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Item Type	Peer-Reviewed;Article;Published version
Authors	Gregersen, Tammy
Citation	Gregersen, T. (2020). Dynamic properties of language anxiety. <i>Studies in Second Language Learning and Teaching</i> , 10(1), 67–87. https://doi.org/10.14746/ssllt.2020.10.1.4
DOI	10.14746/ssllt.2020.10.1.4
Publisher	Adam Mickiewicz University
Download date	2024-08-13 08:33:48
Link to Item	http://hdl.handle.net/11073/21431

Dynamic properties of language anxiety

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Abstract

This article begins by examining previous empirical studies to demonstrate that language anxiety, or the negative emotional reaction learners experience when using a second language (MacIntyre & Gardner, 1999), is a dynamic individual difference learner variable. I show that it forms part of an interconnected, constantly-in-flux system that changes unpredictably over multiple time scales. While at certain times this system might settle into an attractor state that accommodates contradictory conditions, perturbations that arise may lead to development and change with the curious possibility that minor disruptions generate large effects while major alterations go unnoticed. In essence, language anxiety (LA) is part of a continuous complex system in which each state evolves from a previous one. After I establish LA as a dynamic variable using the aforementioned criteria, I outline the implications and challenges for researching LA using a dynamic paradigm, which include focusing on individuals, transforming LA research questions, designing interventions and re-thinking data gathering methodologies. I conclude with implications for language teaching that emphasize: 1) raising awareness of the importance of decoding nonverbal behavior to identify moment-by-moment shifts in learner emotion; 2) remaining vigilant concerning variables that are interacting with LA that make this factor part of a cyclical process; 3) understanding that anxiety co-exists with positive emotions to varying degrees and that language tasks are not unanimously enjoyed or universally anxiety-provoking; and 4) incorporating positive psychology activities that proactively encourage buoyancy and resilience for moment-by-moment daily perturbations as well as debilitating disruptions that result in long-lasting influences.

Keywords: language anxiety; dynamic; timescales; complexity; interconnected

1. Introduction

Language anxiety (LA) is considered dynamic for a host of different reasons. For instance, it exists on different time scales; that is to say, we can talk about it as a trait, a state, as situation-specific, and as fluctuating on a moment-to-moment basis. Secondly, it is part of a system of interconnected variables that are in constant change. Second language (L2) researchers propose that LA influences and is influenced by other individual difference (ID) variables such as motivation, willingness to communicate, and self-concept, among others; linguistic variables such as proficiency; and cognitive variables like a learner's aptitude. Thirdly, contradictory conditions can co-exist. For example, learners experiencing LA can simultaneously feel a sense of enjoyment. Lastly, perturbations in the system, whether they are negative and lead to setbacks, or positive and result in forward progress, catalyze development and change. To this point, it is also possible that minor perturbations can cause later catastrophic tidal-wave-like change or that a major disturbance does not trigger the slightest ripple. The purpose of this article is two-fold. First, it aims to take each of these four defining features of dynamic systems and demonstrate through previous investigations that LA is indeed a dynamic ID variable and that it can be measured in a variety of different ways. Second, it is intended to examine the research and teaching implications of what such a metamorphosis in thinking about LA carries with it.

2. Language anxiety as a dynamic ID

2.1. Different timescales

De Bot comments: "Language development takes place at different, interacting timescales ranging from the decades of the life span to the milliseconds of brain activity. Because these timescales interact, looking at phenomena at only one timescale may lead to spurious results" (2015, p. 29). Examining a phenomenon using multiple timescales – whether measuring across decades, or milliseconds, or the countless scales in between – offers a more comprehensive idea of the innumerable influences on the system in a contextualized way (MacIntyre, 2012). For example, in language classrooms, we would have vastly different results if we measure the LA of an intermediate learner during a public presentation, a week after he or she has had time to decompress, or after several years when his or her language development is well beyond intermediate proficiency. Thus, the timescale one selects will impact data collection and interpretation (de Bot, 2015).

The timescales used to research LA are mainly chosen using LA's various conceptualizations as a trait, a state, specific to a situation, or fluctuating momentarily.

LA can be relatively stable across time, be specific to one domain only (with some learners potentially crossing back and forth over these somewhat arbitrary lines as they respond to a variety of triggers or exercise differentially effective resiliency strategies), and/or shifting in response to immediate stimuli in the context.

