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A Dynamic Intervention for Removing Learning Anxiety: A Field Experiment on Removing Psychological Barriers to Speaking

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Abstract

Introduction: Research findings in last decades have shown that anxiety and its debilitative consequences exert damaging effects on learning. Enjoying a profound theoretical foundation in Vygotskian theories of cognitive development and psychological therapy, dynamic assessment and interventions propose a framework for promoting student's learning through mediation and support in the zone of proximal development of the mind. The present study was an attempt to use this framework to remove anxiety and psychological barriers to mastering speaking in English classes. **Methods:** To this aim, the Foreign Language Classroom Anxiety Scale (FLCAS) was adopted and administered to 250 first grade high school students in Qom. The researcher selected 10 students with highest anxiety scores, serving as the experimental group (n=10). The research used a quasi-experimental design, in which the experimental group's anxiety scores in pre-test (before dynamic intervention), post-test (2 weeks after dynamic intervention) and follow up experiment (after two months) was calculated. Also, the group was given a speaking exam in pre-test and post-test conditions to trace learning after dynamic interventions. Data were analyzed through repeated measures ANOVA and paired t-test respectively.

Results: The findings of the present study showed that the intervention significantly relieved anxiety symptoms (F (1.093, 9.840) = 267.534, P < 0.000) and promoted learning speaking (t (9) = -8.508, p = 0.000). Furthermore, descriptions of treatment showed the way the intervention treated anxiety symptoms and resulted in internalization of learning.

Conclusion: In sum, the current study identified major anxiety symptoms and introduced a fast, non-obtrusive, and time and money saving method for treating anxiety. Findings of this innovatory intervention have implications for psychologists, counselors, teachers, and health and education decision makers.

Keywords: Learning Anxiety, Dynamic Intervention, Learning, Speaking, Zone of Proximal Development

Introduction

Deeply rooted in Vygotskian views of development, interventionist dynamic assessment has attracted a lot of attention in the fields of psychological therapy and education [8]. Dynamic assessment approach sees abilities as not innate or static, but emergent and dynamic. In other words, in dynamic assessments, abilities are not viewed as stable traits that can be measured; however, abilities are the outcome of an individual's repertoire of social interactions in real contexts. Therefore, each individual masters its cognitive functions in a unique way through mediation and scaffolding of more significant others [14]. Thus, according to Haywood [8], interventionist dynamic assessment persuades learners to lay emphasis on behaviors which are dynamic and changeable, problem solving abilities,

temporary and improvable barriers to performance and processes required for attainment of meaningful activities.

Taking learners' development into account and enjoying Vygotskian theoretical psychology, researchers in the field of dynamic assessment, on top of them Feuerstein et al. [6], postulated that collaboration with the learner is crucial for developments to occur. Vygotsky [22] had already stated that the difference between learners' unassisted and assisted performance in their zone of proximal development indicates their future performance. In other words, the amount of performance learners are able to reach with assistance in the present time shows how they might perform in future without assistance. Therefore, scholars in the field of dynamic assessment, particularly Poehner [17, 18, 19] believe that it is necessary to collaborate with learners like a mediator during the completion of assessment tasks and extend their independent performance to levels they could not reach alone.

As it is touched above, the root of dynamic assessment is founded in the theoretical conceptualizations of Vygotsky [22], on top of that the concept of zone of proximal development (ZPD). According to Chaiklin [4], this conceptualization has been interpreted differently by different individuals in different contexts. However, Vygotsky [22] had defined the zone of proximal development as the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more significant others. According to Chaiklin [4] a fundamental concept that is derived from ZPD is scaffolding or assisted learning. Many other researchers such as Lidz [15] believe that Vygotsky is the sole founder of the dynamic approaches to assessing cognitive abilities which have found application in educational contexts too.

Beside Vygotsky, Luria [16] had already enjoyed the potential of ZPD in treating learning problems. In Luria's research on children with learning disabilities, she found that traditional and normative educational and psychological diagnoses often fail to distinguish between different groups of students with learning disabilities. Consequently, children with mental retardation, deaf children, and children with poor attitudes towards school were gathered together in one place where they received a one-size-fit-all input and barely win a chance to learn and develop. She then concluded that ZPD-based methods of assessment are required since they have prognostic value which defines the problem and help the learner deal with it.

