



## The Complexity of Speaking Anxiety in a Graduate EFL Classroom

Jeffrey Dawala Wilang

*King Mongkut's University of Technology Thonburi*

Thanh Duy Vo

*King Mongkut's University of Technology Thonburi*

Anxiety among students in non-English speaking learning contexts remains a dynamic construct due to moment-by-moment fluctuations influenced by different variables – teacher, peers, task, among others. To understand the complexity of speaking anxiety, this study presents the results of case studies of two low, moderate, and high anxious graduate students chosen based on their anxiety self-reports. Data sources include a self-report anxiety questionnaire, heart rate monitor, idiodynamic self-rating, observation, and semi-structured individual interview. Each participant was asked to wear a heart rate monitor while speaking and being observed by the researcher. In addition, the participants were asked individually to rate their moment-by-moment anxiety by using the idiodynamic method. Semi-structured individual interviews were conducted, transcribed, and coded accordingly. The use of five data sources revealed findings that demonstrate the strength of considering specific short periods of time and individual level studies when investigating speaking anxiety. Methodological implications were generated to investigate the complex nature of anxiety in non-English speaking contexts.

**Keywords:** speaking anxiety, complex dynamic system, heart rates

### Introduction

Various conceptualizations of anxiety were anchored in varying language learning contexts – non-English and English-speaking contexts, foreign and second language learning settings, and in-class and out-of-class contexts (Horwitz, Horwitz, & Cope, 1986; MacIntyre & Gardner, 1995; Woodrow, 2006). In addition, linear and objective measurements used in investigating foreign or second language anxiety have provided enormous literature on its effects on language learning and performance. Largely, debilitating effects were reported in specific language skills such as listening (see Elkhafaifi, 2005; Wilang & Singhasiri, 2017a), speaking (see Kim, 2018; Wilang & Singhasiri, 2017b; Woodrow, 2006; Zhang & Liu, 2013), reading (see Zoghi, 2012), and writing (see Cheng, 2004; Jennifer & Ponniah, 2017).

There are still unexplained situations in the language classroom that could be related to anxiety. Like many EFL teachers, the researchers have found themselves in awkward situations where teacher-led interactions are frequently met with silence. Also, in speaking tasks, the teachers spend considerable time to “push” students to perform in front of the class. Methodological frameworks, for example, quantitative, qualitative or mixed methods, have been unable to fully address the emotional experiences of Thai engineering graduate students in speaking tasks. For instance, the truthfulness of the students’ responses in a survey questionnaire remains a concern (Dörnyei, 2003).

This study uses five data sources to provide more insights into understanding the complexity of

speaking anxiety of graduate students in a non-English speaking context. Specifically, this study seeks to understand the complexity of speaking anxiety among graduate students by investigating patterns of low, moderate, and high anxious students in a specific, short period of time.

## Literature Review

### Foreign Language Anxiety

Early conceptualizations of anxiety revolved around Spielberger's trait-state anxiety (1983). Accordingly, trait is a stable disposition, while state anxiety fluctuates over time (Spielberger, 1983). It is possible that a person who experiences higher level trait anxiety tends to be nervous or worried in specific situations. To measure state-trait anxiety, the Trait-State Inventory Scale was utilized. Critics, however, argue that the proposed inventory scale was inadequate to capture the complex interaction between the language learner and the specific situation (Mischel, 1973). Until today, the state nature of anxiety remained an elusive concept.

Quantitative methods, specifically, the use of survey questionnaires is widespread in language anxiety research. Horwitz, Horwitz, and Cope (1986) developed a construct of language anxiety as situation-specific by using the Foreign Language Classroom Anxiety Scale (FLCAS). FLCAS, to date, has gained considerable attention in foreign and second language anxiety measurement (see Aida, 1994; Chen 2002; Cheng et al., 1999; Kitano, 2001; Liu, 2006; Mak, 2011; Marcos-Llinas & Garau, 2009; Phillips, 1992, Saito et al., 1999; Wang & Ding, 2001; Worde, 2003). Constructed to measure general anxiety in the foreign language classroom, Aida (1994) also noted that FLCAS appears to strongly emphasize anxiety in regard to speaking. As compared to other language skills, it is noted that speaking has often been suggested as the most anxiety-provoking language skill in foreign language learning situations (Gregersen & Horwitz, 2002; Horwitz, 2000, 2001, Young, 1992 as cited in Mahmoodzadeh & Gkonou, 2015). Several research methods have been employed to investigate foreign language anxiety (*fla*) particularly focusing on speaking anxiety.

The construct of anxiety is multi-faceted (Horwitz, 2001). Thus, previous literature has used various instruments to explore the state or trait nature of speaking anxiety. For instance, Liu (2006) investigated students' anxiety in English language classrooms at different proficiency levels by adopting a triangulation of methods containing survey, observations, reflective journals, and an interview. A 36-item questionnaire was adapted from the FLCAS developed by Horwitz et al. (1986) in order to measure students' anxiety level in classrooms. The teachers of the focused classes were asked to keep a weekly record of the most/least anxious/reticent students in different classroom speaking activities during the whole term. In addition, to compare students' self-reports with teacher and video-recorded observations, the three focused classes were observed and video-recorded by the researcher three times per class with a focus on oral activities. A reflective journal was used to gather additional data about personal and affective variables in language learning, in which the students of the three focused classes were asked to write reflective journals on a weekly basis for 6 successive weeks. Finally, semi-structured interview was conducted to get a more comprehensive insider view of anxiety in English language classrooms. The employed methods provide the description of learners' own background or judgment about their anxiety in non-English speaking settings. However, such methods are rarely sufficient to understand the complicated and dynamic changes of *fla*.