Trait anxiety, the most stable of the perspectives, is regarded as a distinct personality attribute that remains steady through time and varying circumstances. Individuals who experience anxiety as a trait are more susceptible to LA than others are; that is to say, more situations cause anxiety reactions and/or they respond with more intense emotion when it arises (Spielberger, 1983). According to Spielberger (1983), such trait-like anxiety indicates the inclination to react with state anxiety in anticipation of threatening conditions. State anxiety, as opposed to trait anxiety, is triggered in response to a specific circumstance, like speaking in public or visiting the dentist. Upon cognitively appraising a potential threat and finding it legitimate, an individual with state-induced anxiety experiences a disagreeable emotional reaction (Lazarus, 1991).

The longer-term timescales used to study trait and state anxiety are grounded in summative analyses of experience and the results of these investigations tend to demonstrate stability in their outcomes. Such timescales allow generalizations such as “LA is negatively correlated with motivation, perceptions of competence and willingness to communicate, but positively correlated with perfectionism and neuroticism,” and have a tendency to round out the momentary fluctuations in anxiety as it is experienced in real time (MacIntyre & Serroul, 2015).

Continuing the countdown from most to least stable forms of anxiety, subsequent to trait and state comes language anxiety that is conceived as situation-specific (Dewaele, 2002; Horwitz, Horwitz, & Cope, 1986; MacIntyre & Gardner, 1989). This means that anxiety is aroused within a particular context, such as the language classroom where learners could potentially fear negative evaluation, experience apprehension surrounding their communication and where their limited linguistic knowledge and performance may get tested (Horwitz et al., 1986). Hence, although some language learners may not experience anxiety as a stable personality feature, this does not preclude the possibility that LA may arise in the specific context of learning and using a foreign language. That is to say, language anxious students may feel secure and worry-free in other contexts, but the special circumstances evidenced in the language classroom evoke the arousal of negative emotion.

The most erratic of LA types is the dynamic variety that rises and falls on a moment-by-moment timescale. Such here-and-now emotion appears as we observe “real-time language processing, developmental change in learner language and evolutionary change in language” (Larsen-Freeman, 2007, p. 783). Analyses carried out on per-second timescales show the processes that unfold as participants consciously experience events. Although high anxious language

learners tend to experience state anxiety in L2 contexts more often than learners with low LA (MacIntyre & Gardner, 1989), this does not necessarily portend that even the calmest of learners will not feel temporary bouts of nervousness or unease. Likewise, when viewing LA through a dynamic lens, it is probable that even the most highly anxious language learner will feel fleeting flashes of respite and pleasure.

Although LA is dynamic in the sense that it can be observed on a moment-by-moment timescale, such dynamism is magnified by the fact that all the varieties, including state, trait, and situation-specific also interact. The interaction of LA timescales was well-articulated by MacIntyre and Gardner (1989, 1991), who proposed that when learners first begin their language journey, the anxiety they might feel is not necessarily linked to the specific classroom situation. Subsequent to recurrent exposure with their negative emotions in the context of the language class, they start associating their anxiousness with the class. "Thus, the nature of language anxiety is not merely a question of either/or, but rather a combination of both trait/stable and situation-specific/dynamic dichotomies of language anxiety that are likely to be realized in language classrooms" (Gkonou, 2017, p. 138).

The notions of time and timescales are integral to how we perceive LA. Given that language learning itself continually transpires on numerous concurrent timescales with certain processes linked to particular timescales, any inferences we draw about LA are necessarily tied to the timescale on which they happen. That is to say, as we focus on the constant and continuous dips and surges of LA on a moment-by-moment scale, or on its emergent phases or recurring patterns over the course of a semester, we are examining and attempting to explain LA using different points of departure and over numerous timescales (MacIntyre, Dörnyei, & Henry, 2015).

2.2. Interconnected and constantly in motion

A second argument that supports the dynamic nature of LA is that it is linked with a host of other continually fluctuating variables, whether in cognitive, affective/personal, linguistic or other domains. During their interaction, LA shapes and is shaped by such variables. Divorcing a variable from its system and examining it in isolation is insufficient on many different levels. A learner factor such as LA is not only mutable on its own, but it also overlaps and interacts interdependently, playing a larger role at certain times and not at others. It is easy to envisage, for example, a learner's heightened LA during the early stages of language development wherein his or her low level of proficiency interacts with his or her inferior sense of self-competence to create great unease in speaking in front of others. However, as language development proceeds and learners experience daily successes with their communicative abilities, their own sense of self-efficacy

rises and eases the unpleasant feelings of tension and worry that they had associated with their language use earlier. Hence, the reciprocal interactions that continually occur demonstrate that we cannot accurately measure the influence of a factor if we isolate it from the others and examine it on its own. In continuation is an overview of a sample of studies that demonstrate the multi-directional effects of LA on and by cognition, personal variability and language use.

