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Boudreau, C. and MacIntyre, P. and Dewaele, Jean-Marc (2018) Enjoyment and anxiety in second language communication: an idiodynamic approach. *Studies in Second Language Learning and Teaching* 8 (1), pp. 149-170. ISSN 2083-5205.

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*Enjoyment and anxiety in second language communication:
An idiodynamic approach*

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Abstract

Emotions are a fleeting experience, sometimes lasting only moments before dissipating. Prior research in SLA has either ignored emotions, underestimated their relevance, or has studied them as a relatively stable individual difference variable. In contrast, the present study takes an idiodynamic approach to examine the rapidly changing relationship between enjoyment and anxiety in second language communication, on a moment-to-moment timescale. University students who speak French as a second language were recruited to complete oral tasks in their second language. Participants then rated their per-second fluctuations in each emotion while watching a video recording of their tasks. Immediately after this, they were interviewed about their attributions for fluctuations in their ratings. We found that the relationship between enjoyment and anxiety is highly dynamic, resulting in varying patterns of correlation ranging from negative to positive. Triangulation of ratings of anxiety and enjoyment with interview data produces a richer understanding of the role of emotions in second language communication.

Keywords: emotions; anxiety; idiodynamic; second language communication; dynamics

1. Introduction

The role of emotions in language learning has been severely underestimated and is deserving of a great deal more research attention (MacIntyre, 2002). Emotions are implicated in almost everything people do, functioning to both facilitate motivation as well as provide a “read out” of a person’s ongoing activities (Reeve, 2015). Emotion is an abstract term that represents several complex and multifaceted processes. A single emotion, such as fear or surprise, can be conceptualized as an emergent, integrated whole encompassing several coordinated processes, including subjective feelings, biological responses, and social phenomena (Izard, 1993). Specific emotions emerge in response to a specific event or environmental cue and synergize to form a coherent experience. Emotional reactions tend to be short-lived, fleeting responses; their purpose is dependent on the event that cued them (Reeve, 2015). Unfolding interpersonal contexts that feature communication and facilitate language learning make emotions especially relevant as changes in emotion trajectories interact between/among persons, and at times can lead to rapid and dynamic changes in the social context.

Emotional reactions and the events that trigger them are often so brief that they are overlooked when using traditional research methods based on collecting retrospective data, and the dynamics of emotion can be obscured when data is averaged over multiple persons. The present study will take a novel approach to consider the relationship between a positive emotion (enjoyment) and a negative emotion (anxiety), within individuals, over a brief period of second language (L2) communication. We will address the nitty gritty of emotional experience and describe how it might be relevant to L2 communication processes (see MacIntyre & Serroul, 2015).

2. Emotion in second language learning

The most commonly studied emotion in second language learning is anxiety (Dewaele & MacIntyre, 2014). Anxiety arousal is associated with cognitive disruptions and distractions often associated with self-focused thinking (Eysenck, 1979; Norton & Abbott, 2016), subjective feelings of tension, apprehension, nervousness, and worry (Scatterfield & Feldman, 2014; Leigh, 2015), along with physical reactions such as increasing heart rate, sweaty hands and body, blood flow to large muscles and “butterflies” in the stomach (Spielberger & Reheiser, 2009). More specifically, anxiety in the context of foreign language learning is defined as “the worry and negative emotional reaction aroused when learning or using a second language” (MacIntyre, 1999, p. 27). Anxiety is rooted in fear, one of the most basic of negative human emotions. The function of fear fundamentally is

adaptive: It motivates protection responses, such as fighting, freezing, and fleeing, in response to a threatening event or stimulus. The perception of threat can stem from common roots tied to evolution (e.g., fear of snakes) or sociocultural factors (e.g., responses to angry faces, strangers; Mallan, Lipp, & Cochrane, 2013). Regardless of the origin, fear's function remains the same: to motivate protection. Anxiety is closely related to fear. Ohman (2008) describes anxiety as fear with no identifiable threat that leads to a state of undirected arousal. Essentially, anxiety is fear in a diffuse form.

Fear and anxiety can be highly detrimental to the learning process (MacIntyre, 2017). In fact, anxiety has been described as the strongest predictor of success or failure for second language students (MacIntyre, 1999). Feelings of anxiety associated with learning a second language can be traced back to a variety of sources, some of which include competition in the classroom (Bailey, 1983), personality traits (Dewaele, 2013), and strained relationships between teachers and students (Gregersen & MacIntyre, 2014), among many other factors. Further, learners who are particularly anxious tend to underestimate their proficiency in second language communication (Gardner, 1985; Gardner & MacIntyre, 1993). Experts have suggested that teachers actively implement techniques to reduce the prevalence of anxiety in foreign language classrooms (see Horwitz & Young, 1991; Young, 1999). Some examples of this include teaching students to recognize irrational fears or anxieties, role playing activities, group discussion, and active monitoring of feelings of anxiety during classroom sessions (Young, 1991). These types of activities focus on the reduction of the negative outcomes associated with anxiety in order to produce a better learning experience.