Another study by Mak (2011) explored factors contributing to the speaking-in-class anxiety of Chinese ESL learners in Hong Kong. The research was conducted in three phases: the pilot study, the quantitative phase (questionnaires), and the qualitative phase (semi-structured interviews, discussion and participant observation). This research only focuses on the quantitative findings of the study. Yet, the qualitative data during the pilot did affect the actual creation and design of the questionnaire. The measurement questionnaire was also adapted from the FLCAS. In the adapted version, five underlying constructs were

established such as speech anxiety and fear of negative evaluation, uncomfortableness when speaking with native speakers, negative attitudes toward the English classrooms, negative self-evaluation, and fear of failure/consequences of personal failure. Yet, one would argue that *fla* fluctuates throughout even a short period of time, and it should be looked at in a real-time language learning process where both movement-by-movement changes of anxiety and learners' adaptation take place at the same time. The present study utilized Mak's FLCAS to evaluate the participants' foreign language speaking anxiety as it was adapted for a non-English speaking context.

Obviously, most *fla* in previous studies was measured by self-report surveys, interviews, focus groups, diaries, third party observations, or through other quantitative or qualitative means (Horwitz, 2010; MacIntyre & Gregersen, 2012). The fluctuation of anxiety is not reflected in the methodology as well as how state nature of anxiety is interpreted. One would conclude that such methods cannot fully explain the changes of anxiety levels that occur in specific period of time as well as the spontaneous reactions to it. Therefore, additional methods are needed to explore anxiety as a dynamic system of variables that interact at a given moment in time (de Bot, Lowie & Verspoor, 2007; Larsen-Freeman & Cameron, 2008; MacIntyre, 2012b).

As Horwitz (2010) noted, there is a need to understand the complexity of foreign language (English) speaking anxiety. The study aimed to understand the dynamics of *fla* based on individual level studies in a graduate classroom by addressing one question: In a specific period of time, what are the patterns of self-report anxiety, heart rate, idiodynamic self-rating, observation, and individual interviews during the speaking tasks?

## Complex Dynamic Method

Due to inadequacies of linear and objective methods, Larsen-Freeman and Cameron (2008) proposed chaos or complex theory in the study of non-linear dynamical systems. In other words, chaos does not mean incomplete disorder, but it is unpredictable behavior arisen in a non-linear system due to the complexity and susceptible trajectories chaotic systems. The literature on the dynamic system theory and its applications in foreign language learning is still relatively limited. A pioneering work was conducted by Larsen-Freeman in 1997, followed by Herdina and Jessner with their publication of the book *A dynamic model of multilingualism* in 2002 and Larsen-Freeman with addition to her early work in 2002. Subsequent publications which have touched on this interesting topic were Verspoor, De Bot and Lowie (2004), De Bot, Lowie and Verspoor (2005a, 2005b), De Bot and Makoni (2005), MacIntyre and Legatto (2011), MacIntyre (2012b), Gregersen et al. (2014), and Mahmoodzaddeh and Gkonou (2015).

Recently, Gregersen et al. (2014) conducted a research, using the idiodynamic method, to examine three learners with low level anxiety and three learners with high levels of anxiety, its triggers and the interpretations of moment-by-moment fluctuations in the rapidly changing emotional reactions over a short period of time. The Foreign Language Classroom Anxiety Scale (FLCAS) developed by Horwitz et al. (1986) was employed to figure out the three most and three least anxious participants. The researchers utilized the L2 classroom presentation which was video-recorded. Participants then were asked to wear a heart rate monitor during their 5 to 7 minutes presentation. The specialized software created by MacIntyre and Legatto (2011) originally used in studying willingness to communicate was applied to elicit participants' idiodynamic self-ratings of moment-by-moment changes in their *fla* from the recorded videotape. After the idiodynamic data collection, participants were interviewed by the researchers and told to clarify the spikes and dips in the data. This study triangulated physiological, idiodynamic, interview, and self-report survey data of the participants. The findings showed a strong relationship among various converging data sources which illustrated the strength of focusing on the individual level of language learners using triangulated sources of data. Low-anxious learners were found to spend at least 50% of their time lowering state language anxiety while high-anxious learners spent that amount of time increasing state language anxiety. In the current study, the researchers expect to find similar patterns of anxiety among Thai graduate students.

Apparently, existing research on the dimensions of emotional changes in language learning appeared to have focused on retrospective, summative and trait-oriented approach (Gregersen et al., 2014) and, most of the traits regarding language learning were measured by questionnaires, interview or observations that seek for learners' typical experiences such as in Horwitz (2010), MacIntyre and Gregersen (2012b), Mates and Joequin (2013) and Gregersen et al. (2014). In addition, it was found that state language anxiety is dynamic over time (Gregersen et al., 2014). Mahmoodzaddeh and Gkonou (2015) discussed the core features of complex dynamic systems such as complex interrelations, openness, non-linearity, decentralized causality, unpredictability, dynamism, and emergence. They suggested that the complex dynamic systems perspective can facilitate our understandings of the dynamism and fluidity of foreign language classroom anxiety in second language acquisition studies.

Using case studies as *fla* can vary from individual to individual. "Even the same person speaking about the same topic to the same audience a second time would be expected to show different patterns of reactions because events unfold differently each time" (Gregersen et al., 2014). The inspiration from the aforementioned research studies led to the investigation of the present study. To reach better understanding of the dynamism and fluidity of *fla*, the present study attempted to find out the patterns of students' heart rate, their idiodynamic self-rating, observation, and interview in another setting of Thai engineering graduate classroom.

