

Dialogic Mediation as a Pedagogical Instrument for Removing Test Anxiety: An Applied Experiment on Using Tents of Vygotskian Cognitive Psychology for Nurturing Growth in Writing

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Abstract. The findings of empirical studies in the literature have suggested that test anxiety has debilitating consequences for learning and academic test performance. Deeply situated within Vygotskian sociocultural view of learning, dialogic mediation suggests psychological support for nurturing students' development through collaboration and working within zone of proximal development. This study sought to use principles of this framework as a pedagogical instrument for treating test anxiety and removing psychological barriers to promote writing. To this end, a sample of 65 pre-university male students participated in the Test Anxiety Inventory. Sixteen students with the highest level of test anxiety were chosen as the experimental group whose anxiety scores in the pre-test; post-test and delayed conditions were calculated. Moreover, a writing test was developed and administered to the group in the pre-test and the post-test time points to track growth after mediation. Data were analyzed using a micro genetic method, a Within-Subjects ANOVA, and a paired-samples t- test. The innovatory findings of microgenesis and numerical analysis revealed that dynamic mediations alleviated the diagnosed categories of test anxiety symptoms detected during test conditions to a significant level; $F - (1.089, 16.336) = 151.047, p < .05$ and

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bore growth in writing performance; $t(15) = -10.492$, $p = 0.000$. In sum, this experiment diagnosed chronic test anxiety signs and proposed a psychological, time-saving, economical plan to remove them. The findings of this innovative psychology-based study contribute to the second and foreign language pedagogy, psychologists, psychotherapists, counselors, instructors, and curriculum decision makers.

Keywords: Test anxiety, dialogic mediation, zone of proximal development, socio-cultural theory, writing

1. Introduction

Test anxiety, as a universal concern in educational system and society, has attracted the attention of many communities since 1950s. Anxiety in evaluative conditions is the psychological feelings or pressures that hinder an individual from doing well on a test or an evaluative task. On this basis, test anxiety research has held particular interest for psychologists and educational researchers over last decades. Although Brown (2007) found a moderate level of anxiety beneficial for learners, he continued to assert that the students' actual abilities will fail to meet expectations if they are negatively affected by this feeling. However, antagonistic or debilitating test anxiety in this study has been defined as a psychological barrier whose symptoms, before or during test administration in English as a Foreign Language (EFL) contexts, cause disruptive effects on real-time performance, and make the students experience a poor academic achievement.

To prove those claims, learners' reflections, instructors' observations and empirical evidence in the test anxiety research indicate that the majority of EFL learners suffer from symptoms of anxiety during test conditions which leave debilitating effects on their performances (see Benedict, 2014; Cassady & Johnson, 2001; Dundas, Wormnes, & Hauge, 2009; Eubank, 1993; Fulton, 2016; Kaya, 2015; Lentz, 2017; Mandler & Sarason, 1952; Zeidner, 1998; Zheng & Cheng, 2018).

Based on the observed symptoms of anxious learners in evaluative conditions, test anxiety is seen as the feelings of apprehension over a specific test performance in educational settings. Test-anxious learners experience "disturbing thoughts, distracting emotions, preoccupied feel-

ings, or the fear of evaluation that one perceives while engaged in a test situation” (Tasi & Li, 2012, p. 95).

By comparative investigations into the past literature of test anxiety, much of the research projects have been conducted to establish test anxiety measures, assess the anxiety levels of test takers, and examine the relationship between test anxiety and other variables such as gender, age, and performance. Although a bulk of research has been devoted to detect the nature of test anxiety and have introduced coping strategies or intervention approaches to alleviate its symptoms, most of the researchers viewed this part of learning anxiety as it belongs to the general or societal anxiety. Further, the methods they used to remove test anxiety are not time-saving and need unique settings and human psychological expertise on the part of the teachers to be accomplished. In addition, the major problem with these strategies is that they cannot be accomplished by the ordinary teachers in the educational settings. According to Farokhipour, Khoshsima, Sarani, & Ganji (2018), most of the approaches used for reducing anxiety are implicit and may not have been situated within the framework of cognitive psychology.

Therefore, referring to anxiety as a psychological barrier by many scholars (e.g., Horwitz, 2010; Zeidner & Matthews, 2003 as well as Zeidner, 1998), the present study adopted a dialogic/ dynamic mediation as a pedagogical instrument to detect test anxiety symptoms and alleviate them during the assessment. This instrument is a deep-rooted and diagnostic principle with a theoretical foundation in the Vygotskian cognitive psychology.

Considering the cognitive psychology and learners' development, Vygotsky (1978) found the nature of higher mental functions of the individuals in social interactions with more experienced people who steer them towards the upper levels of mastery. This trait of societal development is central to Vygotsky's Socio-Cultural Theory. However, as it appears, the mediation referred to as 'scaffolding' by the innovator scholars like Wood, Bruner and Ross (1976) is accomplished in interaction with others in the related environment. After receiving any scaffold of various forms, and internalization of the concepts, the cognitive functions would become a part of the child's developed cognitive knowledge.