MacIntyre and Gardner (1994) demonstrated that the dynamic cognitive effects of LA can be evidenced across the three stages of processing (input, processing/interpreting and output) in their research that assessed both anxiety and performance at each phase. They found that LA pervasively, yet sometimes subtly, influenced cognitive processing at all three levels and that observing only the performance that occurs during output, the most common stage to assess learners' LA, may blind us to the impact of LA at preceding stages along with a disregard of the interactions among the stages. Additionally, the presence of anxiety can bias cognitive processing by negatively prejudicing learners' perceptions of their own competence; that is, anxious language learners are more inclined to underrate their L2 proficiency while relaxed students tend to overrate it (Dewaele, Petrides, & Furnham, 2008; MacIntyre, Noels, & Clement, 1997).

Other research demonstrates that LA interacts with personal and/or affective learner variables in mutually transformative ways. For example, Dewaele (2002) investigated the relationships among LA in two foreign languages, and the personality traits of extraversion, psychoticism and neuroticism among Flemish learners. He found that the correlation between LA and the personality variables was different for each foreign language and that the effect of social class of learners was only significant for the foreign language (French) that was a socially prestigious L2 in the first part of the 20th century. Later, Dewaele et al. (2008) added emotional intelligence (EI) to the personality/LA mix and found a robust propensity for low-EI language learners to experience higher LA across all of the languages they used including their L1. Furthermore, researchers have also shown the influencing interconnectedness between LA and perfectionism in that a tendency exists for perfectionistic language learners to experience higher anxiety than their less perfectionistic counterparts do (Dewaele, 2017; Gregersen & Horwitz, 2002). Lastly, Boudreau, MacIntyre, and Dewaele (2018) also highlighted the fleeting nature of emotions when they implemented an idiodynamic technique to observe the moment-to-moment adaptations of the connection between enjoyment and anxiety in second language communication. They discovered that the enjoyment-anxiety relationship is extremely dynamic, which brings about fluctuating correlational patterns.

Mutually influencing, inextricable interconnections also exist among LA and linguistic variables. For example, more contact with foreign languages, higher

feelings of linguistic self-competence, and L2 acquisition that transpires early in life are generally associated with lower LA. Such variables are enhanced even further when learners authentically and regularly use their foreign language with a large network of other speakers (Dewaele, 2013). Additionally, TLs that belong to a linguistic family in close approximation to the learner's L1 will most likely generate less LA than those languages that are typologically distant (Dewaele, 2010).

This sample body of research demonstrates that LA is multi-determined, so that no solitary component, language input, or force commands it or causes it to change. Instead, LA processes and outcomes, rather than being hardwired and static, are in a state of soft assembly wherein components of the system interact in various ways depending on the milieu, interlocutors, task and so on.

2.3. Contradictory conditions can co-exist

Among the features of dynamism is the state of co-existence that seemingly contradictory elements can maintain. MacIntyre and Gregersen (2012) referred to Fredrickson's (2004) broad-and-build theory in their discussion of the different thought-action repertoires that negative and positive emotions invoke in the language classroom. While adverse emotion can trigger a negative-narrowing focus and hamper the processing of language input, positive emotion broadens learners' scope so that they notice and become aware of language input and are better able to absorb it. However, although positive and negative emotions may instigate different action, it does not mean they exist to the mutual exclusion of the other. In fact, although the emotional dimension of a learner's flow of activities may often be in harmony with the immediate circumstances (anxiety and skipping class, feeling motivated and contributing to a discussion), other occasions arise when emotions oppose what the learner is doing (anxiety and taking an exam, discomfiture and speaking to a native speaker). According to MacIntyre and Gregersen (2012, p. 199):

When emotions are in conflict with ongoing actions, when we have to overcome an emotional reaction in order to take action, we are in a state of ambivalence. The perception of a conflicted emotional state reflects a complex, underlying motivational process. When emotions motivate action, conflicted or ambivalent emotions produce instability that might be best understood as a coordination of approach and avoidance tendencies. Rather than looking at emotion as approach *versus* avoidance, we can discuss interesting moments of approach *and* avoidance, to capture in theory the tensions experienced by learners so that pedagogy can actively deal with the issues raised by affective reactions, and better understand the breadth of facilitative and debilitating emotional processes.

