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Using Think-aloud Protocols to Identify Factors that Cause Foreign Language Reading Anxiety

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ABSTRACT

Anxiety is an important personality factor that has been a major concern for foreign language (FL) researchers. Although the influence of anxiety on FL speaking has received considerable attention in research, only a few studies to date have focused on affect and FL reading. Clearly, there is need to use think aloud protocols and learner interviews to identify the factors that lead to FL reading anxiety. Thirty freshman students in the English Language Teaching Department of Trakya University participated in a think aloud activity. Results suggest twelve factors promoting FL reading anxiety. Since it creates an awareness of factors that students consider as anxiety promoting, the study is significant for teachers who are responsible for teaching reading classes to foreign language learners.

INTRODUCTION

Since the early 1970s, anxiety has been a matter of concern in the field of foreign language education. It influences many types of learning and academic achievement and has been examined by psychologists and educationalists alike (e.g., Hill & Wigfield, 1984; Gardner, 1985; Horwitz, Horwitz, & Cope, 1986; MacIntyre, 1995; Jackson, 2002; Cheng, 2004). Spielberger (1983) defined anxiety as “the subjective feeling of tension, apprehension, nervousness and worry associated with an arousal of the autonomic nervous system” (p. 1). According to Lang (1971) and Cheng (2004) anxiety creates cognitive, physiological, and behavioral responses. Thus, when someone experiences anxiety, negative expectations are experienced mentally. This mental negativity creates physiological outcomes such as increased heart rate and stomachache. Finally, situations that create anxiety are behaviorally avoided.

The literature on the effects of foreign language anxiety on student achievement has provided both positive and negative results. While Chastain (1975) and Kleinmann (1977) found that foreign language anxiety triggered student achievement, studies by Horwitz et al. (1986), MacIntyre and Gardner (1989), Saito and Samimy (1996), and Gardner and MacIntyre (1993) found negative correlations between foreign language anxiety and student achievement. According to Scovel (1978) the conflicting findings in the relevant anxiety literature are consequences of different anxiety measures that were used by researchers. He further argued that while conducting research on foreign language anxiety, researchers should be more precise about the type of anxiety they are measuring. As Horwitz (2001) stated “Scovel’s suggestions have proven to be good ones, and since that time researchers have been careful to specify the type of

anxiety they are measuring” (p. 114). Especially the foreign language anxiety scale (FLCAS) created by Horwitz, et al. (1986) has been widely used in order to measure situation-specific anxiety in foreign language education, leading to coherent findings ever since.

Although studies measuring foreign language anxiety abound, few studies have focused on anxiety and FL reading. Saito, Horwitz, and Garza (1999) pointed out that more research is needed in order to determine the factors that cause FL reading anxiety. They suggested learner interviews and think aloud protocols as possible means of determining how anxiety intervenes FL reading. Zhao (2009) and Kuru-Gönen (2009) already used learner interviews to identify the factors that lead to FL reading anxiety and Brantmeier (2005) equally suggested the use of think aloud protocols in research to understand how anxiety from post-oral tasks affects non-verbal representations during reading. Despite notable progress in this area, think aloud protocols were mainly used to examine reading comprehension and reading strategies use rather than identifying the factors that cause FL reading anxiety (see, for example, Davey, 1983; Crain-Thoreson, Lippman, & McClendon-Magnuson, 1997; Kamhi-Stein, 1998; Sellers, 2000; Ghonsooly & Barghchi, 2011). Against this backdrop of research, the current study aims to identify the factors that lead to FL reading anxiety by using think aloud protocols and by monitoring students’ inner thoughts at an advanced level of foreign language instruction.

FOREIGN LANGUAGE READING ANXIETY

Reading might seem like the least anxiety provoking skill when compared to skills such as speaking, listening, and writing. However, research on reading anxiety has shown that students experience foreign language reading anxiety at various levels which, in turn, has negative implications for student achievement (Saito et al., 1999; Sellers, 2000). Saito et al. (1999) introduced the concept of foreign language reading anxiety and found that reading anxiety exists as a distinct construct from foreign language anxiety. Their study examined the influence of the target language (Japanese, French, and Russian) on reading anxiety and revealed that students’ reading anxiety levels varied according to the target language. While learners of Japanese were the most anxious group, learners of Russian were the least. Furthermore, they reported that reading anxiety negatively affected student grades and achievement. In the same vein, Sellers (2000) also identified FL anxiety as a distinct construct and showed that university learners of Spanish who experienced L2 reading anxiety were less successful at reading comprehension than learners who were not anxious at all. Furthermore, Sellers found that students who considered foreign language learning as an anxiety arousing process displayed higher levels of reading anxiety. Young’s (2000) research displayed similar findings revealing that students with higher levels of FL reading anxiety faced more comprehension problems than students with lower FL reading anxiety levels. In a study with 92 advanced learners of Spanish, Brantmeier (2005) found that post-reading tasks caused students to feel more anxious than the reading activity itself. Students in that study reported being more anxious about speaking compared to writing, while their anxiety levels about listening and reading were low and equal.