However, it must be noted that positive emotion is not simply the lack of negative emotion (Seligman & Csikszentmihalyi, 2000). With the SLA literature showing such a heavy focus on language anxiety, the role of positive emotions in language learning has received little attention until recently (Arnold, 2009; MacIntyre & Gregersen, 2012). Prominent theories on the role of positive emotions, including the broaden-and-build theory (Fredrickson, 1998, 2004), can give us some insight into the impact that they may have in second language communication.

2.1. The broaden-and-build theory

The broaden-and-build theory suggests that positive emotions function to "broaden peoples' momentary thought action repertoires and build their enduring personal resources" (Fredrickson, 2004. p. 1369). The theory proposes three specific effects of positive emotions: They broaden our thought-action repertoires, they build resources for the future, and they undo the undesirable effects of negative emotions (Fredrickson, 2013). Positive emotions encourage

behaviors such as play, creativity, curiosity, and exploration; these are behaviors that are widely seen as beneficial in learning. These broadening behaviors are very different from those produced by a negative emotional response.

In particular, negative emotions are often connected with a specific action tendency (Lazarus, 1991). Reeve (2015) provides examples: The emotion of anger elicits the action of destroying an obstacle, sadness promotes reversal of separation, and contempt tends to maintain social hierarchies. A negative emotion serves to focus the stream of consciousness toward a specific target and direct resources to some purposive act. In contrast, Fredrickson (1998) argues that positive emotions do not work to narrow an individual's focus to one specific action tendency, but rather to expand it. In practice, it can be difficult to specify a highly specific action tendency that would be linked to a positive emotion, such as joy or interest, in the way that one can envision negative emotions leading to specific actions. Often, positive emotions are linked with approach behaviors (Frijda, 1994), but this is a vague term encompassing many different kinds of actions. Approach behavior does not necessarily fit into the mold of "specific action" the way negative emotions do. Yet the experience of positive emotion is both desirable and valuable in its own right.

Based on the broaden-and-build theory, it becomes clear that the implications of introducing positive emotions into second language learning could extend far beyond that of reducing or undoing the effects of negative emotions. Applying this theory suggests that positive emotions broaden the perspective of an individual learner, facilitating engagement with the language, play, and exploration within unfamiliar settings. Such activities might allow learners to better notice L2 input (Mackey, 2006), helping build resources for the future by including specific language experiences stemming from interpersonal interactions that accumulate learners' social capital (Gregersen, MacIntyre, & Meza, 2016). Positive emotions may even serve a preventative or protective function against negative emotions, such as language anxiety, when anxiety is difficult to avoid (MacIntyre, 2017). Taking a broaden-and-build perspective on positive emotions could lead to a change in the pedagogical strategies employed in the foreign language classroom (Dewaele & MacIntyre, 2016). One positive emotion that is of particular interest for this study is enjoyment because it is widely applicable to language learning and communication contexts; one can enjoy many types of L2 experiences from a lesson, to conversations, to a trip abroad, to new friendships with speakers of other languages. But we know little about how enjoyment operates in L2 contexts (Dewaele & MacIntyre, 2016), and we know even less about how enjoyment interacts with anxiety during L2 communication.

2.2. Enjoyment

Humans tend to experience pleasure when they meet a need that is driven by biological function or social conditioning (Csikszentmihalyi, 1997). Enjoyment is pleasure taken one step further. Enjoyment is the emotion that is felt when one not only meets their needs but also surpasses them to accomplish something unexpected or surprising (Csikszentmihalyi, 2008). If pleasure can occur simply by performing an activity or completing an action, enjoyment takes on additional dimensions such as an intellectual focus, heightened attention, and optimal challenge. For example, playing a casual game of tennis with a friend may be a pleasurable experience. Playing well in an intensive and competitive game of tennis that both tests and develops one's skill and physical conditioning is more likely to be considered an enjoyable experience. One way to compare pleasure and enjoyment is to think of pleasure as a function of conserving or maintaining needs, and enjoyment as a function of progression or challenging limits.

Framing emotions in this manner, where there is risk inherent in enjoyment, creates a potentially complex relationship between positive and negative emotions. Although the importance of enjoyable experiences in second language learning seems intuitive, research into the relationship between the emotions that underlie enjoyment and language learning is in its early stages (Dewaele & MacIntyre, 2014, 2016). The notions of testing one's skills, using language in new ways, and engaging with learning challenges are likely to implicate anxiety; they are not neutral experiences. In fact, some level of anxiety may be a necessary feature in producing a highly enjoyable experience. When Dewaele and MacIntyre (2014) studied foreign language anxiety and enjoyment in a large sample, the two variables were found to be negatively correlated ($r = -.34$) but shared less than 13% of their variance. Instead of being two ends of the same emotional continuum, where anxiety implies the lack of enjoyment and enjoyment means the lack of anxiety, Dewaele and MacIntyre (2014) suggest that it may be more appropriate to conceptualize them as two distinct emotions working along separate pathways whose trends can converge or diverge from time to time. Situations where anxiety is falling and enjoyment is rising can be easily brought to mind: meeting a stranger and finding you have a lot in common, writing a test where the answers are coming easily to mind, or giving a presentation to a warm and receptive audience. The opposite trend – rising anxiety and falling enjoyment – can be found when we meet an uncooperative stranger, experience difficulty writing a test, or give a presentation to an unpleasant audience. However, considering a more complex emotional context, it is not difficult to imagine both anxiety and enjoyment rising at the same time if a second language learner is feeling challenged, engaged, and creative. Am-