Dewaele and MacIntyre (2014) were among the first to address this somewhat dubious relationship when they juxtaposed LA with foreign language enjoyment

(FLE) and discovered, via the web-based responses of 1,746 multilinguals to their *Foreign Language Classroom Enjoyment Scale* (FLCE), that low anxious learners do not inevitably enjoy the language and/or language class, nor are learners who enjoy the language and language class free from the clutches of anxiety; rather, the dynamic interplay of enjoyment and anxiety is apt to engender adaptive learning. Even the learners who had high levels of enjoyment in the Dewaele and MacIntyre (2014) study experienced anxious moments, so while the enjoyment produced the desire to play and explore, the anxiety spurred them on to take specific action to avoid or eliminate their anxiety and/or its triggers. Statistically speaking, the moderate negative correlation between LA and FLCE that was found suggested that the two emotions are partially inter-related but fundamentally distinct dimensions. For the purposes of this article, what is important to note is that they can and do co-exist.

In a follow-up study, Dewaele, MacIntyre, Boudreau, and Dewaele (2016) added the variable of gender to the language anxiety/enjoyment mix and found the same co-existent condition. Although the females in their study had significantly more fun in class, believed more strongly that what they learned was interesting, and took greater pride in their FL accomplishments than did their male counterparts, they also were more concerned about their mistakes and were less confident when using the FL. Hence, ordinary emotion schemas elicited in language learning contexts can indeed contain both negative emotions like LA along with positive emotions like enjoyment and self-confidence. Emotions like LA and language enjoyment can co-exist in contradictory conditions.

2.4. Perturbations in the system catalyze development and change

In a dynamic system, a seemingly insignificant alteration in its conditions can have immense implications for future behavior. Such alterations or “perturbations” are events that unsettle the stability in a system’s development. At any juncture in a system’s evolving trajectory, even a minor tickle can steer the system down a different path. Likewise, a major blow may have very little impact. In terms of perturbations that influence LA, they can originate externally, such as the introduction of a new test format (Larsen-Freeman & Cameron, 2008) or the presence of a video camera in a speaking class (MacIntyre & Gardner, 1994; Gregersen, MacIntyre, & Meza, 2014). They can also occur internally (Howe & Lewis, 2005), for example, because of a dip in a learner’s perceived self-competence. Important to keep in mind is that a prior state influences a subsequent one, and not always in a way that is anticipated or intended. This is especially the case with LA.

In general, within the multidimensional composition of a system, particular conditions (i.e., “attractor states”) exist that pull the system towards it. As the

system gravitates toward a strong attractor state, it behaves in a comparatively stable way. However, weak attractor states offer little resistance and thus changes are much more likely to occur. This being the case, we can assess the strength of an attractor state and the system's general stability in terms of the resilience it preserves when confronted with perturbations (Larsen-Freeman & Cameron, 2008).

Perturbations that alter the system and result in LA are abundant. Those residing internally but influenced by external relationships include students' negative self-comparisons with other learners, learners' perceptions concerning their relationship with their teachers, and their desire for teachers' approval (Bailey, 1983). Young (1991) also cited the collision of learner beliefs with those of the teacher as a possible disruption of learners' language development resulting in LA, while MacIntyre (2017) proposed that unrealistic beliefs are problematic. Internally-driven perturbations can also be found in negative, self-degrading thoughts, excessive self-evaluation worries over potential failure and concern over what others think (MacIntyre & Gardner, 1991). MacIntyre (2017, p. 21) also suggested that perturbations originating within learners themselves are found in worrying over the forfeiture of one's identity, subjectively self-assessing proficiency, being timid and/or introverted, and having low self-confidence.

Perhaps one of the most oft-cited external perturbations is miscalculated error correction, especially that coming from the language classroom teacher. Gregersen (2003) contends that the relationship of errors and LA is cyclical: that learners make errors and become more anxious, and the more errors they make, the less willing they are to interact in the language as they attempt to shield their public persona. Without participation, anxious learners reinforce the recurring gridlock of negative-narrowing emotion and diminished performance. Anxious learners are inclined to concentrate on the negative, thinking that their language is infused with more errors than they really make. Concurring, MacIntyre (2017, p. 21) described "instructors who intimidate their students with harsh and/or embarrassing error correction in front of other students" as an external "academic" perturbation. External perturbations can also be found in instructional practices, classroom procedures and language testing (MacIntyre, 2017; Young, 1991). Among other social disruptions are "fear of being laughed at, being embarrassed and making a fool of oneself, a poor quality accent, misunderstanding communication or using incorrect words, cultural gaffes, competitiveness, and frequency and quality of contact with native speakers" (MacIntyre, 2017, p. 21).