## Method

A complex dynamic system was used to understand the complexity of speaking anxiety in a graduate EFL classroom. Five sources of data were derived self-report anxiety questionnaire, heart rate monitor, idiodynamic self-ratings, observation, and semi-structured individual interviews.

## Participants

The participants of the study consisted of 35 master's students enrolled in a preparatory English course for graduate students of international programs in science and technology in one of the most respected universities in Thailand. Based upon their scores on the Foreign Language Classroom Anxiety Scale (FLCAS), a 33-item self-report Likert type measure adapted by Mak (2011) specific to non-English speaking language learning context, two most ( $M=2.73-2.83$ ) and least ( $M=1.70-1.79$ ) anxious students including two moderately ( $M=2.15-2.48$ ) anxious students volunteered to participate (see Table 1).

Table 1  
*Participants' Information*

Participant	Speaking task	Mean of <i>fla</i> scores	Level of <i>fla</i>	Amount of time spoken
Max	Oral presentation	1.70	Low anxiety	02:25
Ploy	Oral presentation	1.79	Low anxiety	01:45
Poomjai	Group discussion	2.15	Moderate anxiety	01:25
Jane	Oral presentation	2.48	Moderate anxiety	01:10
Bench	Oral presentation	2.73	High anxiety	02:40
Tharin	Group discussion	2.82	High anxiety	01:15

## Instruments

The instrument used to evaluate the participants' *fla* was created by Horwitz and colleagues (1986), a 5-point Likert scale known as Foreign Language Classroom Anxiety Scale (FLCAS). It was adapted by Mak (2011) for use in a non-English speaking language learning context, specifically Hong Kong. Each of the 33 items was rated on a four-point Likert scale to encourage students to provide their answers, which ranged from 1 (strongly disagree) to 4 (strongly agree). Results of the FLCAS and its effects on

language performance variables such as speaking test scores, group discussion scores, and course grades were published elsewhere (see Samoilova, Vo, & Wilang, 2017; Vo, Samoilova & Wilang, 2017).

The instrument used to measure heart rate during the assigned speaking task was a wristwatch (Vivosmart HR 3.30). It provides a second by second heart rate before, during and after the assigned speaking task.

The instrument used to measure their levels of *fla* was a Windows-based software, Anion Variable Tester, created by MacIntyre and colleagues. It can accommodate the video for the participants to watch themselves and at the same time indicate their self-perceived anxiety. After the process, the instrument provides a bitmap graph and Excel spreadsheet containing the fluctuations.

The instrument used to help the participants recall their anxiety experiences during the assigned speaking task was Video-stimulated recall interview. It was also used to note the behaviors of the participants during the speaking task.

## Data Collection Procedures

After explaining the purpose of the research, consent forms with the attached self-report anxiety survey were administered during class at the beginning of the summer course in May 2017 (see Phase 1, Figure 1). Of 46 students enrolled, only 35 students consented to use their data in the study. Students who did not want to partake in the study were told not to respond by simply leaving the survey unanswered. All students were told that their participation has no effect on their final grades.

Two speaking tasks were included – group presentation and discussion. All six volunteers were asked to wear a heart rate monitor during their part in the assigned speaking task. Also, one of the researchers was in the room to observe the speakers (see Phase 2, Figure 1). Then the idiodynamic self-rating data was loaded in the Anion Variable Tester to rate their anxiety while watching their presentation on a computer screen while simultaneously indicating their *fla* by clicking the UP key if it increases (up to +5) and the DOWN key when it decreases (down to -5). Immediately after the idiodynamic self-rating, participants were interviewed individually (see Phase 3, Figure 1). They were asked to explain the “spikes and dips” (Gregersen et al., 2014, p.578) of their heart rate and idiodynamic self-ratings. Some of the questions included (1) situations that made them worried before, during and after the assigned speaking task, (2) specific anxiety situations while watching their video, and (3) things that made them not anxious.

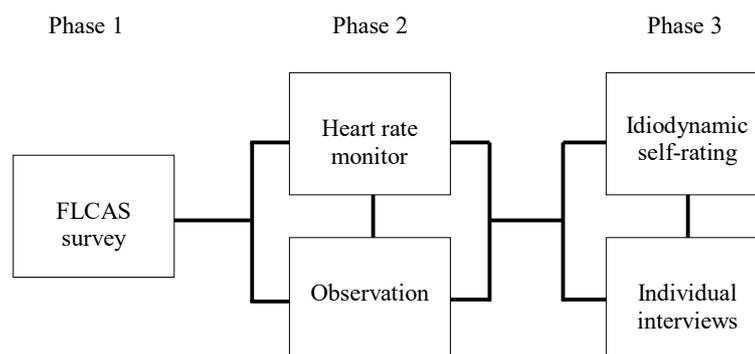


Figure 1. Data collection process.

## Data Analysis

To know the patterns derived from the four sources of data, Figure 2 shows the analysis between two or three variables. For example, the heart rate was triangulated with findings from the idiodynamic self-rating, observation, and individual interviews. Similarities and differences are reported in the succeeding sections.

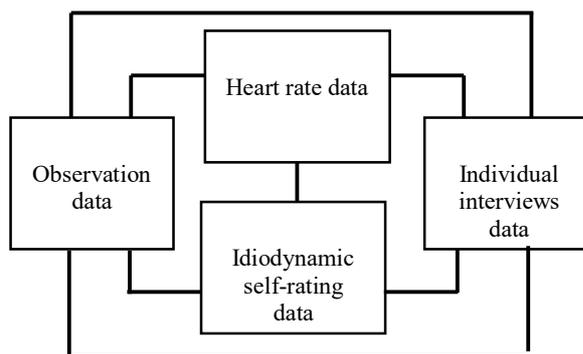


Figure 2. Data analysis.