In a study with learners of Chinese, Zhao (2009) identified unfamiliar scripts, unfamiliar topics, and uneasiness about the reading effect as the chief reasons for FL reading anxiety. Moreover, students who experienced FL reading anxiety also displayed general FL anxiety. Zhao’s study also identified a negative correlation between FL reading anxiety and FL reading performance.

Lien (2011) investigated the effects of FL reading anxiety on reading strategy use and found a negative correlation between the two. While students with low anxiety levels used

general reading strategies, students with high levels of FL reading anxiety used basic strategies, such as translating, in order to cope with comprehension problems. Lien also found that female learners were slightly more anxious than males.

Using both quantitative and qualitative measures (diaries and interviews), Kuru-Gönen (2009) identified personal factors, the reading text, and the reading course as the three main sources that stirred anxiety for 50 Turkish college learners of English. Personality factors included inappropriate strategy use, fear of comprehension, lack of motivation, lack of self-confidence, negative background experiences, and high expectations. The subcategories of the reading text were topics, unknown vocabulary, complex linguistic structures, unknown cultural content, and text format. The third category, the reading course, included course book, compulsory reading, teacher, and evaluation. Ghonsooly and Barghchi (2011) used think aloud protocols to examine the relationship among the reading style, the reading ability, and the reading strategies of anxious learners. Results provided no significant relationship between reading and students' reading ability who experience reading anxiety. However, they found that reading anxiety influenced students' reading styles and preferences for particular reading strategies.

These studies on FL reading anxiety show that students experience foreign language reading anxiety at various levels and, furthermore, that anxiety may have adverse effects on student achievement. Thus, it is paramount that the factors that trigger anxiety be investigated to mitigate potential negative implications on student success.

Context and Research Focus

For FL anxiety researchers, examining a continuous, flowing series of images and ideas running through the mind of students has long been a formidable challenge. When students read a text in a FL language, the only way to find out the factors that trigger anxiety is eavesdropping on students' thinking or motivating them to monitor their own state of mind. FL reading anxiety research has tried to identify reading anxiety and factors causing it by using scales such as Foreign Language Reading Anxiety Scale (Saito et al., 1999) or learner interviews. Although such methods can identify FL reading anxiety as a distinct construct and reveal student ideas related to anxiety, they are not very helpful in bringing instantly occurring complex thinking processes and factors causing anxiety to the surface. For instance, a student may not feel nervous before reading a text or may not even be aware of the factors that will cause him or her to panic. However, during the reading activity, various factors may cause him/her to experience anxiety, leading to an awareness of what triggers it. It is suggested that these kinds of instant stimuli causing psychological tension can be identified by monitoring students' inner thoughts. Thus, by monitoring students' states of mind through think aloud protocols, this study aims to identify the factors that evoke FL reading anxiety when students read a text in English.

METHOD

Participants

The present study includes 30 first-year students in the English Language Teaching Department of Trakya University. Their ages ranged from 19 to 21 years and they all had identical educational backgrounds, that is, before entering the University, they all took an entrance exam which measured their language skills and advanced English preparatory classes

for one year before they started their education in the English Language Teaching Department. An informed consent was obtained from the participants before the study was conducted.

Reading Text Selection

For this study the reading text titled “The Cat Sat on the Test” was chosen from the New Cambridge Advanced English course book. The participants’ FL reading course instructor was contacted for text selection and this book and the text were suggested as appropriate for the students’ level of English. The text consisted of approximately 873 words and its content dealt with the school testing system at USA.