bivalent or conflicted emotional states, such as simultaneously feeling both enjoyment and anxiety, may be overlooked when assessing only the overall correlation between the two variables (MacIntyre, 2007). Considering how the variables rise and fall together leads to new research questions that can drive innovations in theorizing. Instead of asking *what is* the correlation between anxiety and enjoyment, we advocate exploring a dynamic conceptualization of emotion processes, asking instead *when is* there a positive/negative/zero correlation between anxiety and enjoyment (MacIntyre, Mackay, Ross, & Abel, 2017).

2.3. Emotion in language learning: A dynamic perspective

Emotions, defined as short-lived reactions to events, are ideal candidates to be studied from a dynamic perspective. Complex dynamic systems theory (CDST) has made significant inroads into studies of language development over the past decade, spurred by landmark texts by Larsen-Freeman and Cameron (2008) and Verspoor, de Bot, and Lowie (2011). Larsen-Freeman and Cameron (2008) describe complex systems as having defining features and properties, including being (1) dynamic, (2) emergent, (3) open, (4) self-organizing and (5) adaptive, all of which apply to emotions.

Emotions fluctuate over time in constant interplay with other systems and thus change is inherent in emotions because they occur as reactions to events and have a time course of their own. Emotional states also have emergent qualities: They are a combination of physical changes (e.g., increased heart rate), feelings (worry, nervousness), cognitions (e.g., self-deprecating thoughts), behavioral tendencies (e.g., to escape), and so on, which together constitute an anxiety reaction. As an open system, emotions can potentially be influenced by any number of internal or external factors, including personality traits, psychoactive medications, certain foods, sleep deprivation, self-related thoughts, happy or sad memories, and the proximal occurrence of other emotions on the internal side, and a myriad of interpersonal, social, cultural, contextual, and other factors external to the person.

Yet, despite the many interacting components of the systems underlying emotion, cognition, language, communication, and so on, we experience coherence in emotions, even conflicted ones. We know how these components self-organize; that is, they combine in meaningful ways that are maintained for some period of time. The experience of anxiety, for example, is self-exacerbating: As the interacting components of anxiety are experienced, a person can worry about the future effects of anxiety-arousal, a process that ironically fuels further anxiety. The interacting systems that produce an emotion are not controlled by an external agent and are not assembled with a final goal in mind; they self-

organize in the moment and can dissolve very quickly or be rapidly supplanted by another emotion. Finally, complex systems are adaptive, a characteristic that also is a defining feature of emotion. Negative emotions focus attention on specific actions that will aid in adaptation to a situation, in a way similar to the ways in which physical pain alerts the body to tissue damage. Positive emotions, as described by the broaden-and-build theory, also aid adaptation by fostering conditions of exploration, play, and developing social relationships.

The emergence of interest in CDST portends the need for new research questions and methods to address them. As MacIntyre et al. (2017) noted,

at the moment, metaphorical thinking about dynamic systems in second language development is well ahead of rigorous, empirical descriptions of those systems, but perhaps the gap is closing. If complex dynamic systems approaches are to make a lasting contribution to the field of second language development, researchers must do more to generate specific studies of phenomena that produce novel insights into the processes of language learning and communication. (p. 118)

Van Dijk, Verspoor, and Lowie (2011) proposed three key criteria for research methods to address CDST questions. They suggest a need for data that is dense (many data points), longitudinal (collected over a defined period of time, with more than the two testing occasions than a test-retest study would produce), and that analyses be performed at the individual level (not averaged over the members of a group).

The eminent psychologist Gordon Allport (1962) admonished psychological research to test generalizations against the experience of individual persons, “not for the mechanical application of laws (as we do now), but for a fuller, supplementary, and more accurate assessment than we are now able to give” (p. 407). Recent work by Molenaar and Campbell (2009) has shown that research results that summarize groups of people apply to individuals only under rarely obtained conditions. The idiodynamic method produces dense, individual-level data that can be interpreted with a focus on differences across a group of people, or changes within an individual over time, helping to address the longstanding deficit in research identified by Allport who told us that we must confront general principles with real people.

Data from most studies in the SLA literature, including studies of emotion in language learning and communication, would not meet the criteria above for dynamic approach to research. However, new methods are being developed that will allow CDST studies (see Dörnyei, MacIntyre, & Henry, 2015). In the present study we will use the idiodynamic method, a mixed methods approach, to investigate individuals’ experience of anxiety and enjoyment, measured in real time.

