

Review

Adrenalin and Second Language Acquisition: Why Anxiety?

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Second language acquisition (SLA) anxiety in classroom-based language learning has a long history. That anxiety is conducive to poor performance is crystal clear, but what happens in the biology of body when a person gets anxious is what the present paper is going to study. The current work is an attempt to pinpoint that anxiety is not a simple issue that can be easily removed by listing a set of guidelines. In a sense, reevaluation of teachers' beliefs is respected pivotal to alleviate students' anxiety. Taking the topic serious, this paper reviewed the biology of anxiety.

Key words: Adrenaline, anxiety, acetylcholine, comfort zone

INTRODUCTION

Second language acquisition (SLA) is claimed to be "a profoundly unsettling psychological proposition" (Guiora, 1983, p. 8) and as Hortwitz (2001) puts forth, it is an "uncomfortable and unsettling experience" (p. 121). The very affective variable that students experience, in the given field, is unique. Anxiety, as a distinct variable in SLA (Young, 1998), has a profound impact on SLA. According to Arnold (2000), Anxiety ranks high among factors influencing language learning, regardless of whether the setting is informal or formal (p. 59).

Along the same vein, Ellis (1994) classifies anxiety into three categories: trait anxiety, state anxiety, and situation-specific anxiety. The study of situation-specific anxiety is paramount in SLA. More specifically, there are three components of anxiety related to SLA titled as foreign language anxiety: (a) communication apprehension, (b) test anxiety, and (c) fear of negative evaluation (Horwitz, Horwitz, and Cope, 1986). Based on these three components, Horwitz et al. (1986) have designed a Foreign Language Classroom Anxiety Scale including thirty-three items widely used by scholars to measure L2 learners' anxiety in SLA. Still, though measuring foreign language learners' anxiety is

respected pivotal in diagnosing and facilitating the convenient way of SLA, the present paper holds that teachers' familiarity with the biology of anxiety and their reevaluation of their beliefs in coping with the problem of the given problem among students will undeniably pave the way towards healthy L2 learning.

LITERATURE REVIEW

Several scholars (e.g., Chastain, 1975; at least more than 1) contend that anxiety can also exert positive effect on SLA; however, according to Horwtiz (2001), the deleterious role of anxiety on SLA is crystal clear. Parallel to this argument, no one denies that anxiety in SLA has a debilitating effect and can exert a negative effect on individuals' performance.

Though a variety of factors are involved in SLA, anxiety must indeed have significant negative impact. Anxiety is generally defined as "a state of apprehension, a vague fear" (Scovel, 1978, p. 134). More comprehensively, Gardner and MacIntyre (1993) define anxiety "as the apprehension experienced when a situation requires the use of a second language with which the individual is not fully proficient" (p. 5). And according to Tambahan (n.d.), second language anxiety is defined "as a distinct complex of self-perceptions, beliefs, feelings, and

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behaviors related to using a second language for communication beyond the classroom" (p. 66).

Browsing history of anxiety in SLA, one finds two seminal papers conducted by Scovel (1978) and another by Horwitz et al. (1986). Scovel (1978) contends that there is no consensus among scholars regarding the relationship between anxiety and SLA; henceforth, there are inconsistent results between anxiety and SLA achievement. Findings show that anxiety appears to be both facilitating and debilitating. Facilitating anxiety is claimed to enhance academic performance, while debilitating anxiety is claimed to impede performance. However, although a certain level of anxiety may be beneficial, too much anxiety can lead to a debilitating effect, which may lead to avoidance of work or inefficient work performance. Horwitz, Horwitz and Cope's (1986) seminal paper is also influential. To them, SLA anxiety is a situation-specific anxiety. According to Horwitz et al., language anxiety exerts a debilitating effect upon the second/foreign language classroom in different contexts.

ON THE FALSE DICHOTOMY

Always was there a false dichotomy (that is, genetics and experience) that educators suffer from. They probably have difficulty in deciding whether to follow empiricists' or nativists' implications. It goes without saying that language learning is partly gene-based and partly experience-based. Plomin and Kosslyn (2001), regarding the influence of genes on the brain's structure, concluded that the volume of gray matter appear to be genetically controlled, but the white matter which is responsible for setting up the connections between neurons "might be expected to be different among individuals as a result of experiences" (p. 1153). In fact, SLA, as a sort of experience, increases the white matter. Perhaps increase in white matter helps us explain why bilinguals have better executive control. Furthermore, the plasticity in the adult brain is partly due to the change in the amount of white matter that SLA is conducive to it.