## Results and Discussion

This section reports six case studies in the following order. Cases one and two include two low anxiety participants, cases three and four consist of two moderately anxious participants, and the last two cases comprise highly anxious participants. Each figure presents the heart rates of the participants while speaking, idiodynamic self-ratings show the participants' anxiety while watching themselves in the video, and observations consist of observable gestures or actions during the speaking activity. Participants' voices were used to elaborate on the anxiety or non-anxiety provoking situations in speaking. Data triangulation was used to explain differences and similarities of results.

### Case 1: Ploy, Low Anxiety Participant

Ploy's average heart rate was 55 *heart beats* for an 80-second talk. The highest heart rate was 76 *beats per 5 seconds*, which was registered while speaking between 65 to 70 seconds (see Figure 3). Based on observations, Ploy stumbled, looked at the slides and teacher repeatedly, and repeated herself. From another data source, idiodynamic self-rating revealed five instances of anxiety spikes during the participant's talk. During the individual interview, the participant elaborated on the following anxiety situations including script-reliance anxiety, forgetting anxiety, and lexical complexity anxiety.

Accordingly, script-reliance anxiety pertains to situations where the speaker has to present the prepared script perfectly. Secondly, forgetting anxiety refers to situations where the speaker has forgotten some words in the prepared script and was unable to say it during the presentation. Lastly, lexical complexity anxiety is described as the fear of using a "general term" instead of the prepared "academic" word in the script due to forgetting.

The sources of data presented very interesting findings. Ploy believed that she was not anxious at the beginning of her presentation, but her perceived low anxiety has gradually increased over time. The participant's heart rates suggest the prevalence of state anxiety as it increased continually from 44 to 76 heart beats. In lieu of the data above, there appears to be a disparity on perceived anxiety and physiological evidence in this case. As the idiodynamic self-ratings seemed to corroborate with physiological evidence, it could be argued that anxiety may have caused the spikes of heart rates. In addition, the increasing heart rate (although it is found below the average heart beat per minute) could be due to the observed situations, specifically, by looking at the slides and the teacher. It can be noted that the sudden spike at 55 second was registered when she looked at the teacher repeatedly.

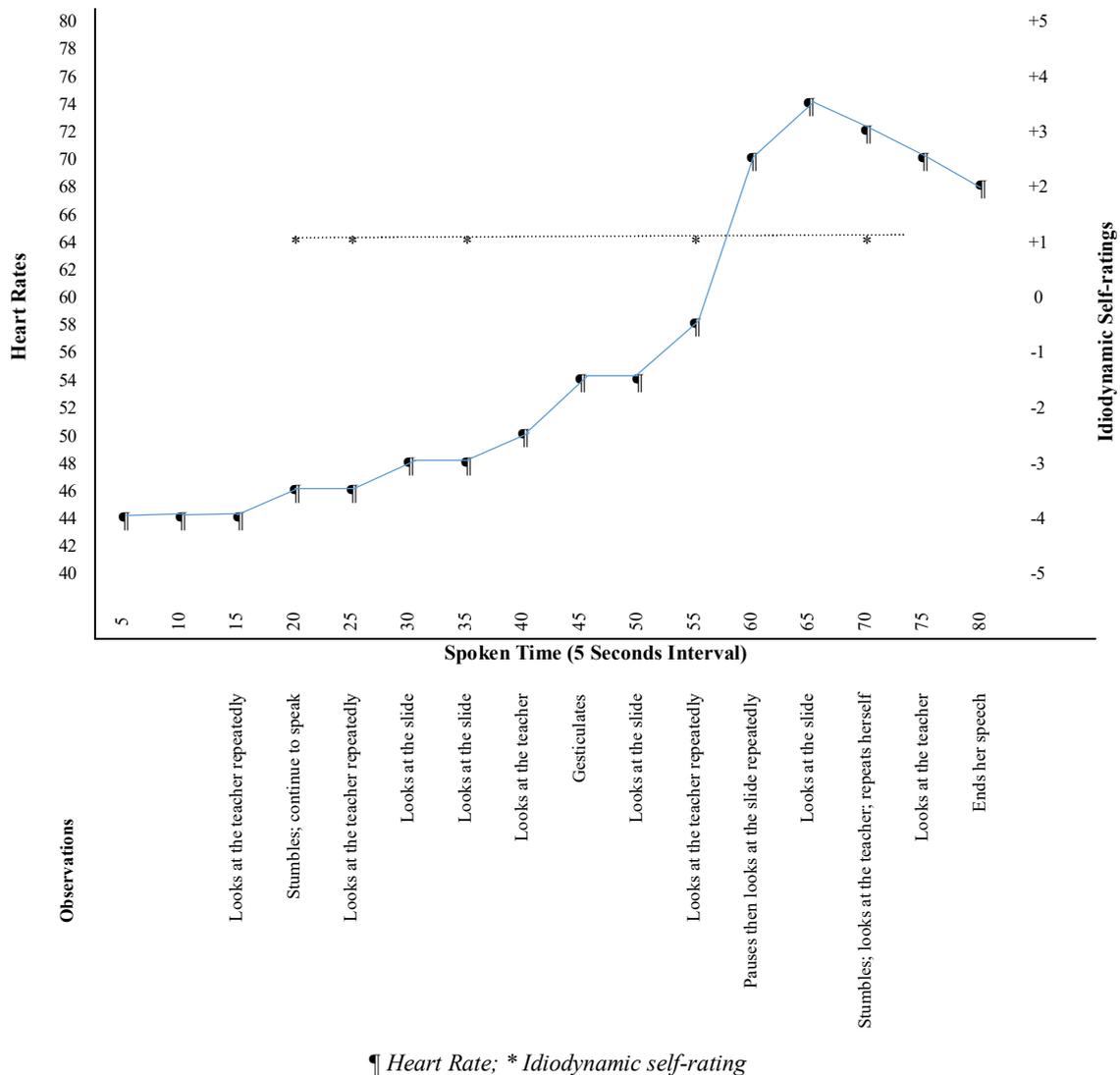


Figure 3. Ploy’s heart rate, idiodynamic self-rating and observations.