2.4. The idiodynamic method

Originally developed by MacIntyre (2012), the idiodynamic method allows us to take a closer look at the dynamic changes in a variable at a per-second timescale. This method can be broken down into four steps:

1. A communication task is recorded for immediate playback.
2. The recording is reviewed by the participant who completes moment-by-moment ratings of the variable under investigation using specially designed software.
3. A graph is produced showing fluctuations in the variable. The graph is reviewed and reasons for changes in the variable are discussed.
4. The complete session is transcribed.

The method has been employed in several studies of second language communication and has produced results that would not have been obtained using a larger timescale or retrospective data collection technique. In the first published study that used the method, MacIntyre and Legatto (2011) measured willingness to communicate and found that it proceeds in a dynamic way, with within-participant ratings fluctuating from high to low several times over the course of a communication event. If an overall mean score of willingness to communicate was calculated for each participant and used for between-subjects comparisons, individual-level findings would have been lost in analysis. Another study used the idiodynamic method to look at approach-avoidance motivation in a second language communication task (MacIntyre & Serroul, 2015). This study found that participants' motivation on a second language communication task fluctuated throughout the course of the activity due to an array of factors such as vocabulary retrieval and the process of choosing what to say and how to say it. Taking a dynamic systems approach to language learning has opened up a new space for explanatory models that directly consider the complexity of human communication (MacIntyre & Serroul, 2015).

Gregersen, MacIntyre, and Meza (2014) assessed idiodynamic self-ratings of anxiety for oral presentations given in Spanish by native English speakers. They also measured participants' heart rate over the course of the presentation. Some of their results emerged as expected. For example, they found that high anxiety participants had both a higher starting and mean idiodynamic anxiety rating than low anxiety participants. However, they also reported individual level results that conflicted with the general trends. For example, one of the low trait-anxiety participants showed instances of accelerated heart rate and unexpectedly high idiodynamic anxiety ratings. The authors attributed this pattern to this presenter's unexpected anxiety reaction, one that generated the self-exacerbating anxiety pattern described above. This type of result emphasizes the

importance of studying the learner at the individual level, and as an integrative person. Gregersen et al. (2014) did not consider the interaction of anxiety with other emotions, which will be the focus of the present study.

3. The present study

The goal of the present study is to describe the dynamic relationship between enjoyment and anxiety, on a per-second timescale, to deepen our understanding of ways in which these two variables rise and fall over the course of a second language communication task. Fluctuations in both enjoyment and anxiety will be examined with two types of tasks, one an oral interview and the other a story-telling task, in a controlled setting. Our specific questions are:

1. What is the relationship between anxiety and enjoyment and does that relationship change over time, within person?
2. When interviewed post-task, to what do participants attribute the observed fluctuations in emotion?

3.1. Method

3.1.1. Participants

Participants were recruited from the student population at Cape Breton University, Canada. English-speaking students who spoke French as a second language were invited to participate. Individual sign-up sheets that included a brief explanation of the nature of the study were distributed. The final sample consisted of 10 participants (7 female, 3 male) in 2nd and 3rd year university. The age of participants ranged from 19 to 29 ($M = 20.8$, $SD = 2.97$). Demographic information including age, gender, year of study, first language, other languages spoken, and grades in which French was studied was also collected.

3.1.2. Materials and measures

Computer software, specifically Anion Variable Tester V2 software, was used to allow participants to give moment-by-moment ratings of their anxiety and enjoyment while viewing the recorded tasks. The scale used by this program ranged from -5, which was defined as very low enjoyment or anxiety, to +5, which was defined as very high enjoyment or anxiety. Upon completion of ratings, the software produced graphs that gave a visual representation of how each variable fluctuated over the course of each communication event. All participants were given a thorough description of how to use the Anion Variable

Tester V2 software before data collection began and practiced inputting ratings until they felt comfortable with the software.

3.2. Procedure

The evening prior to testing, participants were contacted by phone, text, or email and asked to bring with them to the lab testing a photograph of something that they find enjoyable. Participants were informed that they would be asked to speak about this photograph in French (their L2). Examples of photos used include those taken at an event, performing a hobby, photos of a favorite place, and photos of persons.

Upon arriving for their appointment, each participant was asked to fill out a demographic information sheet, a consent form, and a video release form. They proceeded to complete two types of tasks in French, a photo narrative and oral interview:

1. *photo narrative task* – one of the tasks completed was the photo narrative task where participants discussed the photograph they brought for three to five minutes in French;
2. *oral interview tasks* – for the other type of task, participants were presented with five oral interview style questions drawn from MacIntyre and Legatto's (2011) study; the five questions were posed in English and participants responded in French. The questions were as follows:
 - describe what you are wearing;
 - discuss the education system in your home province in some detail;
 - count to 100 by 10s;
 - give direction from this point to the Mayflower Mall (a local shopping center);
 - discuss the role of Parliament in the Canadian system of government.