So much has been reported regarding the reduction of students' stress in class atmosphere, but less has been paid to the scientific analysis of students' anxiety. Undoubtedly, if students are faced with situations that trigger fear or stress, their cognitive functions are affected. Further neurobiological analysis underlying the effects of stress on SLA is needed.

ADRENALINE AND ANXIETY

No one denies that when the fear of speaking in public covers a person's body, the level of adrenaline increases, henceforth, this leads to the increase in the breathing rates. Adrenaline is a hormone and neurotransmitter also known as epinephrine (Berecek and

Brody, 1982). In effect, adrenaline is produced by body in response to anxiety. It makes your heart beat faster and gives you more energy. In other words, the sudden shot of adrenaline makes your heart beat faster, your hands shake, and your knees tremble and your skin perspire. Every public speaker experiences all these reactions to some extent (Lucas, 2004).

Our Sympathetic Nervous System releases adrenaline when we are stressed, while our Parasympathetic Nervous System produces Acetylcholine to counteract the adrenaline effect. It is stress versus relaxation. Professor of neurobiology, McGaugh (1998, cited in Wechsler, 2006) asserts that adrenaline is considered as the glue for long-term memory. Adrenaline makes our brain remember better. LeDoux (1996), in this regard, maintains that if adrenaline is released naturally, the related experience will be remembered well. The brain has one memory system for ordinary facts and one for emotionally charged facts. As to several scholars (e.g., LeDoux, 1996 at least more than 1), when students feel anxious, the amygdale in the limbic system will fast downshift. Downshifting occurs when the neocortex does not get sufficient glucose to function properly, causing the amygdale to prevent the brain from making rational decisions. Henceforth, the role of emotion in the brain not only is critical but also must be taken into serious consideration. Accordingly, if a person is anxious, the high surge of adrenaline never lets human beings think logically (Hsueh-Yun, 2006). Though adrenaline releases, to some extent, is useful, overtime it can weaken the cognitive functioning (Sprenger, 2010). Nevertheless, the reason why irrelevant events are susceptible to be filed away is the lack of decrease in adrenaline. Research shows that emotionalizing a fact, idea, or principle by creating a weird image on the screen of mind by awakening amygdale located in the limbic system is conducive to retain long term memory of the data. Amygdale controls autonomic responses associated with fear (Schmidt, 2007). In fact, when you cannot recall something, the missing element is emotionalizing the new details by producing adrenaline that is accompanied with stress. As to Wechsler (2006), natural level of adrenaline acts as an anchor to consolidate the new memory in long-term memory.

Still, learning a new language has become a challenging journey where both genetics and experience are involved. On the journey, we experience a range of emotions along the ride. Emotional arousal usually results in the release of adrenaline (Huang, 2006). As to LeDoux (1996, cited in Maftoon, Shakouri, and Nazari, 2014), when adrenaline is released naturally, the related experience is remembered well. Manning (2007), also, puts forth that so much anxiety leads to increase in the activation of hippocampus, and as a result, the encoding of declarative memory becomes debilitated. In sum, the activity of amygdale becomes more active under stress.

Undoubtedly, no one denies that increase in the

amount of adrenaline in blood has a negative effect on the performance of students in L2. Nonetheless, the role that L2 teachers can have in L2 context is necessary to take heed to. An attempt to humanizing English language teaching exerts a positive effect on SLA, and therefore a natural release of adrenaline occurs. Bartolome (1994) asserts that teachers can humanize instruction by permitting learners to speak from their vantage points and acting as cultural mentors. In a sense, establishing a supportive learning atmosphere is the starting point. Fines (2008) contends, a teacher can be a humanizer if he/she (a) treats students as persons having rights and personalities, (2) emphasizes the strength employed by students, and (3) helps students protect his/her identity.

That teachers have enormous power in the class is not dubious. Employing the given power must not be in a way to legalize their authority, but endeavors have to be made in order to create a climate in which students neither get so intimidated that they never challenge us, nor become so infuriated that they revolt (Shakouri and Nazari, 2012).