The efficacy of dynamic interventions in treating learning difficulties has been proved in the researches of the current and past decade ([17], [14]. However, despite its deep roots in psychology, the effect of dynamic assessment and dynamic interventions in treating psychological barriers to learning has been rarely studied. Teachers' experience and observations and empirical data show that many Iranian high school students suffer from a great feeling of apprehension, fear, and worry in the educational contexts. This feeling of anxiety is doubled in English classes where students are required to perform in

another language. Speilberger [21] has defined anxiety as a subjective sense of tension, apprehension, nervousness, and worry that arouses the autonomic nervous system. In the current study, the researchers have studied debilitative state anxiety (one that decreases the outcome of learning and is related to a certain context or environment, respectively) as categorized by Horwitz et al. [10, 11]. Therefore, the current research is an innovator which employs tenets of dynamic assessment and field experiments to investigate the effect of dynamic interventions in removing learning anxieties and difficulties in Iranian high school students, associated with learning in a regular English class. As a result, the current research investigates whether this dynamic intervention removes debilitating state anxiety and promotes speaking skills of anxious students in Iranian high schools or not.

Methods

The current study has employed a quasi-experimental design to trace the effect of interventions on relieving anxiety symptoms and promoting speaking.

In order to carry out this research, 250 participants were selected from different high schools in Qom through a convenience sampling procedure. The participants were all male students studying in the first grade of high school. Then, they were given an anxiety measurement scale, Horwitz et al. [11] Foreign Language Classroom Anxiety Scale (FLCAS), through which 10 most anxious students were identified on the basis of the score they obtained. In all, 10 anxious students were identified for the experimental phase of the research, i.e. dynamic intervention aiming at removing anxiety and learning difficulties. An informed consent was obtained from either students or their parents for their participation in the study. The instruments used in this study are as follows:

Foreign Language Classroom Anxiety Scale (FLCAS):

This five point Likert-scale questionnaire that investigates foreign language anxiety level was designed by Horwitz et al [11]. Since then, the questionnaire has been broadly used by different researchers in different contexts with acceptable degrees of reliability [13], [12]. This 33 items questionnaire deals with anxiety as a special phenomenon within an academic context in forms of communication apprehension (items 1, 4, 9, 14, 15, 18, 24, 27, 29, 30, 32), test anxiety (items 3, 5, 6, 8, 10, 11, 12, 16, 17, 20, 21, 22, 25, 26, 28), and fear of negative evaluation (2, 7, 13, 19, 23, 31, 33). The questionnaire was translated and its translation validity was determined by the panel of translation experts. The reliability of the translated version of questionnaire was later estimated in a pilot study with 100 students. The result of reliability estimation of the translated version was proved statistically acceptable (Cronbach's Alpha = 0.90) and comparable to the original ones used in other studies such as Horwitz et.al (Cronbach's Alpha = 0.93).

Also, two parallel forms of a speaking test were developed by the teacher on the basis of the Vision 1 book of first grade high school students and was then employed for testing speaking in pretest and post-test conditions.

Intervention Instrument: a mediation typology, adopted from Poehner [17] was employed as bedrock on which the dynamic intervention was put into effect. This typology involved fifteen different types of mediation which the teacher can use to deal with the difficulties encountered in the speaking of students. These scaffold mediations serve as some type of support during assessing speaking with the aim of nurturing growth. Besides, a regulatory scale adopted from Aljaafreh and Lantolf [2] - which includes 12 different mediatory steps from most implicit to most explicit – was used in the study.

The design of the present study was a quasi-experimental one. Therefore, repeated measures ANOVA and paired samples *t*-test were used to compare the data in pre-test, post-test and follow-up conditions. In the very beginning of the research, the FLCAS was administered to all 250 participants. Scores of anxiety were obtained and 10 students with sever anxiety (scored between 133 and165) were identified. In other words, results of FLCAS administered to 250 students in pre-intervention phase showed that many of the participants (88.8 percent f= 222) have low anxiety scores (between 33-66) while a smaller percent suffer from moderate anxiety (7.2 percent, f=18) with scores between 67-132 and only a few of them are troubled with sever anxiety (3.2 percent, f=10) with scores between 133-165.