### Case 2: Max, Low Anxiety Participant

Max’s average heart rate was 50 *heart beats* for a 145-second talk. The highest heart rate was 60 *beats per 5 seconds*, which was registered at the beginning of his presentation (see Figure 4). Based on observations, Max stumbled, looked at the slides and notes, gesticulated, paused, and asked questions to the audience. From another data source, idiodynamic self-rating revealed two anxiety spikes and three dips. During the individual interview, the participant elaborated on the following non-anxiety situations including self-esteem, word coinage, and script non-reliance.

Elaborating on non-anxiety situations, Max said that his exposure to presentations made him “not anxious at all.” For instance, the participant presented his undergraduate thesis three to four times in various seminars. When asked about the video or the teacher, he said that both have no effect on anxiety as he “was focused on the words he wanted to say.” With regards to word coinage, Max “came up with something new” when he forgets a word that was prepared in the script. Another non-anxiety situation related with self-esteem is script non-reliance. He admitted that he wrote a script the night before the presentation and went through it the next day. He explicitly stated that he did not memorize the script. For situations where he had forgotten some words, he said:

At the beginning I forgot what I wrote. You know sometimes I wrote something and I forgot. And then I have to stop and think what I wrote and I didn't think it out and I just say. Just stop and say something connected to what I wrote.

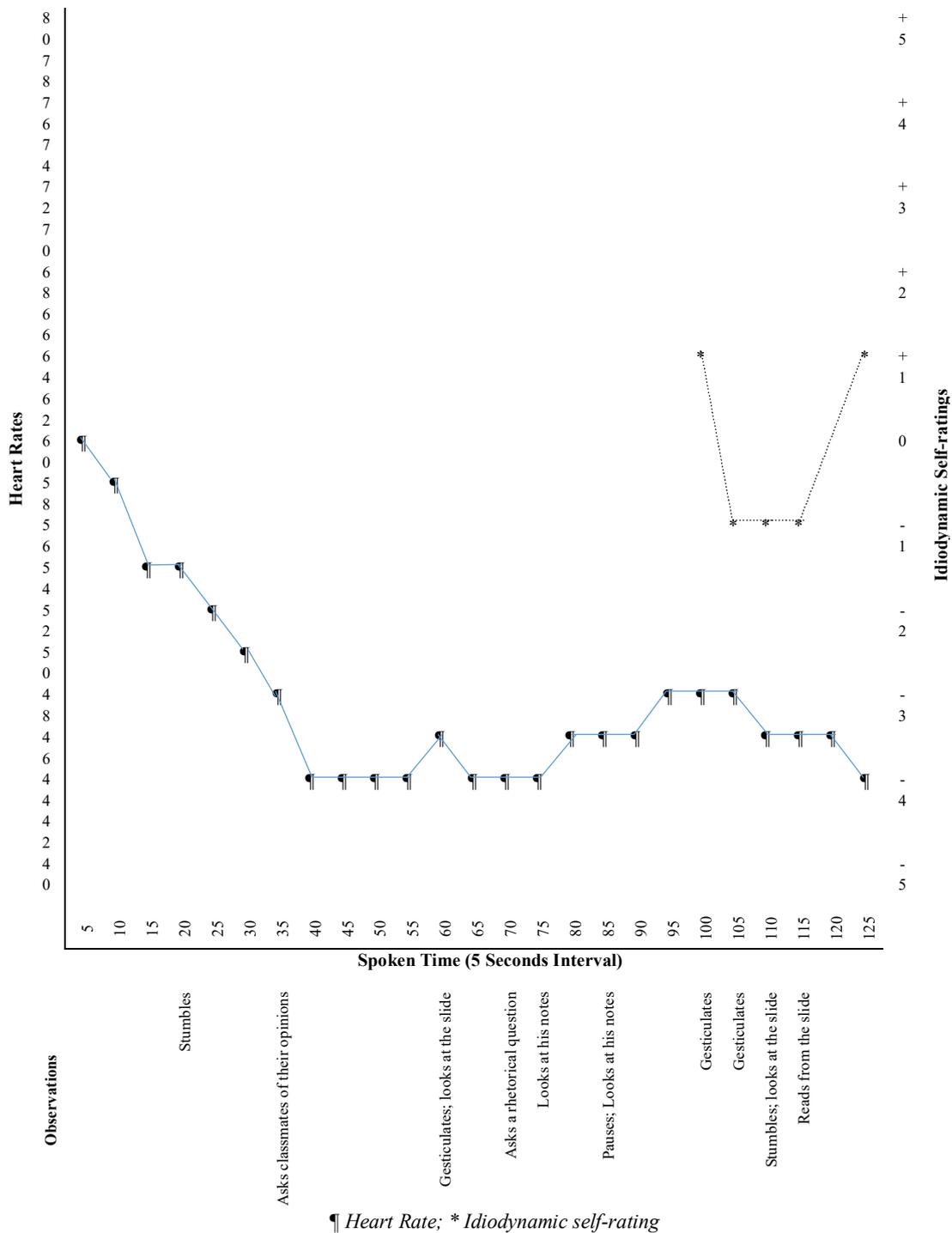


Figure 4. Max's heart rate, idiodynamic self-rating and observations.