As it is inferred above, dynamic assessment is not only linked to Vygotsky's interpretations of development in Zone of Proximal Development, but also has a deep ground in it. Also, the applicability of dynamic mediation as a remedy to learning problems has been proved many times in the literature of scaffolding theory from the late 1970s and 1980s until recent decades (Bruner, 1975; Cazden, 1979; Hod app et al., 1984; Wood et al., 1976; Boblett, 2012; Reynolds, 2017). Also, it turned out to be a stepping stone to the implementation of learning in the last two decades (Ableeva, 2010; Antn, 2003; Lantolf & Poehner, 2010; Poehner, 2005; Xiaoxiao & Yun, 2010). Despite the massive application of mediation approaches with a long history in developmental and educational psychology, to date, the investigation of its effect on psychological barriers to language learning like test anxiety has not been the focus of dynamic assessment studies; however, its research is an innovative and needs thorough investigations.

Thus, as a plan of action to bridge this gap in the literature, the present study focused on test anxiety issues and investigated those psychological obstacles (those negatively affecting performance in academic tests) formulated in Spielberger's (1980) Test Anxiety Scale. In other words, as an innovative piece of research under the tents of Vygotskian Psychology, this study aims to investigate the role of dialogic mediation as a pedagogical tool in treating test anxiety at the pre-university level and to explore whether or not this psychological model of pedagogy promotes writing skill among test-anxious students in pre-university schools of Iran.

1.1 Research question

Does dialogic intervention result in the treatment of test anxiety symptoms as well as the promotion of writing among pre-university EFL learners?

2. Literature Review

Empirical findings of the past literature bore conclusive proof that test anxiety hurts the learners' successful performances in educational settings. Test anxiety, as an innovative research topic, found its way in the

1950s through several research studies conducted by Mandler and Sarason (1952). As the pioneers in this new research area the researchers developed a Test Anxiety Questionnaire (TAQ), through which adult learners' level of anxiety associated with tests and exams could be measured. Since then, scientific research projects on test anxiety have attracted the interest of many scholars over years. Test anxiety is of vital importance in education and diverse disciplines of psychology, "including personality and social psychology, educational and developmental psychology, cognitive psychology, health psychology, and counseling and clinical psychology" (Zeidner, 1998, p.xi).

As a primary goal, previous bodies of research involving test anxiety have mainly focused on exploring the relationship between this construct and students' performances in evaluative conditions. In this regard, Zeidner and Matthews (2003) ascertain that much of the related research over the past decades has revealed the negative impact of test anxiety on learners' test performances (e.g., Aydın, Yavuz & Yeşilyurt, 2006; Birenbaum & Abu Alhija, 1994; Cassady & Johnson, 2001; Zheng & Cheng, 2018; Eubank, 1993; Fulton, 2016; Powers, 1986; Rana & Mahmood, 2010; Seipp, 1991). The finding drawn from these studies stressed the fact that the low performances of students had been due to the debilitating effects of anxiety during test administration. These researchers also confirmed the existence of a negative correlation between test anxiety and learners' exam performances and course grades.

Taking into account these very facts, however, many researchers have put forward with a plan in mind to ameliorate the harmful symptoms of test anxiety among learners in diverse settings (Benedict, 2014; Dundas, Wormnes, & Hauge, 2009; Embse, Barterian & Segool, 2013; Kaya, 2015; Lentz, 2017; Sanaeifar & Nafari, 2018; Talbot, 2016; Yeo, Goh & Liem, 2015).

Dundas et al. (2009) reported the results of a particular mediation to treat test anxiety among 36 cases in Norway. In an intervention plan which took three sessions, and completed in several weeks, the members were intervened by the mediators through techniques such as cognitive behavioral treatment and positive thinking approaches during the test. The results of data analysis revealed that almost the entire

group used mediation and dealt with their signs of anxiety according to their statements about their levels of anxiety. It was additionally demonstrated that the members not only ameliorated the real-time anxiety but also controlled their anxiety in new conditions.

Further, in his pervasive experiment on the treatment of test anxiety, Benedict (2014) developed an intervention plan to relieve test anxiety, and led the students with diagnosed learning difficulties to improve their scores. The intervention approaches used in this study were mainly focused on the skills during the test and study. The intervention plan was intended for teaching the students' test anxiety remedial skills and strategies, study skills, test wiseness strategies, test taking, and relaxation techniques in three sessions. The findings, however, indicated that meaningful differences were seen among Test Anxiety Inventory scores in pretest and posttest for two of the three individuals in the follow-up experiment after four weeks; entire participants' self-reported grades were lower after mediation program.

Nadinloyi et al. (2013) earlier explored in their study the effectiveness of "cognitive therapy" as a diagnostic and mediation tool to ameliorate test anxiety of ninety test-anxious undergraduate students in Tehran. This experimental research showed the diagnostic power and successive role of meditational approaches in decreasing anxiety during the test among the diagnosed test-anxious students.

Goh et al. (2015) referred to test-related anxiety as a mental matter of concern among school children in Singapore. On this basis, they developed another study intending to prevent test anxiety through the application of "cognitive-behavioral therapy" to a cluster of fourth- grade students. This therapy technique includes practicing relaxation techniques, teaching study skills, monitoring the signs of stress, and teaching positive self-talk that was used by the researchers as interventional procedures. The results demonstrated a significant reduction rate of anxiety among learners in real time and delayed test conditions.