All of the tasks were video-recorded. It was randomly determined whether participants began with the photo narrative or the oral interview questions; half of them started with photos and the other half with interview questions. Upon the completion of each type of task, the video recording was loaded into the Anion Variable Tester V2 software. Half of the participants began by rating their levels of enjoyment and the other half began by rating their levels of anxiety. As soon as the first set of ratings was complete, a graph of the participant's ratings was printed. The researcher and the participant looked at the graph together and discussed points of interest, such as spikes and dips in ratings. This portion of the process was also audio-recorded. Some examples of questions that were asked by the researcher include:

1. You rated your (anxiety/enjoyment) as particularly high at this particular interval, can you explain why?

2. Your (anxiety/enjoyment) ratings were particularly low here, why do you think that was?
3. Your ratings remained stable and neutral over this time interval. Can you explain why?
4. Do you have anything else to add about your overall experience with the task?

After the first graph was analyzed, participants repeated the procedure with the remaining variable (anxiety or enjoyment). All interview results were transcribed. The procedure produced a lot of information for each person. To focus analysis on the specific research questions noted above, all data was analyzed within person. First, we examined the overall correlation between anxiety and enjoyment, within person, for the oral interview and photo narrative separately. This approach provides an estimate of the strength of relationship between anxiety and enjoyment. The interviews were examined for specific rationales given for changes in emotion and are used to add the participant's voice to the accompanying statistical results. For some individuals, the results will be analyzed by segment, especially when the overall pattern of changes in anxiety and enjoyment produces a low correlation that might reflect multiple, competing tendencies. Within person, we will look for segments with a negative correlation between anxiety and enjoyment to be contrasted with segments showing a positive correlation, within the same person.

4. Results and discussion

4.1. What is the within-person, dynamic relationship between anxiety and enjoyment?

The first step in considering the relationship between anxiety and enjoyment is to examine data on a per-person basis. To begin, we computed the correlation between enjoyment and anxiety for each participant separately for the oral interview and photo narrative. The correlations are shown in Table 1. As can be seen from this table, 18 out of the 20 tasks showed an overall negative correlation between the two emotions; none showed strong positive correlation. Given the descriptive nature of the research question, traditional testing for statistical significance is not appropriate. Using an arbitrary benchmark of $r = .30$, the so-called *personality coefficient* (Mischel, 1968), for identifying correlations of interest, we see that 12 of the 20 correlations are substantial and all of those are negative. The rest of table shows smaller negative, and near-zero correlations.

Table 1 Correlation between per-second ratings of enjoyment and anxiety for each participant for each task type

Participant	Correlation	
	photo narrative	oral interview
1	-.65*	-.87*
2	-.30*	-.09
3	.05	-.07
4	-.65*	-.59*
5	-.56*	-.72*
6	-.40*	-.04
7	-.86*	-.29
8	-.56*	-.33*
9	-.48*	-.15
10	.09	-.57

Note. * Correlations greater than .30.

A very strong, negative correlation indicates a regular pattern: When scores on one variable go up, scores on the other reliably go down, and vice versa. Data for the question task for Participant 1, across the oral interview questions, is particularly indicative of a regular, dynamic relationship between anxiety and enjoyment. The data showed an overall negative correlation within Participant 1's data of $r = -.87$. The idiodynamic graph of this data shows a clear seesaw relationship between anxiety and enjoyment ratings. There is a great deal of variability in the ratings and the variation is quite predictable: When one emotion goes up, the other goes down (see Figure 1).

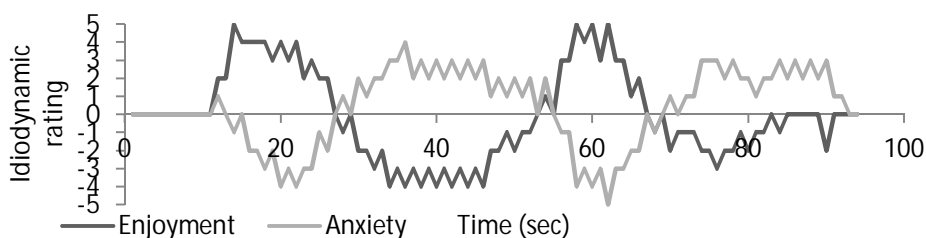


Figure 1 Idiodynamic ratings during the oral interview for Participant 1

For other participants, a substantial but not as strong pattern is revealed by correlations in the .50-.65 range. Inspecting the graphs, in conjunction with the subsequent interviews, suggests that in two specific cases, anxiety began to overpower enjoyment as time went along. This occurred especially for Participant 1 ($r = -.65$; see Figure 2) and for Participant 5 ($r = -.56$; see Figure 3) during the photo narrative task. Both participants began the task with positive enjoyment ratings. However, language-related anxiety arose quickly and became the

dominating perceived emotion for the remainder of the activity; as anxiety rose, enjoyment fell. In the words of Participant 5,

It was just kind of like, got worse and worse and worse and I kept forgetting more and more. So my anxiety just kind of increased and I could feel that emotion and it just made things worse. I was comfortable starting, but then I got uncomfortable and then it just kind of went to an extreme uncomfortable where it just blocked anything I could think of to say.