The sources of data presented some patterns. Max forgetting of some words at the beginning of the presentation could have provoked the spikes of his heart rate at 60 beats per 5 seconds. Due to his confidence and ability to coin new words to replace forgotten words from the script, his heart beats

continuously declined over time despite some situations where he stumbled, gesticulated, paused, among others. Although Max's average heart rates were below the normal heart beat per minute, he indicated through idiodynamic self-rating that he got anxious at some points when he gesticulated towards the end of his presentation (see 100 seconds). In addition, three dips in the idiodynamic data were registered when he gesticulated, stumbled, and looked at the slides. Further, heart rates and idiodynamic data seemed to corroborate from 105 to 115 seconds. However, the observed acts are non-anxiety provoking situations as compared with other participants in the study.

### Case 3: Poomjai, Moderate Anxiety Participant

Poomjai's average heart rate was 101 *heart beats* for a 105-second talk. The highest heart rate was 120 *beats per 5 seconds*, which was registered while speaking between 25 to 30 seconds (see Figure 5). Based on observations, Poomjai hesitated and looked at her notes before the sudden spike of her heart rate. It eventually decreased when she spoke fluently about the topic. Poomjai confirmed that the uptick of her heart rate after indicating a spike of her anxiety through the idiodynamic self-rating. When asked during the interview on what situations that made her anxious, she suggested a trait-like anxiety, as it happens whenever she presents in class. She explained below.

(I am anxious) when I have to go to front of the classroom and speak to other friends like presentation time. This is the same (when presenting in Thai) because I am a shy person and I feel fear when I face too many people. I have more confidence when there are fewer number of people in the room.

She acknowledged that she felt stressed at the beginning (see heart rate) "because I want to speak finish so I can feel relaxed after that." It is interesting to note the differences of her perceived anxiety and heart rate, idiodynamic data and the observed situations. She felt anxious in her mind but there was a steady decline of her heart rate while speaking. Poomjai prepared keywords on what she wanted to say before the presentation but would improvise new words to explain the topic.

As suggested above, there seemed to be a decreasing pattern of anxiety over time based on heart rate, idiodynamic self-rating, observation, and interview data. Her fluency in spoken English could have resulted to the continuous dip of her heart rate.

### Case 4: Jane, Moderately Anxious Participant

Jane's average heart rate was 99 *heart beats* for a 75-second talk. The highest heart rate was 112 *beats per 5 seconds* between 55 to 60 seconds (see Figure 6). The uptick of her heart rate started when she stumbled while speaking at 45-seconds. Her idiodynamic self-rating revealed three spikes and two dips. The spike was associated with stumbling and pausing while speaking, and the dip was related to apologizing. Five sources of anxiety were coded from individual interviews including self-doubt, peer anxiety, script reliance anxiety, teacher-induced anxiety, and fear of failure.

Accordingly, self-doubt arises when the speaker starts thinking of using "wrong words" during the presentation. Such anxiety is related to script reliance anxiety where the speaker starts to get nervous when the prepared script is not delivered accordingly. Peer anxiety is the result of comparing one's self ability to others, denoting that others are better or good at presentations. Teacher-induced anxiety is provoked when the teacher "looks at me" making the participant nervous. Fear of failure refers to worries for not passing the course due to self-doubt of one's ability.