In addition, many other studies highlighted the negative correlations between test anxiety and the academic performance of language learners (Kahan, 2008; Sarason, 1975; Spielberger & Vagg, 1995; Zeidner, 1998). For instance, Majidfar & Oroji (2015) examined the effect of test

anxiety and self-efficacy as two psychological variables on the writing performance of fifteen intermediate language learners. Throughout their study they emphasized the crucial role of these factors in the students' writing proficiencies. They noted that the high-anxious students encountered severe physical problems such as high blood pressure and heart related disorders as opposed to self-efficient and low-anxious pupils. The results, however, suggested that test anxiety was negatively correlated with academic performance in EFL settings.

Vukeli? (2011) also investigated the relation between writing anxiety and writing performance of second and third grade of high school students and found a negative correlation between these two variables. In other words, the results indicated that as writing anxiety increases, writing ability decreases and vice versa. These empirical findings align with the findings drawn from Sarason (1975) that reported a negative association of test anxiety with writing performance.

2.1 Dynamic intervention-based studies

With a profound look at the background of dynamic assessment, many scholars have investigated this psychological approach on different aspects of language learning (Ableeva, 2010; Hidri, 2014; on listening, Ajideh & Nourdad, 2012; Amini, 2015, on reading, Isavi, 2012; Shrestha, 2011 on writing, Levi, 2012; Poehner, 2005, on writing).

The theoretical framework used in these studies was based on psychological views of language learning, concept of ZPD, and the sociocultural theory of cognitive development proposed by much famous psychologist Vygotsky (1978). Since its emergence in 1990s, the applicability of this approach to all sorts of learning difficulties, recognition of learning potentials, and development of learning skills has been abundantly proved in the literature.

Despite all privileges and contributions of dynamic intervention studies to language learning, the issue of test anxiety has been ignored by the researchers. Test anxiety, as a psychological construct is now in its early days among dynamic assessment scholars, and very few studies have investigated the effect of the dynamic aspects of teaching on reducing test anxiety. The earliest study in the area was conducted by

Sanaeifar & Nafari (2018) on test anxiety, although it is different in many aspects such as methodology, design, and the innovatory findings from the present research. They investigated the effects of formative and dynamic assessments of reading comprehension on 50 intermediate EFL learners' test anxiety. The findings derived from this research showed that formative and dynamic assessments of reading comprehension had a statistically profound impact on the intermediate EFL learners' test anxiety amelioration. They also found that the dynamic assessment approaches worked better than formative assessment to reduce test anxiety among participants.

Moreover, in an immediate investigation Farokhipur et al. (2018) clung to a novel idea of removing learning anxiety and used the principles of Vygotskian cognitive development to alleviate anxiety symptoms and promote speaking skill in the language classes. They employed Horwitz et al.'s (1986) foreign language classroom scale and chose ten students with the highest anxiety level out of 250 high school students. These researchers reported the supportive role of dynamic mediations as a valuable diagnostic instrument in eliminating anxiety. More broadly, the findings drawn from this study demonstrated that dynamic interventions alleviated symptoms of anxiety in the scale including communication apprehension, test anxiety, and fear of negative evaluations, and had pervasive effects on the development of speaking among learners as well.

3. Research Methodology

This quasi-experimental study lies within the framework of the Vygotskian theory of cognitive development. The principal aim of the study is to investigate the diagnostic role of dialogic mediation in removing test anxiety symptoms as well as promoting writing performances among FEL pre-university students. The study applies interventionist approach which is a quantitative method with a pretest-intervention post-test paradigm following the Sternberg and Grigorenko's (2002) Cake Format. According to Poehner and Lantolf (2004), the mediation in this method is provided for the examinee in form of a set of standardized hints ranging from implicit to explicit during test administration. The methodology used in this study was also supplemented by a qualitative

approach using a micro genetic examination to trace the psychological progress of learners in a certain period.

3.1 Participants

This study was conducted using a sample of 65 pre-university male students who enrolled in 2018-2019 in various schools in Yasouj, Iran. The students belonged to the intact language classes, and they were selected through a convenience sampling procedure due to the practical criteria of availability, and easy accessibility (an intact class design). They had been learning English for about seven years at school, and their ages ranged from 17 to 19. These students were Persian native speakers and none of them had experienced living or studying in an English-speaking country. Through the administration of Spielberger's (1980) Test Anxiety Inventory, sixteen learners with high test anxiety levels were highlighted according to their gained scores, and subsequently selected as the experimental group for intervention phase of the experiment. The participants were invited to a make-up English course after obtaining the necessary permission of their parents, and school principals to promote their language abilities.

3.2 Instrument

To put the requirements of the research into practice, the following instruments were employed:

3.2.1 Test anxiety questionnaire

To measure the participants' anxiety levels, the researcher adopted the twenty-item Test Anxiety Inventory devised by Spielberger (1980). This self-report measure includes two sub-constructs/scales that measures Worry (items: 3, 4, 5, 6, 7, 14, 17, and 20) and Emotionality (items: 2, 8, 9, 10, 11, 15, 16, and 18) based on a four-point Likert scoring scale ranging from 'almost never' (indicating low anxiety rate) to 'almost always' (indicating high anxiety rate). Each sub-construct contains 8 items along with the other four items (1, 12, 13, 19), which do not belong to any of these scales but constitutes a part of the total grade. The four choices in the scale are scored as indicated in the following figure.