Here, the cumulative effect of anxiety arousal is apparent. In a type of self-fulfilling prophesy, the arousal associated with anxiety can lead to even more anxiety in a cascading pattern that a person can find overwhelming. Such an experience, in turn, heightens anxiety even more as one feels effective communication slipping away, interference with ongoing cognition mounts, and the frustration associated with the process further feeds the anxiety experience (MacIntyre & Serroul, 2015). This phenomenon, which has been described as a self-exacerbating quality of anxiety (Gregersen et al., 2014), is evident in both the pattern of data and the words Participant 5. High levels of anxiety eventually edge out the perceived comfort that initially was present. More broadly, this pattern is indicative of the power of negative emotion, which functions to narrow attention and focus in on a particular potentially threatening stimuli in the environment. Strong anxiety arousal can overpower the positive emotion.

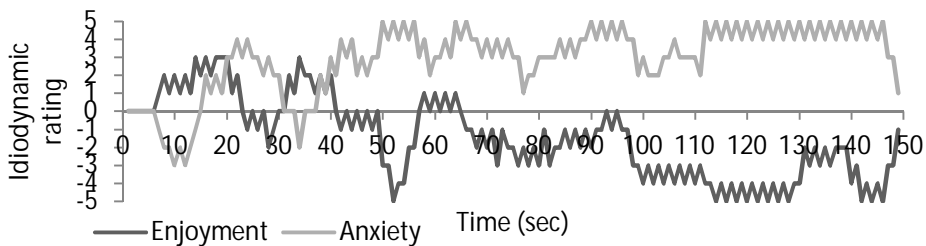


Figure 2 Idiodynamic ratings during the photo narrative activity for Participant 1

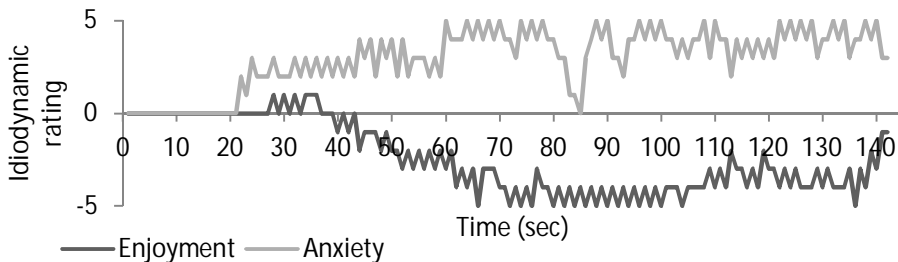


Figure 3 Idiodynamic ratings during the photo narrative activity for Participant 5

Other participants did not show a clear relationship between the two emotions throughout the tasks. In some cases, the overall negative correlation masked underlying dynamic fluctuations in the correlation between anxiety and enjoyment. Specific communicative events seemed to drive the changing patterns. Participant 8's data from the photo narrative is an example of the potential for masking interesting emotional phenomena (see Figure 4). Although Participant 8 showed an overall negative correlation between enjoyment and anxiety ($r = -.33$), a closer look shows a more complex pattern within specific sections of the data. In some segments of Participant 8's photo-related ratings, anxiety and enjoyment are strongly negatively correlated, for example during the 20 second segment from 90-110 seconds ($r = -.66$). However, other segments within the same person's data actually show a positive correlation between anxiety and enjoyment (190-236 sec, $r = .38$), and others still show a near zero correlation (10-40 sec, $r = -.01$). The variation in the relationship between anxiety and enjoyment in Participant 8's data provides evidence of negative, positive, and near-zero correlations. Indeed, the relationship between anxiety and enjoyment, as expressed by the correlation between them, fluctuated in a similar way within the majority of participants.

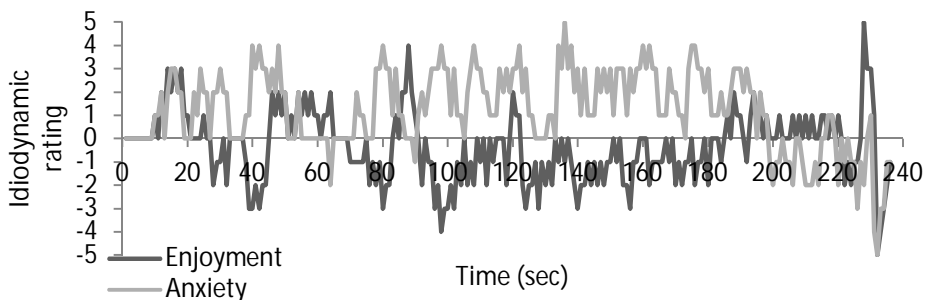


Figure 4 Idiodynamic ratings during the photo narrative activity for Participant 8

As can be seen in Table 1, there were also near-zero correlations between enjoyment and anxiety overall the data in five of the 20 tasks. There were two main patterns that show near zero correlations. On the one hand, some idiodynamic graphs, such as those for Participant 2 ($r = -.09$; see Figure 5) and Participant 6 ($r = -.03$; see Figure 6) responding to the question task, showed very little emotional fluctuation. These participants might have been feeling muted, weak emotional responses. It also is possible that they used the rating software differently than the other participants, simply not clicking the ratings software as often as other participants. Given that the qualitative themes that arose from the interviews of these participants were similar to the rest of the sample, we think that the latter explanation is more likely.