On the basis of the questionnaire's data, anxiety symptoms of the experimental group were identified. Then, in order to investigate the effect of intervention on promoting speaking skills, a teacher-developed speaking test was administered to the experimental group and scores were obtained where the areas of learning difficulties were identified too. Later, in the intervention phase, the experimental group underwent dynamic treatment in forms of interventions which were tailored to anxiety symptoms and learning difficulties of speaking. In other words, anxiety symptoms and learning difficulties were treated with befitting mediations and interventions. In the second phase of the research, the FLCAS was administered to experimental group and scores were obtained. In order to trace the permanence of the causal effect of intervention, a follow up experiment was conducted by the researcher in the next semester of the educational year. The results of these three tests were then entered into SPSS (Version 21) and analyzed through repeated measure analysis of variance. Consideration for normality and assumptions of repeated measures analysis of variance were also taken into account. Also, a parallel form of speaking test was administered to the experimental group in the post intervention condition and scores were obtained. The data obtained in the preintervention and post-intervention phase were entered into SPSS (Version 21) and analyzed through paired sample t-test to trace any meaningful changes in anxiety and speaking scores because the researchers did not incorporated any follow up tests for speaking. The logic behind the absence of a follow up speaking test for students was that the educational content of students had drastically changed in the next semester. Therefore, any follow-up speaking tests could violate the content validity of any future tests.

Results

The major anxiety symptoms of anxious students (experimental group, N=10) were determined on the basis of FLCAS findings which are presented in the following table

As it can be seen in this table, anxiety symptoms of the experimental group along with their category and descriptions before intervention are provided. In the following table, however, the scores of the experimental group on the basis of FLCAS and speaking test are presented both in pre-test, post-test and follow-up conditions.

Due to the design of the study, in order to investigate the effect of intervention on learning anxiety of the participants, a repeated measure analysis of the variance was conducted to compare any significant changes in the anxiety scores of students in pre-test, post-test and follow-up conditions. Having a look at the descriptive statistics of FLCAS shows that the mean of FLCAS in pre-test condition has been 142.5, Std = 6.36 while the mean of FLCAS in post-test and follow-up conditions has been 62.5, Std=12.57 and 63, Std, 15.74 respectively. The results of within-subjects comparison is shown in the following table

It can be seen in table (3) that our data violated the assumption of sphericity. Therefore, according to statistical procedures, it is required to look at the values in the "Greenhouse-Geisser" row. When using an ANOVA with repeated measures with a Greenhouse-Geisser correction, the mean scores for FLCAS were statistically significantly different. This information shows that an overall significant difference has been observed in means, but we do not know where those differences have occurred. Therefore we have conducted a Bonferroni post hoc test, which allows us to discover which specific means differed.

It was observed that there was a significant difference in FLCAS scores between post-test and pre-test condition (p=0.000), and also between follow-up and pre-test conditions (p=0.00). This is while no significant differences were observed between post-test and follow-up training (p=0.990). From the "Mean Difference (I-J)" column we can see that FLCAS scores were significantly reduced at post-test and follow-up conditions (in the next semester).

In sum, a repeated measures ANOVA with a Greenhouse-Geisser correction determined mean FLCAS scores differed significantly between these time points (F(1.093, 9.840) = 267.534, P <0.000). Post hoc tests using the Bonferroni correction revealed that there a slight increase exists in FLCAS scores from the post-test condition to the follow-up condition in the next semester but this increase was not statistically significant. Therefore, it can be concluded that the dynamic intervention not only had a short term effect on the students' anxiety scores (within 2 weeks), but also kept their symptoms relieved in the next semester (about 4.5 months later).

After investigating the effect of interventions, the following statistics were gathered.

Table	1 Major	anxiety o	symptoms	of e	xperimental	aroun	on the	hasis	of FLCAS	[11]

Anxiety symptoms		Description				
		Feeling uncertain when speaking				
		Frightened when he does not understand what teacher says				
	Communication	Feeling panic when required to speak without preparation				
		Feeling upset when he does not understand teacher's correction				
	Apprehension	Feeling unconfident in class				
		Getting nervous when he does not understand every single word said				
_		Feeling overwhelmed by the number of language rules required for speaking				
_		Tremble when going to be called to perform				
		Being afraid of any kind of test				
Catagoni		Being afraid of failing consequences				
Category	Tost Amviota	Getting nervous and forgetting known things				
	Test Anxiety	Feeling anxious even when prepared				
		Dislike going to language class				
		Getting more confused when study more for a test				
_		Worrying about being left behind in class				
		Fear of making mistakes when speaking				
	Foor of Mogative	Thinking that other students are better				
	Fear of Negative Evaluation	Embarrassed to volunteer answering				
	Evaluation	Being afraid of instant correction by teacher				
		Being afraid of student's laughing				

 Table 2. Quantitative scores of experimental group based on FLCAS and Speaking Test (ST)