To sum up, Larsen-Freeman (2012, p. 205) stated that complex systems are "open and dynamic" and "operate under conditions that are not in equilibrium." The countless number of variables makes it nearly impossible to identify a comprehensive inventory of pertinent influences on a system. Furthermore, they are interconnected and change over time. If one feature is altered, the other

system components are affected, too (de Bot, 2007). As variables change through interaction with the environment and internal self-reorganization, their continual interrelatedness nevertheless maintains meaning and order. However, even though there is no master plan, script or prescriptive solution for the behavior of the variables in a system, they are NOT fully random and disconnected.

From the time SLA researchers began examining anxiety in the context of language learning, they have mainly conceptualized it as being somewhat static, using methods that incorporated surveys, language learning tasks, case studies, interviews, participant observation, and diary studies, among a host of others, to collect data. To analyze their data, researchers used correlation, multiple regression, structural equations, ANOVA, grounded theory, etc. (MacIntyre, 2014). What few have done, however, is wade into the messy, chaotic data that a dynamic systems approach generates. In the next section, I attempt to paint a picture of what that might look like, for both researchers and teachers.

3. Implications for research and pedagogy

We are left now with questions about the impact on research and pedagogy of the paradigm shift in SLA toward dynamics and complexity. What happens to research and teaching when we move away from a traditional perception of LA (as a trait, a state, or specific wherein the summary accounts that are generated overlook intra-individual variation) to its conceptualization as part of a dynamic, constantly fluctuating, interconnected system (that transcends timescales, maintains contradictory conditions and changes and adapts to the intrusion of perturbations)? We might draw the analogy of comparing a photograph with a video recording of the same event (MacIntyre, 2014). While a static photo and moving images both communicate visual information to the viewer, the form and quality of the communication is very different. It is not necessarily that one is better than the other. Rather, each provides a different kind of experience. For both researchers and teachers, such a fundamental transformation of the way we characterize LA necessitates changes in research and classroom practices.

3.1. Implications for research

One of the most significant changes for LA researchers who integrate a dynamic perspective in their investigations will be in their formulation of research questions and the methodological designs and data collection measures that will necessarily follow in order to pursue the new lines of inquiry. To exemplify what this might look like, I googled the phrase *research questions for language anxiety*. From the first four studies that appeared, I pinpointed the research questions.

In the left column of Table 1, there is a list of the first research question (of sometimes two or three) that each of the author(s) had utilized to guide their studies. The second column contains suggested wording to transform the original question so as to re-formulate the study into a dynamic one.

Table 1 Non-dynamic vs. dynamic research question formulations

"Non-dynamic" research questions	Transformed into dynamic studies
Does the motivational level of students differ according to gender? (Öztürk & Gürbüz, 2013)	How do motivational levels in females change over the course of an hour-long language task? How does this compare with those of males?
Are US college-level Chinese as a foreign language learners anxious when speaking Chinese? (Luo, 2014)	What happens to the fluency of US college-level Chinese as a foreign language learners as anxiety rises and falls in a five-minute presentation?
How can we identify whether students experience speaking anxiety in the foreign language classroom? (Suleimenova, 2013)	As students are speaking in the foreign language classroom, what behavioral indicators accompany their rising and falling anxiety?
What are L2 teachers' and students' perceptions of the extent to which L2 students' attitudes and beliefs about learning English contribute to L2 students' feelings of anxiety? (Lababidi, 2016)	How do the perceptions of L2 teachers and students about students' attitudes and beliefs about learning English and the ways the latter contributes to language anxiety change over the period of one semester?

With questions focusing on dynamic processes, the traditional methods by which researchers used to gather and analyze data are no longer appropriate. Non-dynamic methods seek to isolate and manipulate an independent variable, such as LA, with the purpose of controlling as many factors and conditions as possible in order to generalize findings to other contexts. Such procedures create at least two problems that dynamic systems researchers try to avoid: 1) because variables are interconnected (and thus mutually influencing and being influenced), any measure would provide only a snapshot of what was occurring at the very time the variable was being measured; and 2) because in an ideal non-dynamic world groups are selected at random to allow wider generalization to a larger population, little is known about what happens at the individual level. This is particularly troubling when applied to studies of LA due to the extremely personal and individualized response of L2 learners.

Beyond the framing of suitable research questions that focus on process rather than product, what else does dynamic systems research involve? According to MacIntyre, Dörnyei, and Henry (2015), researchers must first define the system and the level of said system that is under scrutiny. This can range from an individual, to a dyad, to a classroom, and extend all the way to a culture, but it can also, as is often the case in LA research, be defined as a system that is internal to a learner – such as the interplay of variables in a learner's emotional system as anxiety ebbs and flows. This leads us to the second requirement of dynamic research: Because systems are in motion and interacting, they cannot

be isolated, which necessitates: 1) a process of mapping wherein between-systems interactions can be examined; and 2) an appropriate methodology to gather and interpret data. Such a methodology, most likely mixed methods, requires a process in which data is collected often over a defined period of time (timescale) and focuses on individuals rather than group averages.