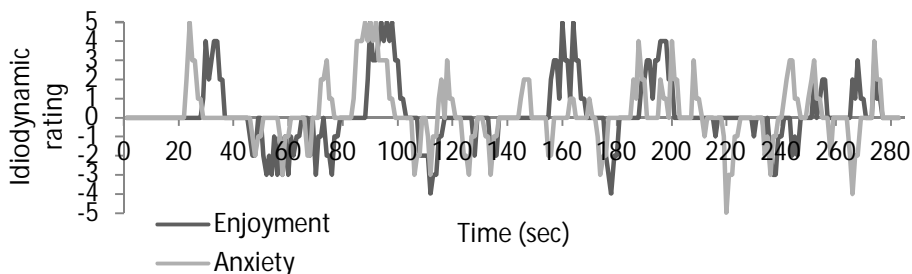


Figure 5 Idiodynamic ratings during the oral interview for Participant 2

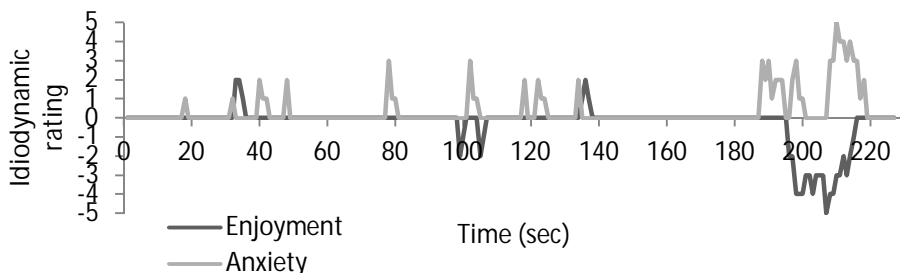


Figure 6 Idiodynamic ratings during the oral interview for Participant 6

On the other hand, data for both Participant 10 ($r = .09, p = .06$; see Figure 7) and Participant 3 ($r = -.07, p = .25$; see Figure 8) showed a great deal of variability in the ratings. Both were relaxed speakers with versatility in task response strategy; they were generally comfortable with making mistakes, and expressed a genuine interest in learning French.

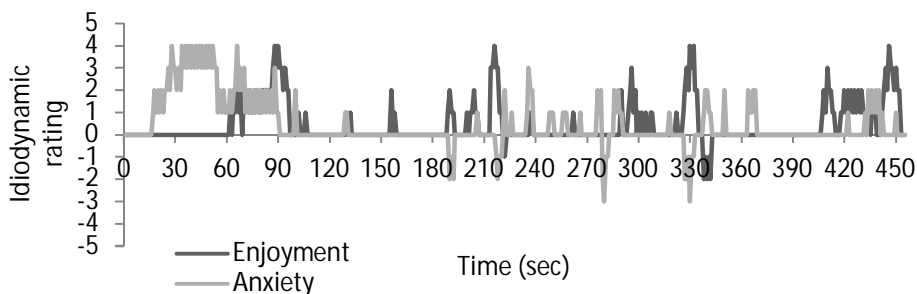


Figure 7 Idiodynamic ratings during the oral interview ratings for Participant 10

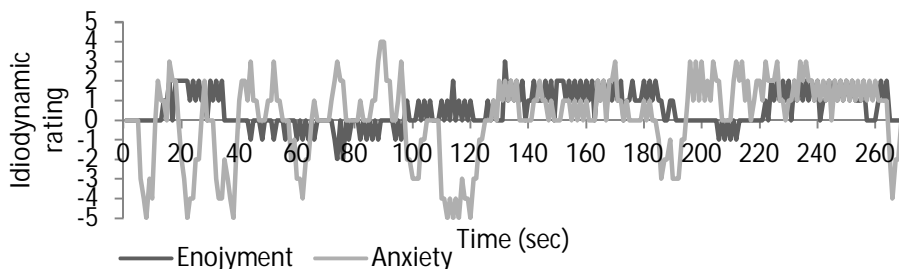


Figure 8 Idiodynamic ratings during the oral interview for Participant 3

In the post-task interview, Participant 10 said:

Well I felt a lot more comfortable once I started to get the rust off, once I started realizing that you know, it's okay to make mistakes and whatnot. It's okay to forget words because, like, it's part of the learning experience.

Participant 3 noted:

I guess I just found that even when I'm feeling kind of anxious, I like speaking French. I like practicing; I like having the opportunity to use the language. So, even when I'm feeling a little anxious about it, I still found it fun.