Students	FLCAS (pre)	FLCAS(post)	FLCAS(follow)	ST (pre)	ST (post)
Student 1	149	69	72	15	17
Student 2	147	73	71	13	16
Student 3	143	81	84	13	17
Student 4	142	55	49	11	14
Student 5	139	62	65	10	12
Student 6	138	68	68	10	15
Student 7	135	71	75	7	13
Student 8	133	44	47	6	11
Student 9	153	60	65	13	18
Student 10	146	42	31	9	15

Table 3: Test of within-subjects effects for FLCAS

	Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Test	Sphericity Assumed	42666.667	2	21333.333	267.534	.000	.967
	Greenhouse-Geisser	42666.667	1.093	39026.223	267.534	.000	.967
	Huynh-Feldt	42666.667	1.130	37765.600	267.534	.000	.967
	Lower-bound	42666.667	1.000	42666.667	267.534	.000	.967
Error (Test)	Sphericity Assumed	1435.333	18	79.741			
	Greenhouse-Geisser	1435.333	9.840	145.874			
_	Huynh-Feldt	1435.333	10.168	141.162			
	Lower-bound	1435.333	9.000	159.481			

Table .4 Pair-wise Comparison for FLCAS

(T) Total	(I) T4	M B:(((7.1)	Ct-l F	C: a	95% Confidence Interval for Difference ^a			
(I) Test	(J) Test	Mean Difference (I-J)	Std. Error	Sig.ª	Lower Bound	Upper Bound		
	2	80.000*	4.216	.000	67.632	92.368		
1	3	80.000*	5.245	.000	64.614	95.386		
	1	-80.000*	4.216	.000	-92.368	-67.632		
2	3	.000	1.599	0.990	-4.689	4.689		
	1	-80.000*	5.245	.000	-95.386	-64.614		
3	2	.000	1.599	0.990	-4.689	4.689		

Table 5. Paired samples test for speaking scores

			Paired Diffe					
	Mean	CD	SEM	95% Confidence Interval		t	df	Sig.
	iviean	SD	SEIVI	Lower	Upper			
Test1-Test2	-4.100	1.524	.482	-5.190	-3.010	-8.508	9	.000

Furthermore, a paired-sample t-test was conducted to compare the speaking scores of the experimental group before and after dynamic interventions. There was a significant difference in the scores for pre-test (M= 10.70, SD= 2.869) and post-test (M= 14.80, SD= 2.300) conditions; t (9) =-8.508, p =0.000". These findings indicate that the intervention not only decreased anxiety but also promoted the performance of the experimental group in the speaking test. Thus, it is not far from fact if we hypothesize that anxiety is a major barrier to language learning and that dynamic assessment is a good treatment for anxious students. In addition, to shed more light on the way, dynamic assessment ameliorated anxiety and learning difficulties. The descriptions of intervention are presented in the following table.

In order to shed more light on the way, these mediations remove or alleviate anxiety symptoms in the language class. In the following sections, two protocols of these dynamic interventions is shown.

Protocol 1: Relieving uncertainty in speaking

Student. "He saw, see, saw a monkey on the tree last week *Teacher.* Please repeat (step 1, request for repetition, most implicit mediation)

Students: He sees, saws a monkey on the tree last week *Teacher*: No. Please be careful and say again (step 2: a less implicit mediation)

Student:silence

Teacher: Correct your verb (step 3: a more explicit mediation) *Student*: He sees... saw, no... see a monkey on the tree last week

Teacher. Last week is past tense. The past form of see is? (Step 4, yet more explicit)

Student. He saw a monkey on the tree (student answers firmly and smiles)

Teacher. Yes, correct. Well done (Step 5: Teacher approves student's learning and firm response

Result: Student did not repeat the same mistake in using past tense, indicating that he has learnt the rule during dynamic intervention. He also answered following questions with higher degrees of certainty and without hesitation or bafflement.

Protocol 1: Relieving fear of making mistakes

Description: Teacher is reviewing a reading in the book. "Newton was a wise child......" Then the teacher asks the whole class about the meaning of wise. <u>All</u> sidesteps. Then teacher finds him and elicits him for question.

Teacher. You, Ali, are you ok?

Ali: Yes

Teacher: What does <u>wise</u> mean in this sentence? Ali: Silence

Teacher: Are you a wise boy (Step1: Asking for explanation, an implicit mediation)

Ali: Silence looking down on the floor

Teacher. A wise boy is a clever, smart boy (step2: Provides explanation)

Ali: Looks at the teacher, seems invigorated but keeps silence *Teacher*. Ali is clever, means, Ali is wise (Step3: Illustration and example, an explicit mediation)

Ali. Starts trying to answer but still unsure of the response and fears possible mistake

Teacher. Clever means "Bahoosh (Persian term, meaning clever)", smart means "Bahush". So, wise means...? (step4)

Ali: "Newton Bod Yek Bache-ye (Persian term meaning Newton was a ...Child)......."