Instrument and Procedure

In order to uncover the factors that generate L2 reading anxiety, the qualitative instrument known as the ‘think-aloud method’ was used. This method is useful for gathering data on the mental states of individuals (Bernardini, 1999) because it requires participants to tell researchers what they are thinking and doing while performing a task (Yoshida, 2008). It thus constitutes an appropriate instrument for motivating students to reveal factors that cause L2 reading anxiety. The participants were first provided with an overview of the study, including its purpose and significance. They were also trained and informed about what think aloud is and its details in an introductory course so that they could learn how to report their inner thoughts during the reading activity. The initial training procedure took approximately two hours and a sample think-aloud activity was provided in order to exemplify how to use it. Following the introductory course, students practiced how to use think aloud protocols for one week in six more classes. After the students were instructed on how to verbalize their mental processes, the study was initiated. Students were invited to the research room one by one, and they were asked to read the text and report situations and factors that evoke instantaneous anxiety. This part of the study was audio recorded and students were formerly informed about the recording.

Data Analysis

The audio recordings that involve student reports of the think aloud activity were transcribed and coded by two raters. The transcriptions were examined by using content analysis. According to Hsieh and Shannon (2005), content analysis is “a research method for subjective interpretation of the content of the text data through the systematic classification of coding and identifying themes or patterns” (p. 1278). As Zhang and Wildemuth (2009) stated “content analysis goes beyond merely counting words or extracting objective content from texts to examine meanings, themes, and patterns that may be manifest or latent in a particular text. It allows researchers to understand social reality in a subjective but scientific manner” (p. 308). Therefore, content analysis was useful for identifying the major themes that trigger FL reading anxiety.

Intercoder Reliability

Lombard, Snyder-Duch, and Bracken (2010) define intercoder reliability as “the extent to which independent coders evaluate a characteristic of a message or artifact and reach the same conclusion” (p. 2). Weber (1990,) states that “to make valid inferences from the text, it is important that the classification procedure be reliable in the sense of being consistent: Different people should code the same text in the same way” (p. 12).

One of the most popular ways to measure intercoder reliability is to calculate the percent of agreement between raters (Lombard et al., 2010). This involves simply adding up the number of cases that were coded the same way by the two raters and dividing by the total number of cases (Stemler, 2001). However, percent agreement approach is considered problematic since it does not account for the fact that raters are expected to agree with each other a certain percentage of the time simply based on chance. In order to combat this shortfall, reliability may be calculated by using Cohen's Kappa, which is a measure of reliability that corrects for chance agreement (Cohen, 1960). Hence, the audio recordings of the think aloud activity were transcribed and coded by two raters. Following the coding process, intercoder reliability was measured by calculating Cohen's Kappa value.

RESULTS

The primary concern of the present study is to pinpoint the factors that cause instant FL reading anxiety by exposing students to a reading text and monitoring their inner thoughts through the think aloud activity. The ensuing think aloud activity revealed 173 units and 12 categories (see Table 1).

Table 1: Categories of FL Reading Anxiety

Sub-Categories	N ^a	Percentage
Metaphorical Title	27	90
Unknown Vocabulary	24	76
Exam	22	73
Reading Aloud	21	70
Text Length	19	63
Time	17	56
Teacher's Questions	17	56
Topic Familiarity	8	26
Linguistic Structures	8	26
Students' Questions	4	13
Coherence Among Paragraphs	4	13
Text Type	2	6

^a The number of students who consider the related category anxiety provoking

In order to determine how well the implementation of coding worked, Cohen's Kappa was calculated by comparing rater 1 and rater 2 units (see Table 2 for cross tabulation results).

Lombard et al. (2010) state that coefficients of .90 or greater are nearly always acceptable for the index or indices to be used. In the current study the value of .96 was found which indicates a highly acceptable reliability value (see Table 3).

Table 1 results reveal that the metaphorical title of the article was the leading anxiety provoking factor for the participants: 90% of the students expressed that the title of the text was not clearly understood which resulted in anxiety before reading the whole text. For instance, one of the participants stated that "the title is very metaphorical and not comprehending what it says makes me nervous before I start to read the whole text."