Optional Choices	Scores
Almost never	1
Sometimes	2
Often	3
Almost always	4

Figure 1. Spielberger's (1980) Likert Scoring Scale

The total grade of each participant on the Test Anxiety Inventory represents their level of test anxiety (Spielberger, 1980). The Test Anxiety Inventory has been widely used by researchers, and the acceptability of its reliability has been reported on many bodies of research. Initially, Spielberger (1980) reported the estimated reliability through Cronbach's alpha (α) to be 0.96 for the scale's total scores, 0.91 for Worry, and 0.91 for Emotionality items. Further, for Mahmood and Rana (2013), the reliability for total grades was 0.868, 0.767 for emotional and 0.720 for worry items. Furthermore, for better understanding, the questionnaire was translated into Persian then its accuracy was examined through a back translation procedure by two post-graduate translation students.

3.2.2 Mediation tools

To put into practice the dynamic mediations, a regulatory scale of mediation outlined by Aljaafreh & Lantolf (1994) was adopted. This menu of mediation contains 13 prompts taken by the mediator to scaffold the learners' ability to overcome real-time difficulties when performing a task. These pre-chosen mediating prompts are used through systematic teacher-learner dialogic interactions during the test and follow an implicit-to-explicit format in providing mediation. The rationale behind using this scale was to gain insights into the microgenesis of the students' growth through dialogic mediations performed by the mediator. The inventory is shown in figure 2.

3.2.3 Writing Materials

In order to examine the effect of dynamic/dialogic mediation on developing writing performances, a teacher-fronted writing test was designed from the pre-university English book and administered to the students. This test follows the criteria of the CUNY Assessment Test in

Writing (CATW) associated to the City University of New York that is a standardized writing test measuring students' abilities to do introductory college-level writing in English. Further, the CATW adopts a rubric that is an instrument for scoring and measuring writing abilities. In the test students are asked to:

1. Identify critical ideas within the reading passage
2. Write a summary of the key ideas in the reading in your own words
3. Identify an important idea in the passage and present a written response to it
4. Responding to some reading comprehension focus questions in written English To standardize the teacher-made test, it was administrated to a class of 16 members in a pre-university center with similar characteristics. In other words, the pilot study was conducted to calculate the reliability of the test. Its reliability calculated by Cronbach's Alpha turned to be 0.79.

0. Tutor asks the learner to read, find the errors, and correct them independently prior to the tutorial.
1. Construction of a "collaborative frame" prompted by the presence of the tutor as a potential dialogic partner.
2. Prompted or focused reading of the sentence that contains the error by the learner or the tutor.
3. Tutor indicates that something may be wrong in a segment (e.g., sentence, clause, line)- "Is there anything wrong in this sentence?"
4. Tutor rejects unsuccessful attempts at recognizing the error.
5. Tutor narrows down the location of the error (e.g., tutor repeats or points to the specific segment which contains the error).
6. Tutor indicates the nature of the error, but does not identify the error (e.g., "There is something wrong with the tense marking here").
7. Tutor identifies the error ("You can't use an auxiliary here").
8. Tutor rejects learner's unsuccessful attempts at correcting the error.
9. Tutor provides clues to help the learner arrive at the correct form (e.g., "It is not really past but something that is still going on").
10. Tutor provides the correct form.
11. Tutor provides some explanation for use of the correct form.
12. Tutor provides examples of the correct pattern when other forms of help fail to produce an appropriate responsive action

Figure 2. Regulatory scale of mediation- Implicit (strategy) to Explicit (Aljaafreh & Lantolf, 1994, p. 471)

3.3 Data collection

At the onset of the experiment (pre-intervention condition), the Test Anxiety Inventory was administered to the entire of 65 pre-university candidates, and sixteen high test-anxious students were identified then, they were chosen as the experimental group of the study. After analyzing the data obtained from the anxiety questionnaire, it was found that all candidates suffered from different anxiety symptoms in evaluative conditions. In other words, the questionnaire scores represented different levels of test anxiety among the participants; out of 65 research samples, 41.53 percent (n= 27) suffered from low anxiety, 33.84 percent (n=22) had medium level, and 24.61 percent (n=16) suffered from severe anxiety level.

However, through the analysis of the questionnaires' data, the test anxiety symptoms of the treatment group were detected. Then, to investigate how much growth was achieved in writing ability as the result of dynamic mediations, a teacher-fronted writing test was developed, which according to Poehner (2005), creates a baseline measure in form of the achieved scores. The scores on this test represented the students' Zone of Actual Development (ZAD); however, any growth after intervention would be due to dynamic mediations and their remedial effects on anxiety symptoms and writing difficulties.

Next, the experimental group entered the interventionist dynamic assessment phase during the course with a deep glance at either anxiety symptoms or writing difficulties seen in pre-mediation conditions. All mediation inventory prompts adopted by the researcher during test administration were taken from Aljaafreh & Lantolf (1994), which were highly fitted into the learners' ZPDs. These scaffold interventions served to treat test-related anxiety symptoms, remove psychological obstacles to learning, and promote writing. During the assessment, based on the individuals' inability to accomplish the task and when committing mistakes, the mediator offered gradual assistance and scaffold. Hence, all learners' needs were properly met during the test with the systematic process of dialogic or cooperative interactions in part of the researcher.