In their study of second language oral communication, Gregersen et al. (2014) found that low anxiety participants were able to use more flexible communication strategies, such as speaking extemporaneously as opposed to memorizing. Participants 3 and 10 both reported the use of similar communication techniques. Further, these respondents were able to mitigate the detrimental impact of anxiety and avoid anxiety's self-exacerbating quality by maintaining a form of mastery motivation or a growth mindset, accepting the idea of making mistakes and seeing the task as an opportunity as opposed to a threat (Dweck, 2006). Although negative emotion was not eliminated for these participants, they were able to maintain a manageable level of anxiety where successful task completion was still possible.

Although the majority of the tasks showed a negative correlation between anxiety and enjoyment at the overall level, which is consistent with survey results (Dewaele & MacIntyre, 2014, 2016), it is evident that the relationship between enjoyment and anxiety is not at all a simple seesaw pattern. These two emotions can interact continuously in complex, dynamic ways. They can be negatively correlated (high anxiety, low enjoyment; low anxiety, high enjoyment), positively correlated (high anxiety, high enjoyment; low anxiety, low enjoyment), or show near zero correlation even within the same individual over a very

brief time period (a few minutes). We also found preliminary evidence that, beyond a certain threshold, the strength of the negative emotion can override the impact of the positive emotion, such that it is not felt or perceived to be present anymore. The notion of emotion thresholds, within person, might have pedagogical implications as teachers deal with particularly anxious students whose behavior changes when anxiety becomes overwhelming (see Horwitz & Young, 1991; Gkonou, Daubney, & Dewaele, 2017).

There is a great deal of interpersonal variation in how enjoyment and anxiety fluctuate over the course of communication tasks, much of which would have been missed if only the overall correlations were assessed or if we averaged data across the participants. However, after taking a closer look at this relationship, it becomes evident that enjoyment and anxiety are best considered distinct emotions that do not follow a single, simple, pattern. Each emotion appears to operate somewhat independently of the other. Of course the two emotions interact, converging or diverging during specific events. The idiodynamic method allows us to take one step further and assess each correlation pattern in conjunction with the qualitative themes that explain them.

4.2. Limitations and future directions

Like all research, this study has limitations. The first limitation to consider is the artificiality of the setting. Some of the participants mentioned the unusual communication situation when being interviewed about their anxiety ratings. In the words of Participant 5:

I think feeling a little uncomfortable, because normally when I do speak it with my brother it's not like anyone's really watching. It's just like a back and forth casual conversation and like, if I mess up no one is going to know about it. But, with this it was kind of just like, I knew it was being recorded and it just kind of, made me . . . flabbergasted?

In future studies, the per-second, dynamic relationship between emotion and anxiety could be examined in naturally occurring situations, such as with different activities during a second language classroom lesson. A classroom environment might be more natural and comfortable for second language speakers, but the video recordings and immediate stimulated recall procedures of the idiodynamic method must be taken into consideration. Secondly, there may have been some discrepancies in how different participants were using the rating software. The researcher explained and demonstrated the software in a similar way to all participants. However, some participants did not click very often. A program that uses a rating system at a slightly larger time interval, even one

that takes ratings every 2 seconds instead of 1 second, could be more user-friendly. Further analysis of physiological data such as heart rate (beats per minute), heart rate variability, or R-R intervals in conjunction with the existing analysis of the idiodynamic ratings and qualitative interview data could lead to a more complete understanding of participants' emotional reactions. A measure of physiological arousal or reactivity might help identify whether the emotional reaction was stronger in participants with the more pronounced ratings, or if some people were simply using the rating system differently than others. It might also explain why participants might be simply clicking more or less often.

Finally, this study was conducted with native English speakers who speak French as a second language. The majority of participants were French immersion students who practice their French predominantly in a classroom setting. Future studies could compare participants with differing levels of language proficiency. In this way, a better understanding of how the role of emotion in second language communication changes over the course of the learning experience could be established. Further, the same method could be used to look at individuals who speak English as a second language, or any other language of interest. Different language learning motivations (such as learning a heritage language, an endangered language, or the language of a majority group after immigrating) may produce a different emotional response moment-to-moment during learning and communication tasks than learning a language with different emotional connotations.

5. Conclusion

This study adopted a novel methodological approach and generated novel findings showing the complexity of the interaction between positive and negative emotion in L2 communication. First, we showed that the relationship between enjoyment and anxiety can be both conceptualized and measured dynamically. Sometimes the two emotions move in converging patterns in relation to specific events, at other times anxiety and enjoyment show divergent trajectories. Sometimes they operate independently of one another, moving forward and following unpredictable trajectories. Both the presence and the strength of positive and negative emotions impact the individual's subjective experience. The dynamic relationship of enjoyment and anxiety has been shown to impact the speaker's experience in meaningful ways in the context of second language communication. We are making inroads to a better understanding of the moment-to-moment experience of emotion and how it relates to language, but there is much more yet to be learned.

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