3.2. Implications for teaching

Researchers are not the only language experts whose practices are transformed when attention is shifted from static measures of LA to a dynamic systems perspective. Language teachers' practices also need an overhaul.

3.2.1. Teachers and timescales

Let us consider the issue of timescales and look at an example of what happens when teachers widen their focus from the traditional way of perceiving LA as a trait, state, or specific to a situation to also considering it as constantly fluctuating from moment to moment. LA, as we know through decades of previous research, can be exacerbated by pre-existing conditions like particular personality variables or be aggravated by features specific to the language learning classroom; however, research into the dynamics of LA also demonstrates moment-to-moment variations that become evident even in those learners who generally do not exhibit trait, state, or even situation-specific varieties. For example, one specific learner in Gregersen, MacIntyre, and Meza's (2014) study had tested as very low anxiety on the *Foreign Language Classroom Anxiety Scale* (FLCAS), a situation-specific anxiety measure, but when she participated in an idiodynamic process in which she self-ranked her moment-by-moment LA, her anxiety was higher than that of some of the participants who were more prone to situation-specific LA. When asked about it in a posterior interview, she mentioned several arousal factors ("perturbations") such as being videotaped, wearing a heart monitor, and speaking in front of a group in a language that was not her own while being evaluated by the professor. Her specific case is testimony to the potential vacillation of LA in learners with little to no known history of LA.

Just when language teachers thought their jobs were taxing their sensitivities to the brink by accommodating learners whose LA is a well-established debilitating phenomenon, teachers now must ask themselves what recourse they have to identify learners whose LA rises suddenly with little previous history? One possible recommendation to consider comes from the nonverbal research that has been carried out in language classrooms.

Although we sometimes break down communication into different channels such as verbal (the words we use), nonverbal (the "body language" that

accompanies the verbal message, such as gesture, posture, facial expression, and eye behavior), and paraverbal (the variations in vocal cues that express meaning, such as intonation, speech rate, pitch and other prosodic features), in reality, they all work together to create one whole communication event. However, that said, each channel tends to perform a specialized purpose. While the verbal channel primarily has a cognitive orientation via the transmission of content information, the nonverbal and paraverbal channels in tandem express the emotional message, at least in the sense of guiding the listener's interpretation of it. Nonverbal and paraverbal channels are primarily responsible for communicating emotions and attitudes, even if not intentional (Gregersen & MacIntyre, 2017).

Furthermore, previous investigations examining the nonverbal behavior of low and high language-anxious learners in an anxiety-inducing situation (graded oral exam) suggest that there are particular body and vocal cues that indicate the presence of LA. Gregersen's (2005) observation study revealed variances in high and low language anxious learners' facial expressiveness, eye behavior, posture and body movements. For example, the facial movement (including eye behavior and smiling) of learners with high LA was more limited than that of learners with low LA, including brow behavior and smiling. Their eye contact with the teacher tended toward minimal, their posture rigid and closed. They were also inclined to use their hands to self-touch and manipulate objects rather than to use them to improve their communication through speech-enhancing gestures. This is in contrast to the low-anxious participants whose purpose in gesturing tended to illustrate the content of their verbal message and regulate interaction.

In a related study, Gregersen (2007) explored whether explicit training for pre-service language teachers resulted in increased accuracy when interpreting the anxiety states of learners with variable LA. She found that, indeed, teachers did improve their nonverbal decoding skill with awareness-building and explicit preparation, especially when the participants observed language learners whose LA was on the extreme high and low ends of the continuum. Because pre-service teachers increased their interpretive precision upon being presented with explicit anxiety-indicating cues, Gregersen (2007) recommended nonverbal awareness preparation as a means of identifying those learners who struggle with LA.

Although these two nonverbal decoding studies (Gregersen, 2005, 2007) contained elements of dynamism, Gregersen, MacIntyre, and Olson (2017) purposefully took an overt dynamic turn when they examined the expression of nonverbal emotion as part of a system identified as being composed of interacting variables in constant flux. Using the video-recorded data of a previous idiodynamic study (Gregersen, MacIntyre, & Meza, 2014) wherein participants self-rated their levels of LA in real time while watching their pre-recorded performance in an oral classroom presentation, this study added two different external observers,

one an experienced language teacher and the other a peer reviewer, to assess convergence and/or divergence with learners' self-ratings after watching the same videos. Results led to the pedagogical implication that teachers' attention should be drawn to those cues research suggests are indicative of LA and that they should be encouraged to be on the lookout for these specific nonverbal manifestations of anxiety.