Table 2. Rater 1 and Rater 2 Cross-tabulation Results

		Rater 1													
Rater 2		0 ^a	1 ^b	2 ^c	3 ^d	4 ^e	5 ^f	6 ^g	7 ^h	8 ⁱ	9 ^j	10 ^k	11 ^l	12 ^m	Total*
		0 ^a Count	0	0	0	0	0	0	2	2	0	1	0	1	0
	Expected Count	0	0,9	0,8	0,8	0,7	0,7	0,6	0,6	0,3	0,3	0,1	0,1	0,1	6
	1 ^b Count	0	27	0	0	0	0	0	0	0	0	0	0	0	27
	Expected Count	0,2	4,2	3,6	3,4	3,3	3	2,7	2,7	1,2	1,2	0,6	0,6	0,3	27
	2 ^c Count	1	0	23	0	0	0	0	0	0	0	0	0	0	24
	Expected Count	0,1	3,7	3,2	3,1	2,9	2,6	2,4	2,4	1,1	1,1	0,6	0,6	0,3	24
	3 ^d Count	0	0	0	22	0	0	0	0	0	0	0	0	0	22
	Expected Count	0,1	3,4	2,9	2,8	2,7	2,4	2,2	2,2	1	1	0,5	0,5	0,3	22
	4 ^e Count	0	0	0	0	21	0	0	0	0	0	0	0	0	21
	Expected Count	0,1	3,3	2,8	2,7	2,5	2,3	2,1	2,1	1	1	0,5	0,5	0,2	21
	5 ^f Count	0	0	0	0	0	19	0	0	0	0	0	0	0	19
	Expected Count	0,1	3	2,5	2,4	2,3	2,1	1,9	1,9	0,9	0,9	0,4	0,4	0,2	19
	6 ^g Count	0	0	0	0	0	0	15	0	0	0	0	0	0	15
	Expected Count	0,1	2,3	2	1,9	1,8	1,6	1,5	1,5	0,7	0,7	0,3	0,3	0,2	15
	7 ^h Count	0	0	0	0	0	0	0	15	0	0	0	0	0	15
	Expected Count	0,1	2,3	2	1,9	1,8	1,6	1,5	1,5	0,7	0,7	0,3	0,3	0,2	15
	8 ⁱ Count	0	0	0	0	0	0	0	0	8	0	0	0	0	8
	Expected Count	0	1,2	1,1	1	1	0,9	0,8	0,8	0,4	0,4	0,2	0,2	0,1	8
	9 ^j Count	0	0	0	0	0	0	0	0	0	7	0	0	0	7
	Expected Count	0	1,1	0,9	0,9	0,8	0,8	0,7	0,7	0,3	0,3	0,2	0,2	0,1	7
	10 ^k Count	0	0	0	0	0	0	0	0	0	0	4	0	0	4
	Expected Count	0	0,6	0,5	0,5	0,5	0,4	0,4	0,4	0,2	0,2	0,1	0,1	0	4
	11 ^l Count	0	0	0	0	0	0	0	0	0	0	0	3	0	3
	Expected Count	0	0,5	0,4	0,4	0,4	0,3	0,3	0,3	0,1	0,1	0,1	0,1	0	3
	12 ^m Count	0	0	0	0	0	0	0	0	0	0	0	0	2	2
	Expected Count	0	0,3	0,3	0,3	0,2	0,2	0,2	0,2	0,1	0,1	0	0	0	2
Total*	Count	1	27	23	22	21	19	17	17	8	8	4	4	2	173
	Expected Count	1	27	23	22	21	19	17	17	8	8	4	4	2	173

^a disagreement between the raters agreement other than what would be expected by chance, ^b Metaphorical title, ^c Unknown vocabulary, ^d Exam, ^e Reading aloud, ^f Text length, ^g Time, ^h Teacher's questions, ⁱ Topic familiarity, ^j Linguistic structures, ^k Students' questions, ^l Coherence among the paragraphs, ^m Text type, * Total number of units

Table 3. Cohen's Kappa

		Value	Approx. Sig.
Measure of Agreement	Kappa	.96	.000
N of Valid Cases		173	

The second factor participants considered as a source of instantaneous reading anxiety was unknown vocabulary. A total of 76% of the students revealed that encountering too many unknown words hinders text comprehension and makes the reading process traumatic. As one of

the students expressed: “I don’t know the meaning of various words in the text and sometimes the context is not helping me to guess their meanings. Whenever this happens I feel like I am not exactly getting what the text says and this causes me to feel worried.” Another student complained about running into unknown words especially in the introduction part of the text: “I don’t exactly understand what the introduction is saying because of unknown words and this stresses me out.” The possibility of being asked exam questions from the related text caused 73% of the participants to feel anxiety. As one of them reported “I know that I am not in an exam now but if I were reading this article in a reading exam I would feel anxious.”

The fourth category that stimulated reading anxiety was reading aloud as 70% of the students stated that they would not be happy to read the text aloud in the class since they were afraid they would make pronunciation errors. Text length was another category the students quibbled about. 63% of the students found the text long and stated that when they see long texts in front of them they feel intimidated. For example, one the participants stated that “I have a general dislike towards reading and any time I see such a long text in front of me I become uneasy.”