Teacher. Yes, Go on

Ali: "Newton Yek Bacheye Bahoosh Bod" (Persian term meaning Newton was a smart child)

Result: Student learnt the meaning of the word. He also dared to perform more in class because he found the teacher's mediations assisting after successive scaffolding by teacher.

Table 6. Some anxiety symptoms and their typical interventions used in class

Anxiety Category	Anxiety Symptom	Outcome	Dynamic Intervention
Communication	Feeling unsure when	Self-disapproving thoughts	Step 1: Request for repetition Step 2: Request for Verification Step 3: Identifying source of error
apprehension	speaking	Bafflement in speaking	Step 5: Identifying source of error Step 5: Accepting response
Fear of negative evaluation	Fear of making mistakes in speaking	Topic- avoidance Sidestepping in class	Step1: Eliciting and asking for explanation Step2: Providing explanation Step3: Providing illustration and Examples Step4: Translation to Persian Step5: Help moving narration
Test anxiety	Getting nervous of forgetting things I know	Self-deprecating thoughts Debilitative- stimulation	Step1: Reminder of direction Step2: Metalinguistic clues Step3: Providing explanation Step4: Offering a choice Step5: Providing correct response

Discussion

The findings of the present study revealed that Iranian students suffered from different categories of learning anxiety which were presented and discussed in detail in the above tables. However, the innovatory findings were the positive role of dynamic intervention in removing learning anxiety in an un-obtrusive and time-saving

manner. Although other studies in the filed such as those by Chuang [5] and Hasenan and Abdulghani [7] had employed the same tool (FLCAS) to identify major anxiety symptoms but the method they provided for treating and reliving symptoms required long term psychological therapy in clinical conditions. For instance, the findings of Chuang [5] has proposed that for removing anxiety

symptoms, counselors are required to inhibit students' negative feeling through relaxation techniques, positive self-talk, and releasing psychological tension or refreshing psychological functioning. All these techniques are time consuming and need a sophisticated psychological knowledge by teachers which is outside the ability boundary of customary language teachers in Iran and many other countries. But, the dynamic interventions used in this study can be performed by all ordinary language teachers in the class context (not in clinical conditions) during instructions. Cao [3] used different instruments and identified similar symptoms but did not propose any remedy for removing them. Besides, in a similar study, Hasenan and Abdulghani [7] recognized same anxiety symptoms but proposed learning strategies such as social, affective, meta-cognitive, cognitive and memory strategies for treating anxiety. These strategies are implicit in nature and are not deeply rooted in psychological theories of learning. They might help removing learning difficulties but their application in relieving or treating learning anxiety is in serious doubt. However, the inventory of mediations and interventions used in this study are deeply rooted in Vygotskian psychology, counseling, ZPD and theories of social-cognitive development. Also, the findings of the current research enjoy support of robust experimental findings. Poehner [17] found that dynamic intervention has prognostic vales in identifying learner's problems and therefore it is an effective means of understanding learners' abilities and helping them to overcome learning problems. However, he only underlined learning difficulties which were caused by wrong instructions, static views of assessment and etc. Besides, Ajideh and Nourdad [1] indicated that using dynamic interventions in education, improves immediate and delayed effects on the reading comprehension of learners in all proficiency levels. A bulk of researches stand firm behind the current findings [2, 4, 14, 17, 18, 19] none of them, however, have studied the effect of dynamic views of instruction on removing anxiety. Therefore, it can be concluded that using those approaches to teaching such as dynamic intervention and mediated learning which have their roots in cognitive and psychological underpinnings might relieve the psychological problems associated with learning. This issue is also found in a research by Zare and his colleagues [20] which have stated that combining meta-cognitive approach with cognitive and behavioral approaches can teach patients to not only process their beliefs and attitudes objectively, but also become aware of information processing which result in reduction of anxious thoughts among patients.

Conclusion

The current research was an attempt to investigate the role of dynamic interventions, rooted in Vygotskian theories of mind and psychology, on treating diagnosed symptoms of anxiety in classrooms and promoting learning problems associated with anxiety. The findings of statistical analysis showed that dynamic interventions relieved anxiety symptoms and learning difficulties associated with it in a significant manner. These findings

have implication for psychologists, counselors, mind therapists, teachers and educational and health decision makers.

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