In the next phase of the experiment (post-mediation), the Test Anxiety Inventory was administered to the treatment group once again, and

the results were drawn. Too, a parallel writing post-test was conducted on the group, and the scores were recorded.

Furthermore, (in delayed conditions) in order to assess the far effect of dynamic mediations on anxiety among learners, the Test Anxiety Inventory was administered eight weeks later (at the end of the academic year) and the scores were obtained. Investigating the far transfer of intervention effects in follow-up conditions reveals how much the learners can internalize the activated potential abilities through mediations in favor of their sole problem-solving behaviors as a diagnostic tool for the future in new settings.

In the end, the findings of the two writing tests and three Test Anxiety Questionnaires in the pre-test, post-test and delayed situations were analyzed through statistical tools then, the results were reported.

3.4 Data analysis

To investigate the effect of independent variables (dynamic mediations) on dependent variables (test anxiety and writing performance) in the experiment, repeated measures ANOVA was used to compare the data obtained from TAI in pre and post mediation and delayed condition. Also, a Paired sample t-test was used to compare obtained writing tests scores to quantitatively examine the product of test anxiety treatment and writing development in language learning. As a supplementary method, a micro genetic examination of mediator-student dialogic interactions was designed to track the growth process among experimental learners. This qualitative method allows the analysis of interactions between the mediator and the students, and shows how they solve their test anxiety problems through intervention processes in a systematic manner. All numerical data were analyzed using SPSS analytic program (version 19).

4. Results

The test anxiety level of the participants was determined at the very beginning of the experiment based on TAI categories. Mainly, it was intended to pinpoint the high anxious students as the treatment group of the study. The TAI scoring results (ranging from 20 to 80 points) are shown in the following table.

Table 1: Test anxiety levels of participants on the basis of TAI

Level	Number of Students	Anxiety level	Scores	Percentage
1	27	Low-level	20-40	41.53
2	22	Moderate-level	40-60	33.85
3	16	High-Level	Above	24.61
Total	65	-	-	100

Table 1 indicates the grades of low-level ($n=27$, 41.53%), medium-level ($n=22$, 33.85%) and high-test anxious ($n =16$, 24.61 %) learners on TAI. In another attempt, the significant test anxiety symptoms of treatment group were identified through analyzing the questionnaires' statements as well as their performances on TAI. The results are presented in the following table.

Table 2: Major Test Anxiety Symptoms of participants based on TAI

Sub-Scale	Test Anxiety Symptom
Emotionality	<ol style="list-style-type: none"> 1. Become afraid when thinking about the failure in the test 2. Being taut or frightened of not getting through the school. 3. Rapid heartbeat during the test. 4. Feeling uneasy or fear of poor performance before getting the test paperback. 5. Feeling upset and excessive sweating while taking tests.
Worry	<ol style="list-style-type: none"> 1. Feeling restless or fidgety on an important test. 2. Thinking about the failure consequences. 3. Being worried about the test outcome. 4. Memory loss and deep nervousness during examinations. 5. Great concerns about course grade. 6. Getting mixed and confused when working harder at a test.
Test Anxiety Total	<ol style="list-style-type: none"> 1. Feeling worried about the test after taking it. 2. Being worried sick and tensed during tests.

Addressing the research question of the study, which investigates the effect of dynamic mediation on the test anxiety of participants, as they underwent repeated measurements at different time points, a within subjects ANOVA was conducted to mark changes in mean scores of test anxiety gained by the treatment group on TAI in pretest, posttest, and delayed conditions.

Table 3: Descriptive Statistics for Experimental Cluster Scores on TAI

Tests	Mean	Std. Deviation	N
Pretest	69.69	5.816	16
Posttest	42.81	10.722	16
Delayed post-test	41.63	9.280	16

Descriptive statistics of TAI in table 3 shows the Means and Standard Deviations of the treatment group on TAI in pretest ($M = 69.69$, $SD = 5.816$), posttest ($M = 42.81$, $SD = 10.722$) and delayed time points ($M = 41.63$, $SD = 9.280$) respectively. Furthermore, the result of ANOVA for these test-anxious correlated samples has been tabulated as follows:

Table 4: Tests of Within-Subjects Effects of the participants' Scores on TAI

Source		Type III Sum of Square	df	Mean Square	F	Sig.
Test	Sphericity Assumed	8059.625	2	4029.813	151.047	.000
	Greenhouse-Geisser	8059.625	1.089	7400.527	151.047	.000
	Huynh-Feldt	8059.625	1.109	7268.534	151.047	.000
	Lower-bound	8059.625	1.000	8059.625	151.047	.000
Error(test)	Sphericity Assumed	800.375	30	26.679		
	Greenhouse-Geisser	800.375	16.336	48.995		
	Huynh-Feldt	800.375	16.633	48.121		
	Lower-bound	800.375	15.000	53.358		

Mauchly's Test of Sphericity indicated that the assumption of sphericity had been violated, $p < .05$, and therefore, a Greenhouse-Geisser correction was used. The values in the Greenhouse-Geisser row showed a statistical difference, $F(1.089, 16.336) = 151.047, p < .05$. In sum, this information reveals that an overall significant difference is seen in

mean values obtained from TAI in different time points, but it is not clear where those differences are located.