In the study conducted by Riasati (2011), the researcher reported that teachers can play an important role in alleviating the students' anxiety. In this regard, Williams and Andrade (2008) assert that the first important thing that teachers can do is to remove the students' fear of tests and scores. Williams and Andrade go on to hold that establishing a rapport is held a necessity on the part of teachers who can alleviate stress among students. Similarly, Riasati (2011) is of the thought that teachers need to have extra meetings with their students in a non-defensive atmosphere. Moreover, as Kagan (1994) asserts, a cooperative learning environment has also been shown to reduce anxiety.

Cooperative learning is founded on constructivist epistemology. That is, knowledge is constructed and transformed into concepts. Thus, learning is achieved through active participation rather than passive perception of information presented by the teacher. In fact, the role of teacher is shifted from a simple disseminator to an active facilitator. Two critical features of cooperative learning are accountability on the part of students and interdependence on the part of material, tasks, and goals. For example, providing materials that could be shared or fostering group cohesion by introducing suitable tasks, or assigning a positive point to the work done by students will enhance the process of learning, and therefore reduces students' anxiety in this way.

Furthermore, teachers' own beliefs can also be reevaluated in order to alleviate student anxiety. In so doing, conferences, workshops, and panels can be held to keep up-to-date perspectives in SLA. Young (1991), in this regard, contends that there are six sources of language anxiety: (a) personal and interpersonal anxiety, (b) learner beliefs about language learning, (c) instructor beliefs about language teaching, (d) instructor-learner

interactions, (e) classroom procedures, and (f) language testing. Elsewhere, Young (1994) declares that these sources are interrelated.

When students are feeling stress, seldom do the students perform efficiently. Put differently, "when people perceive the challenges as much greater than their skills, they experience anxiety and they get demotivated" (Larsen and Rusk, 2011). Along the same line, when children have responsibility for more than they can handle, they will have stress. However, there are a number of strategies that teachers can employ in order to facilitate the process of learning.

Creating a comfort zone in classroom, where students can go when they feel stressed is efficient. Nonetheless, the teachers should be inclined towards getting students out of their comfort zone. That is, attempts should be made in order to move anxious students from the fun of painting, for instance, for its own sake to learn real-world experiences derived from careers embedded in arts. To do so, students can be allowed to experience *alone time* as a means of relaxation and rejuvenation. In effect, when students get relaxed, their level of adrenaline gets natural. It seems that acetylcholine counteract adrenaline in this case. Moreover, thinking in English is also respected as a good method to overcome the anxiety in SLA (Rathiga, 2014). In fact, Rathiga (2014 p 18), "people translating the content can triumph over their fears of language by making English their mind language during the interpersonal communication".

Scholars (e.g., Ullman, 2006) hold that when the level of adrenaline increases, the amount of acetylcholine decreases; thus learning faces difficulty. Acetylcholine is produced by Parasympathetic Nervous System that counteracts the adrenaline which our Sympathetic Nervous System releases.

Regarding the importance of acetylcholine, Ullman (2006) maintains "acetylcholine which plays an important role in hippocampal function, seems to be implicated in aspects of word learning" (p. 261). Henceforth, taking the drug scopolamine that locks acetylcholine impairs one's ability to memorize word forms. Research shows that patients suffer from Alzheimer involves a severe loss of acetylcholine activity in the hippocampus. They have difficulty in remembering new word forms and meanings. Thus, it is suggested to give these patient cholinesterase inhibitors that increase the level of acetylcholine in synapses and improve learning (Ullman, 2006).

CONCLUSION

SLA appears to become a frightful experience. In fact, seeing each others in an uncomfortable emotional state, students feel powerless, and therefore SLA has resulted in an exhausting challenge for them. However, the wish for improved SLA resides in the hearts of many of us. Effectiveness in a system is tied to how well different

parts of it teachers, students, and programs perform. Henceforth, it is important to approach the notion of anxiety from diverse angles. And reevaluating our beliefs is the first step since incorporating our beliefs into a system leaves no place for innovation. In this regard, teachers should take students' affective factors into full consideration. However, the way that the teachers interpret affective components, in general, and anxiety, in particular, is the key to alleviate the level anxiety and fulfill achievement in SLA.

It is suggested that more practical research on affective factors should be carried on SLA. Thus, it is advisable for teachers to employ practical and useful techniques to reduce students' anxiety in order to lead students to fulfill the requirements of the curriculum.

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