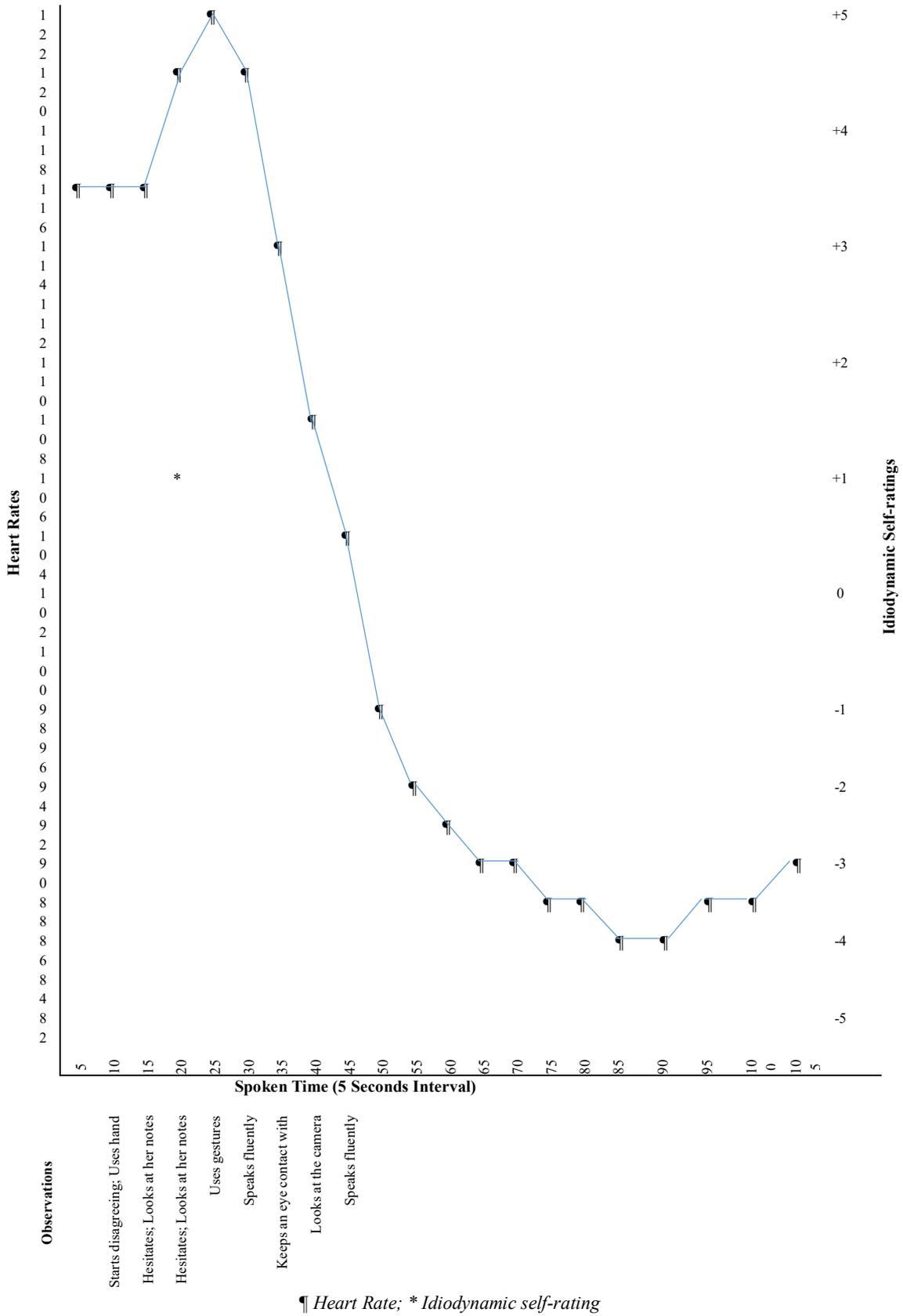


Figure 5. Pomjai's heart rate, idiodynamic self-rating and observations.

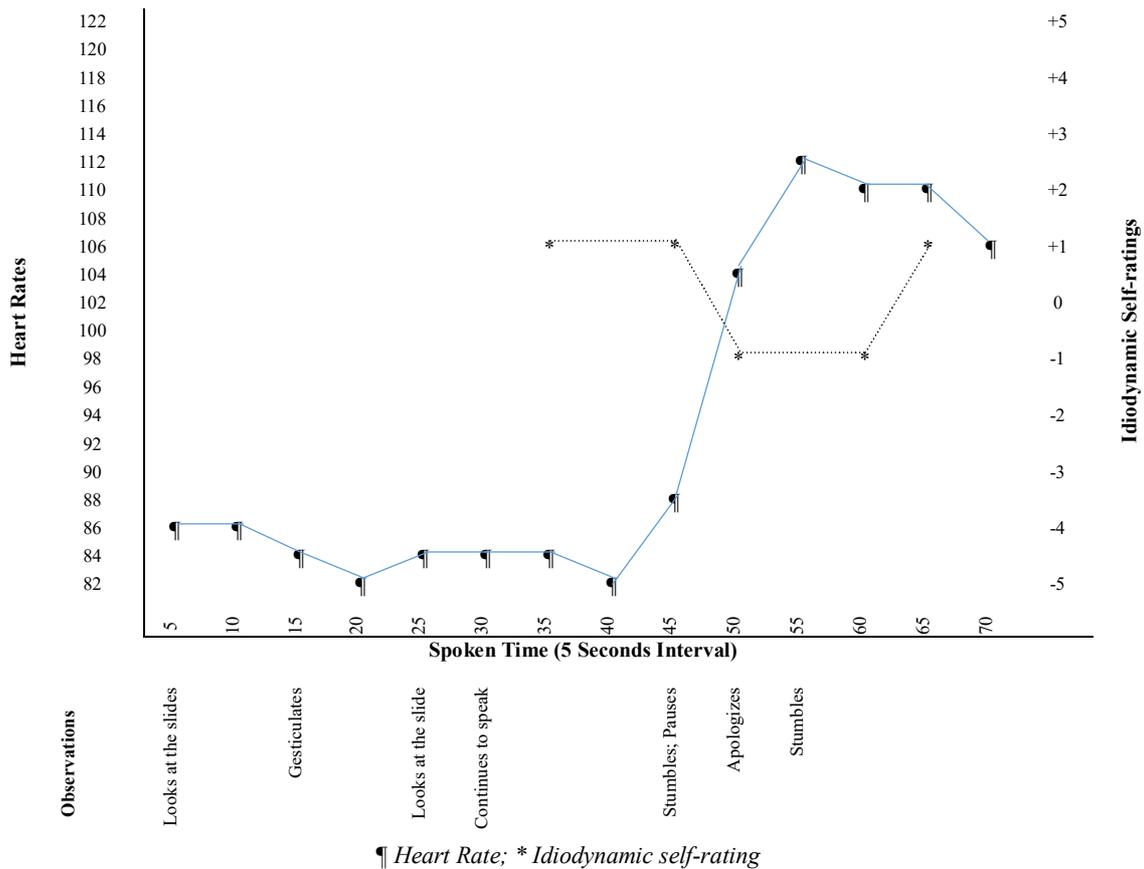


Figure 6. Jane’s heart rate, idiodynamic self-rating and observations.

It is also important to highlight the following. Jane’s heart rates continually increase after she stumbled and apologized afterwards. Her apology could indicate self-doubts of her ability. It also appears that she apologized to her friends as she “cannot match their ability to present.” For instance, she said:

I think I am not good at presentation because my friends (did) their best. My friends studied in international programs (but) I studied in the Thai program.