However, when the ANOVA result is significant, a posteriori test (Bonferroni post hoc test) is to be conducted to confirm where the differences occurred between the mean scores. The results of Pairwise Comparisons are presented in the following table.

Table 5: Pair-wise Comparisons for TAI

(I) factor1	(J) factor1	Mean Difference		Sig. ^a	95% Confidence Interval for Difference ^a	
		(I-J)	Std. Error		Lower Bound	Upper Bound
1	2	26.875*	2.331	.000	20.597	33.153
	3	28.063*	2.050	.000	22.539	33.586
2	1	-26.875*	2.331	.000	-33.153	-20.597
	3	1.188	.607	.208	-.448	2.823
3	1	-28.063*	2.050	.000	-33.586	-22.539
	2	-1.188	.607	.208	-2.823	.448

Table 5 shows the significance level for differences between the groups' time points. In other words, Bonferroni Post hoc tests revealed that there was a significant difference between pre-TAI and post-TAI scores ($p = 0.000$) and also between pre-TAI and TAI in delayed conditions after eight weeks ($p = 0.000$), but no significant differences between post-TAI and far TAI scores and after eight weeks of interval ($p = 0.208$). Also, the "Mean Difference (I-J)" values in the Pair-wise Comparisons table indicated that TAI scores were significantly dropped at posttest and delayed time points. It was also revealed that a slight decrease was found in TAI scores from post-test to the delayed condition, although this reduction was not statistically significant.

Therefore, we can conclude that dynamic interventions not only treated test anxiety symptoms of the experimental group shortly after enrichment dialogic sessions but also kept on treating these symptoms in the follow-up time points (at the end of the academic year). Further, to compare the mean scores of writing tests in pre-test and post-test conditions, a series of descriptive statistics and paired-sample t-test were run, and the results were presented in the following table.

Table 6: Descriptive Statistics and t-test Results for Writing Scores of Experimental group in Pre & Post Test

Pairs	Pre-test		Post-test		95%Confidence Interval of the Difference		N	t	df	Sig.
	M	SD	M	SD	Lower	Upper				
Experimental Pre-test/posttest	50.50	14.99	72.19	15.85	-26.09	-17.28	16	-10.492	15	.000

From Table 6, it can be seen that there was a significant difference in the scores of experimental group for writing test in pre- test (M= 50.50, SD = 14.99) and post-test (M= 72.19, SD= 15.85) time points; $t(15) = -10.492$, $p = 0.000$. The results revealed that dynamic interventions did have a pervasive effect on the performance of the experimental group in writing tests. In sum, not only will dynamic mediations relieve debilitating test anxiety of EFL pre-university students but also it nurture growth in their writing abilities.

Furthermore, addressing the research question of the study, the research methodology was supplemented by a qualitative microgenesis of students' development. This supplementary method suggested by Aljaafreh and Lantolf (1994) showing the frequency of scaffolds and responsive moves produced by the tutor and the students, while dialogically working in the ZPD. On this basis, to trace the process of removing test anxiety symptoms and language difficulties several parts of this micro genetic analysis are presented in form of protocols in the following phase of the study.

Protocol 1: Treating Feeling upset and excessive sweating while taking tests (TAI-Emotionality)

Description: The teacher is reviewing a reading in the test. He asks the student to take a few minutes and read, find the errors to correct them alone. He, then, goes over the sentence containing the error implicitly.

Teacher: Take a look at the third sentence Reza

[Step1: Focused reading of the erroneous sentence, very implicit hint]

Reza: Okayhmm (He is reading the sentence with shy voice).

Teacher: I think there is a problem with the sentence, “Do think the same”.

[step2: point to the wrong sentence, an implicit hint]?

Reza: Hmmm, silence

Teacher: Look at the first part of the sentence please repeat it

[step3: location of the error, a more implicit hint]

Reza: hmmmI have studiedlast night

Teacher: A wrong tense [Step 4, Identify the error, an explicit mediation], time of your study is related to a finished action in the past?

[Step 5, more explicit, implicit mediation]

Reza: Hmmm (Looking around the class under stress) had study? (Thinking while sweating and being stressful)

Teacher: Nop, Reza [step 6: Rejection of an unsuccessful attempt] just one word which shows the past

[step 7, explaining the rule, most explicit hint]

Reza: Oh yes, studied (smiling, less stressful and more relaxed).

Outcome: Student dealt with his shyness, and managed his stress and anxiety under the teacher’s scaffolding. He also did overcome his physical discomfort, and remembered the proper form of the tense calmly with no symptoms of anxiety.

Protocol 2: Treating the worries about the test outcome (TAI-Worry)

Description: The teacher is going over a paragraph from which a written summary was given by the students.

Teacher: Look at line 1, please

[Step1: focus on the wrong sentence-very implicit hint]

Ali: The writer is talk about global warming

Teacher: is there anything wrong with this sentence

[Step 2, point that something is wrong, an implicit hint]

Ali: Silence and look at the teacher while taking deep breath.

Teacher: Is talk about

[Step 3, narrow down the location of the error, an explicit mediation]

Ali: Thinking with worries

Teacher: Don't you think you must correct something?

[Step 4, an explicit hint]

Ali: Hmmmlooking nervous and worried.

