanced time perspective for individuals with a Past Negative bias used narrative therapy and included the following five steps:

1. Identify the time perspective profile by administering the ZTPI.
2. Explain the importance of shifting from a biased to a balanced time perspective.
3. Share and explain the clients’ time perspective profiles with the clients.
4. Determine opposite but equal time perspective(s) that will balance the bias.
5. Use narratives to help the clients recall past positive experiences, rework negative memories, and create a positive future narrative. Help clients use these narratives as a bridge to actualize change so they become less biased and move more freely between the Past, Present, and Future time perspectives as needed.

Jacobs et al. (2013) stated that writing skills, motivation to acquire new technology skills, and time management were reasons for occupational therapy online learners’ attrition. As a solution to attrition, Jacobs et al. emphasized the importance of providing external, focused, supportive student services; this supports the use of time perception identification and intervention that this current study suggests. Occupational therapy academicians may choose to use the ZTPI to help identify and provide focused services to academically at-risk occupational therapy students.

The ZTPI also can be used to guide the development of additional admissions criteria, which are important in determining which students are most likely to do well in a particular program. Admissions criteria for entry-level occupational therapy doctoral programs are usually academically based. Consideration of applications for post-

professional degrees are typically more holistic and less academically focused. Lysaght, Donnelly, and Villeneuve (2009) found that ethics and personality characteristics measured before admission were associated with program retention. They suggested that a shift be made from the usual scholastic admission criteria to nontraditional criteria. By administering the ZTPI to preadmission students, occupational therapy doctoral program administrators and faculty could obtain each applicant's time perspective profile in each of the five categories. The results of this current study show that students with a Past Negative bias might not do well academically. As cited, the literature demonstrates that students with a Future bias might do well academically. This information may be useful in the selection of students for occupational therapy doctoral programs and possibly decrease the number of students at risk for attrition.

Summary

This nonexperimental, cross-sectional, quantitative survey study investigated the predictive nature of subjective time perspective on the GPAs of occupational therapy doctoral students at various programs throughout the United States. Results showed that when participants enrolled in pre- and post-professional programs were examined together, high scores in Past Negative time perspective significantly predicted low GPAs. Predictions also were significant in the negative direction when students enrolled in pre-professional programs were studied as a group. When students enrolled in post-professional programs were studied as a group, Past Negative time perspective did not significantly predict their GPAs, possibly due to a

low sample size. This study introduces the possibility that Zimbardo and Boyd's ZTPI instrument and model of time perspective have value to the field of occupational therapy and might have uses in occupational therapy doctoral programs.

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