So, to conclude this section on teachers' options in dealing with the moment-by-moment timescales that dynamic systems introduce, the following captures the gist well:

Teachers who can read these [emotional] cues accurately are better able to react to the changing emotional tenor in the classroom that can disrupt even the most carefully prepared lesson. Being sensitive to nonverbal emotion cues can . . . [avoid] some of the harmful consequences of emotional arousal that tend to narrow students' focus to dealing with the source of anxiety. (Gregersen, MacIntyre, & Olson, 2017, p. 114)

3.2.2. Teachers and interacting variables

A language teacher's classroom practices will also be altered if he or she perceives LA as interacting with other variables rather than a factor that is isolated from the rest and treated as such. One of the long-standing debates in SLA concerning LA is whether anxiety is a cause or an effect of language learning difficulties. This question is at the heart of the dynamic principle of interacting variables. A teacher who recognizes that LA networks with other learning variables, whether they are emotional, cognitive and/or linguistic, immediately knows LA is BOTH a cause and an effect. It is both an emotional reaction AND impediment to ongoing cognition and behavior, thus making it part of a continuous cycle of sometimes influencing other variables and sometimes being influenced (Gregersen & MacIntyre, 2016).

So where does such ambiguity leave the classroom language teacher? Does it matter that a learner's LA is a symptom of another phenomenon he or she is experiencing, or that LA is the source of the disturbance? It might or it might not. A medical doctor who gives a pain reliever to a patient for a sore throat but does not treat the bacterial infection causing the strep throat treats the symptom but not the cause. Likewise, a language teacher who focuses on a learner's LA without understanding its roots in the learner's abysmal self-ratings of linguistic competence might be confounding the source of the problem. However, because of the cyclical nature of the interconnected systems, targeting one factor might mitigate some of the negative effects of the ones with which it interacts. Dynamically-minded teachers, when confronted with learners struggling with LA, do not focus exclusively on the LA but also look for interacting variables that surround it and work with the conglomerate of emotions that make up the learner's affective profile. Mentioned earlier were an assortment of variables among which were low levels of

self-competence and motivation, perfectionism, neuroticism, and the like. Such a comprehensive approach will minimize the conundrum as to whether LA is a cause or an effect, as that distinction may be difficult to ascertain in the moment.

3.2.3. Teachers and contradictory conditions

Language teachers who understand that contradictory conditions can co-exist will come to a fuller understanding of learners' conflicted (or as MacIntyre suggests, "ambivalent") states, including developing sensitivities to the possibility that even the least anxious students might suffer bouts of LA. This translates into teachers needing to remain vigilant concerning practices that might trigger negative-narrowing learner responses. At times teachers may let their guard down with learners that they intuit are emotionally and psychologically "in a good place." We might be more relaxed with how we correct their errors or assign tasks necessitating more risk-taking when we think that their self-confidence can handle it. Although such decision-making on the part of the teacher may not always lead to negative results, the fact that all learners are susceptible to LA should give us pause to think first and insert risk later.

On a hopeful note, the opposite is also true in the co-existence of contradictory conditions, as high anxious learners surely enjoy moments of pleasure. Language teachers can optimize such moments by noting what the features were that incited the enjoyment and attempting to lengthen them and repeat them to preserve the allure. In the Dewaele and MacIntyre (2014) study that examined the co-existence of enjoyment and LA, the participants found a variety of activities enjoyable and particular aspects of the classroom environment stimulating, including teacher- and peer-related behaviors. Among the activities were those that: 1) were novel (e.g., making short videos and preparing group presentations); 2) provided space for learner choice (e.g., choosing debate and/or discussion topics); and 3) respected learner autonomy and imagination (e.g., group projects). Furthermore, in terms of teacher behavior and the classroom environment that he or she fostered, Dewaele and MacIntyre (2014, p. 264) reported:

Teachers who were positive, humorous, happy, well organized, respectful of students, and praised them for good performance were appreciated by their students. Respondents forgave teachers for gentle teasing and for laughing together when they made mistakes. Laughter that occurs when things do not go as planned can have a healthy effect on learners, taking the negative emotional tension out of the room.

In terms of the role of peers in the enjoyment experienced in language class, they found that size matters: Small groups facilitated social connections, a relaxed environment, and increased target language use.