Teacher: Is talk I meant [Step 5, pointing the incorrect phrase, a very explicit hint], is talk or talking?

[Step 6, provide clues, the most explicit hint]

Ali: is talk is not right teacher?? (While looking anxious)

Teacher: it is a present continuous using to the action which is being done

[step 7, explain the rule, most explicit hint]

Student: Oh yeah, the writer is talking about global warming (Smiling and not looking worried).

Outcome: The student learned the linguistic rule through systematic cooperative interactions with the teacher. He dealt with his anxiety during meditational steps with the teacher, which resulted in physical comfort and rule mastery in writing tests.

Protocol 3: Treating the nervous tension during the test (TAI-total)

The teacher points to a focused question in the test.

Teacher: What does it mean by 'global warning' Nima? Please repeat your answer.

[Step 1, focused reading, very implicit hint]

Nima: It mean that the earth is.

Teacher: Find the error in this sentence

[Step 2, pause, an implicit hint] it mean?? [Step 3, narrow down the error, an explicit mediation]

Nima: Thinking while looking nervous Oh it means that sorry teacher (smiling and looking calm)

Teacher: No problem, go on.

Outcome: The student corrected the missing rule at the beginning of the mediation. He found the teacher's scaffolding valuable in dealing with tension and recalling the linguistic point during the exam.

In addition, to shed more light on the efficacy of dynamic assessment in ameliorating test anxiety, some anxiety symptoms and the dynamic interventions used are summarized in Table 7.

Table 7: Test Anxiety Symptoms and Meditational Prompts Adopted during Exam

Sub-Construct	Test Anxiety Symptom	Result	Dynamic Prompts
TAI-Emotionality	Feeling upset and excessive sweating while taking tests	Light-headed Feelings Physical discomfort	1: Focused reading 2: Identify the wrong sentence 3: Pinpoint the erroneous part 4: Explanation
TAI-Worry	Memory loss and deep nervousness during the examination	Negative performance Test apprehension	1: Focused reading 2: Show the wrong part 3: Asking a question 4: Pointing to the incorrect part 5: Identifying the correct answer 6: Explicit explanation
TAI-total	Being worried sick and tensed during tests	Thoughts of failure Excessive Sweating and fast heartbeat	1: Focused reading 2: Indicate the wrong part 3: Asking a question 4: Identifying the nature of the wrong form 5: Explanation

5. Discussion

The present study is a novelty that is situated within the Vygotskian psychology and the notion of dynamic assessment. The principal purpose of this experiment was to investigate whether or not dialogic intervention as a pedagogical instrument result in the treatment of test anxiety symptoms as well as the promotion of writing test performance among EFL pre-university students. The results of data analysis demonstrated that Iranian pre-university students suffered from severe anxiety symptoms in evaluative settings, as elaborated and illustrated thoroughly in the above tables.

However, the novel findings of this study, both qualitatively and quantitatively, are further proof of dynamic/dialogic interventions' outstanding remedial capability to treat test anxiety and promote writing in a systematic and quick manner. In other words, the qualitative anxiety research proposed by sociocultural theory shed further lights on the process of test anxiety treatment and the growth of writing performance through micro genetic analysis. This SCT-based method to analyze data demonstrated to the mediator a collection of learners' language difficulties blended with different anxious reactions when they had to deal with the problems. Accordingly, during the interaction analysis approach the mediator was able to set the meditational strategies based on the concrete reactions of the learners to their real-time problems. More precisely, during the assessment the micro genetic analysis highlighted the relationship between meditational moves and responsive moves in teacher-learner dialogic interactions to show the process development of the knowledge in learners' ZPDs. Moreover, making contributions to the language pedagogy the positive outcomes of the integration of instruction and assessment to accomplish the learning goals could be better understood during this type of analysis.

Hence, the findings of micro genetic examination of mediator-learner dialogic interactions in this study revealed that test-anxious learners gradually reduced their anxiety symptoms through teacher meditation strategies in their ZPDs and consequently mastered their writing difficulties.

Consequently, the result of micro genetic tracking was also supplemented utilizing the quantitative analyses that shed additional lights on the vital function of mediations in removing psychological barriers to learning. Also, the results of statistical data best represented the product of the impact of the dialogic-negotiated intervention on test anxiety symptoms of the participants. The significant difference between the pre-TAI and post-TAI mean scores and also between pre-TAI and TAI in delayed conditions after eight weeks confirmed a quantitative proof on a positive change in cognitive awareness of the learners toward their potential ability to solve the test-related psychological problems beyond their abilities. This significant difference revealed that the students performed better on the posttest conditions than in the pre-test as they benefitted from the teacher inventory prompts to treat their anxiety and overcome learning difficulties during test conditions. Despite this, it was also found that the individuals used the mediators' assistance in their ZPDs and had the ability to internalize the assistance and transfer it to later times (eight weeks later).

A plethora of studies have been conducted in the area, but they did not provide any psychology-based methods for treating or ameliorating test anxiety symptoms among test takers. For instance, Rana and Mahmood (2010) used the same anxiety questionnaire (TAI) in their study, and found that test anxiety would be the most debilitating factor affecting the students' test performance, while they did not propose a practical method to remove or even alleviate test anxiety. Further, the findings of Farooqi, Ghani and Spielberger (2012) revealed that test anxiety pervasively influenced the medical students' academic performance however, they proposed that for eliminating test anxiety, timely and effective counseling and therapeutic interventions could be introduced to the learners. These techniques require academic clinical knowledge on part of the teachers and also need a huge amount of time to be accomplished.