Time caused 56% of the participants feel anxious. Although students were not instructed to finish reading the text in a limited time, they stated that when reading the text in an unspecified amount of time, they did not feel anxious; however, if they were required to read the text during the exam, they would feel intimidated. Similarly, 56% of the participants expressed that they would feel anxious if their reading teacher had asked them questions from the parts of the text that they were unable to completely understand. For example, one reported that “I couldn’t understand the whole text, and in reading lessons when we do reading activities and when I cannot understand every part of the text it bothers me. I start to think what I will say if the reading teacher asks questions from the parts that I couldn’t understand.”

The other factors that the students mentioned as sources of FL reading anxiety were topic familiarity (26%), linguistics structures (26%), students’ questions (13%), coherence among the paragraphs (13%), and text type (6%). These factors were less pronounced compared to the factors mentioned thus far.

DISCUSSION AND CONCLUSION

Following Saito et al.’s (1999) suggestion for using think aloud protocols in determining anxiety provoking factors that interfere with successful FL reading, the study results reveal that think aloud protocols can indeed be useful in monitoring the factors that engender anxiety during real reading situations. The results also show that in the course of the reading procedure, learners are influenced by so many other factors that can turn a reading activity into an unpleasant practice and thereby increase their levels of mental anxiety. Research suggests that when anxiety has negative implications for student achievement, factors leading to it should be detected and further precautions to minimize their negative impact should be taken (Horwitz et al., 1986; Saito et al., 1999; Sellers, 2000).

Thus, FL teachers can use think aloud activities to identify what triggers FL reading anxiety in their classrooms. By paying attention to the anxiety sources declared by their students, teachers can design activities and classroom applications that promote pleasant reading while encouraging students to overcome their anxieties. For instance, in the current study the metaphorical title is the most remarkable anxiety factor since most of the participants considered it vague and argued that it disturbed their comprehension, causing them to experience anxiety before even reading the whole text. Starting to read the whole text with an already nervous brain

can influence further text comprehension which may encourage even more anxiety. Considering this finding, if language teachers identify a similar problem in their classrooms, it is important that they make targeted educational interventions to decrease the level of anxiety that metaphorical titles create for students. One useful method to combat this would be to incorporate Lazar's (1996) suggestions into the teaching practices. Lazar argues that figurative language is an important area of foreign language teaching, and in order to increase awareness, students should be exposed to it in the course of their learning. Solutions Lazar suggests are (1) encouraging students to group vocabulary around metaphorical sets, (2) training students how to make the right inferences as figurative language requires an act of completion from the reader, (3) providing students with strategies to decode figurative language while making sure students know which figurative expressions are standardized in dictionaries, (4) sensitizing students to the cultural significance accorded to particular examples of figurative language in the foreign language being studied, and, finally, (5) encouraging students to compare the resulting figurative associations with those in their own language. If reading teachers were to incorporate these kinds of intervention activities into their classroom practices, expose their students to demonstrations of figurative language, and help develop student awareness concerning figurative language in another language, they may well minimize a metaphorical title's adverse affective influence next time their students encounter it in a reading text.

To sum up, this study focused on using think-aloud protocols to identify factors that trigger FL reading anxiety. Results obtained suggest that as more is learned about students' inner thoughts, better adjustments can be made to the educational environment and to targeted interventions designed to reduce FL reading anxiety. The provision of academic interventions notwithstanding, teachers can also help students curtail anxiety by promoting self-confidence within a stress-free climate of learning (Horwitz & Young, 1991; Oxford 1990). As Harmer (2001) states, physical surroundings and atmosphere in classroom are the vital factors to make sure the students feel both confident and comfortable. Thus, more research is needed to address even further the factors that are believed to trigger anxiety by eavesdropping on students' thinking and by motivating them to monitor their own states of mind.

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A Think-aloud (or thinking aloud) protocol is a method used to gather data in usability testing in product design and development, in psychology and a range of social sciences (e.g., reading, writing, translation research, decision making, and process tracing). Think-aloud protocols involve participants thinking aloud as they are performing a set of specified tasks. Participants are asked to say whatever comes into their mind as they complete the task. This might include what they are looking at. Thinking aloud helps students identify strategies to improve their understanding of text. Instructing teachers to use think-aloud in the classroom improved the reading comprehension of their students (Fisher et al., 2011). Ortlieb and Norris (2012) employed think-aloud to enhance kindergarteners' understanding of science texts. Baumann et al. Two frequently used online assessment methods are the analysis of think-aloud protocols and systematical observation. When thinking aloud, students are asked to merely verbalize their ongoing thoughts during task performance. Whenever they fall silent, students are encouraged to "keep on thinking aloud" by the experimenter.