The important take-away for teachers concerning the dynamic trends in the co-existence of contradictory conditions is not to assume that classroom activities or affective environments are unanimously enjoyed or universally induce anxiety. Instead, to promote enjoyment, a person-in-context approach advocates a fit between learners' skill level and the degree of challenge found in the activity. Overgeneralizing enjoyment triggers and prematurely fitting them into universal contexts would create "laws" of effective teaching and learning that simply do not exist. Because every learner is unique and is inserted into a distinctive context, what the individual finds enjoyable or anxiety-provoking will be in the eyes of the beholder (Dewaele & MacIntyre, 2014).

3.2.4. Teachers and perturbations to the system

In terms of perturbations in the dynamics of LA, as mentioned earlier, they can originate from a variety of sources and the influence of the resultant condition can last from a matter of milliseconds to a lifetime. Anxiety-producing perturbations can minimize learners' progress if they cannot remain impervious to both ordinary and extraordinary impediments and challenges and surmount the stresses that arise from moment-to-moment and/or during the lifetime of learning another language (Ushioda, 2008). For teachers, understanding learners' triggers and attempting to avoid them is the first place to start, particularly if the perturbation is within the teachers' control. For example, if error correction is a major perturbation, consider alternative ways of providing feedback. If speaking in front of the entire class disrupts learners' well-being, divide learners into small groups with cooperative tasks to provide practice opportunities; this might also alleviate the common social trigger of competitiveness among learners. Nonetheless, perturbations will continue to occur, no matter the attention paid or the energy exerted on the part of language teachers. It may be that disruptions to the system fall outside the direct attributions of the classroom teacher, but no matter the origin, learners will still need to overcome the setbacks, challenges, and pressures that are part of the ordinary course of language learning.

To this end, I would like to turn our attention to the notions of *resiliency* and *buoyancy*, two related ideas but qualitatively different from each other. For the purposes of our discussion on the dynamics of LA, their distinction may lie in the gravity and duration of the perturbation in question. Resilience is necessary in response to perturbations of intense difficulty and menacing threats to growth while buoyancy is pertinent to overcoming routine stressors and anxieties that disrupt learner engagement by posing a threat to self-confidence and determination (Yun, Hiver, & Al-Hoorie, 2018). For both, the underlying question is how we can help learners turn adversity into advantage by engineering the

circumstances for resilience and buoyancy to thrive. For instance, such positivity might be achieved by expanding the relative balance of protective factors over risk factors (Luthar, Chicchetti, & Becker, 2000) and by building individual strengths by emphasizing a proactive rather than reactive approach to setbacks and challenges (Martin & Marsh, 2008). One of our teacher goals in response to the disruptions caused by perturbations in the form of LA should be enabling learners to successfully resolve or adapt to risks and threats in the language classroom.

Yun et al. (2018) also recommended a proactive rather than reactionary approach to perturbations. In their study examining the relevance of the buoyancy construct in L2 learning, they discovered that L2 learners with a sufficient amount of self-efficacy, self-regulation, and motivation can develop buoyancy despite a certain degree of anxiety. Citing Oxford (2016), they suggested the following (Yun et al., 2018, p. 822):

Instead of focusing on avoiding or reducing the negative dimensions such as tension, apprehension and nervousness that accompany L2 learning, strengthening positive indicators in the face of external threat may more successfully reinforce learners' buoyancy in the L2 learning process, helping them develop the ability to deal with and overcome day-to-day stresses and setbacks. This may also make buoyance directly amenable to intervention through its focus on positive and adaptive coping with hassles.

Such advice is also in keeping with recent research in language learning that has begun to integrate insights from positive psychology which seeks to incorporate positive qualities and endeavors to complement steps that teachers are already taking and to help learners flourish and thrive (MacIntyre, Gregersen, & Mercer, 2016). Insights from this line of thinking contribute to individual development and well-being by nurturing learners' strengths and personal resources (Gregersen, 2016). A positive perspective on L2 learners and the learning process will expand our understanding of how L2 learners can proactively recover and move beyond the inevitable challenges of both their short-term struggles and long-term language learning challenges (MacIntyre, 2016).

4. Conclusion

This article provided four convincing reasons why LA is a dynamic individual difference, namely, its measurability on different timescales, the interconnectedness of its moving parts, the co-existence of contradictory conditions, and the change that transpires when perturbations are present. As such, these dynamic elements require both researchers and teachers to adapt the way they approach their tasks. For researchers, their challenge will be in the formulation of research questions that consider the dynamic properties of LA and the changes in design

and data collection that such modifications imply. For teachers, they will want to consider innovative ways of identifying language anxious learners through nonverbal means and once identified, to look for interacting reasons for the causes and effects and to understand that all learners can feel both positive and negative emotions, and sometimes even at the same time. Proactively engineering circumstances that incite resiliency and buoyancy may even stave off problems before they even begin.

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