Rajiah, Coumaravelou and Ying (2014) used a different anxiety scale in their study, and concluded test anxious pharmacy students suffer from higher level of psychological distress and amotivation. On this basis, the researchers only proposed psychological mediations to deal with test anx-

iety and its follow-up aftereffects but they did not employ any psychological remedy for removing them. Gursoy and Arman's (2016) findings identified the test anxiety level of high school students and investigated its relationship with other variables like grade level and academic performance. Although these researchers pinpointed the sources of test anxiety, they did not propose any method to alleviate these sources. Dundas et al. (2009) reported the results of a specific intervention to treat test anxiety among 36 candidates in Norway. Despite the pervasive role of cognitive behavioral therapy and positive thinking approaches in reducing anxiety, the methods they used took several weeks to be accomplished. Benedict (2014) used intervention approaches such as test-taking strategies, study skills, test wiseness strategies, and relaxation practices to decrease test anxiety among learners. These strategies are implicit and are not deeply rooted in cognitive psychology proposed in the Vygotskian theory. Despite this, the findings obtained in this study did not reveal a positive outcome for all participants.

In addition, a considerable body of research has also been carried out to reduce test anxiety (Gregor, 2005; Larson et al, 2010; Weems et al, 2009; Yahav & Cohen, 2008). These researchers adopted coping techniques such as relaxation practices, exposure programs, test-taking skills, biofeedback computer programs, cognitive behavioral therapy, muscle relaxation intervention and deep breathing practices. All these approaches are time-consuming and need human expertise and high level of academic knowledge to put all them into practice. Besides, these coping strategies are not deeply rooted in psychological aspect of language learning and their successive remedial effects need further investigation. On the contrary, intervention approaches used in this study are deeply originated from the theoretical conceptions of the cognitive psychology and the Vygotskian Socio-Cultural Theory of learning. Moreover, dynamic mediations used in this experiment can be accomplished in ordinary educational settings with minimal facilities and language teaching skills.

The results of this DA-based experiment are in line with those of Sanaeifar & Nafari (2018). In a similar study the researchers investigated the effects of formative and dynamic assessments of reading com-

prehensions on intermediate EFL learners' test anxiety and found that dynamic assessment of reading skill was a more effective treatment for test anxiety than formative assessment. Although the study was rooted in the Vygotskian SCT, the model of dynamic assessment (Sandwich format) they used to remove test anxiety does not allow for micro genetic tracking of development and anxiety reduction process during the examination. Also, internalization of the knowledge gained through dynamic mediations was not scrutinized in delayed conditions, which is the key concept in the Vygotskian perspective.

Also, the findings of present study support the findings of other experimental studies in the area of dynamic assessment. Poehner (2005) found that dynamic mediation is a pervasive means of understanding individuals' mental abilities and prognosticating the problems as a stepping stone to overcome language learning difficulties. However, he only concentrated on those difficulties emerged from traditional atmosphere of language testing and teaching. A considerable body of research in dynamic assessment (Hidri, 2014; Isavi, 2012; Amini, 2015; Ableeva, 2010) and many others stand behind these findings, while, none of them has investigated the effect of dynamic mediations on individuals' test anxiety.

In sum, the inventory of meditational prompts adopted for this experiment has a deep foundation in Vygotsky's sociocultural concepts i.e., the ZPD and his cognitive view of learning. They can be brought into EFL educational contexts with a plan to ameliorate psychological obstacles, i.e. test anxiety and other barriers concerning learning skills. Despite this, all approaches of dynamic assessment can be implemented in a small-scale by ordinary teachers on the least amount of time.

6. Conclusion

The present SCT-based study sought to investigate whether or not dialogic interventions resulted in the treatment of test anxiety and promotion of writing test performance among EFL pre-university school students in Iran. The results of the present experiment led to the conclusion that Iranian EFL learners at the pre-university level suffer from

chronic anxiety during examinations in evaluative situations. Further, exploration of coping strategies to remove or even alleviate test anxiety among learners has been one of the most debated issues in all fields of education. However, this study as an innovation in applied linguistics has been developed based on SCT and the notion of dynamic assessment to treat test anxiety signs and promote learning among EFL students.

On this basis, the innovatory findings of microgenesis and numerical analysis revealed that dialogic mediation alleviated the diagnosed categories of anxiety symptoms detected during test conditions to a significant level and bore growth in EFL writing performances. Since test anxiety as a psychological barrier can negatively affect the process of evaluation, therefore it is crucial to ameliorate its symptoms through psychological-based approaches. Thus, it can be claimed that dynamic views of instruction stemming from deep psychology i.e., the Vygotskian theory of social-cognitive development can not only remove individuals' test anxiety but also alleviate psychological barriers to language skills especially writing in EFL contexts.

In sum, considering the limitations of this experiment an implication for further research emphasizes participating control group with focus on other language skills to remove test anxiety. The novel findings of this study make contributions to second and foreign language pedagogy, psycho-educational researchers, therapists, counselors, and all who are engaged in anxiety research.

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