### Case 5: Bench, High Anxiety Participant

Bench’s average heart rate was 116 *heart beats* for a 180-second talk. The highest heart rate was 124, which was registered at the beginning of his talk between 20 to 30 seconds (see Figure 7). The continuous spikes of his heart rate started after playing the video, specifically when he got confused, repeated, and interrupted himself. Based on idiodynamic self-rating, six spikes and two dips were registered. The spikes were related to when he looked at the teacher (+3), explained the topic, and repeated some words. Meanwhile, the dips were associated with when he was looking at the teacher.

Based on the interview data, sources of anxiety include preparation anxiety, lack of readiness, forgetting, script reliance anxiety, self-doubt, and teacher-induced anxiety.

Preparation anxiety refers to surprising situations against the set standards in the classroom. Accordingly, Bench’s group was designated to present secondly but due to some late students in the first group, his group had to present first. In fact, before he started presenting, he said, “I haven’t prepared to be the first group in class so I am very nervous right now!”

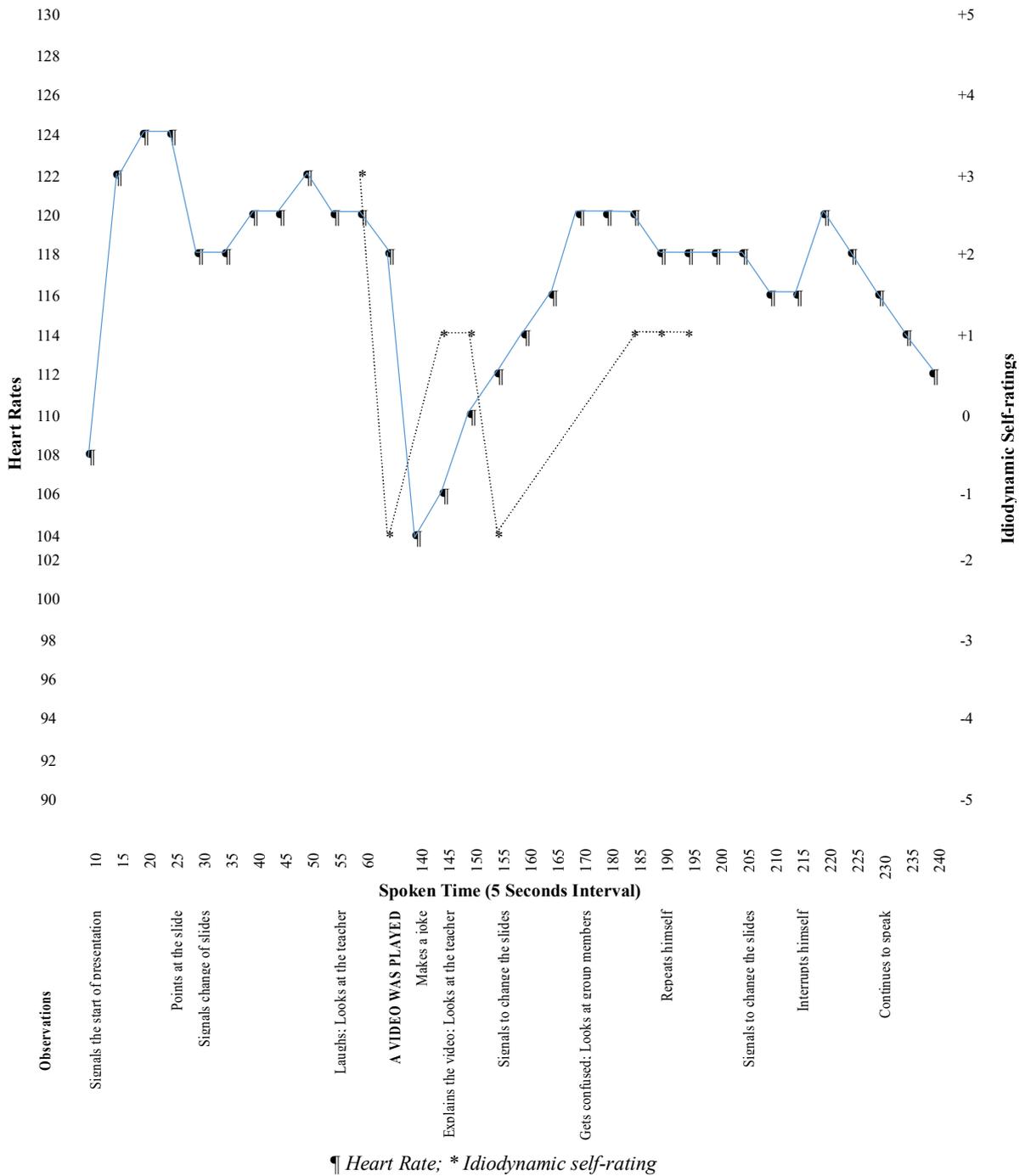


Figure 7. Bench’s heart rate, idiodynamic self-rating and observations.

Lack of readiness is the result of lack of sleep due to worries of presenting on the next day. Bench described the result as having a “blank brain” contributing to another source of anxiety coded as forgetting. In the later situation, it is described as a phenomenon of being unable to remember “what (he) is going to talk about.” For instance, he explained his rising heart rates after the video presentation as follows.

After the video I forgot the sentence... What I am going to say next or I try to think if it comes back... Just a little bit I have to wait if not I have to say whatever I am going to say.

The above situation also corresponds to another source of anxiety referred to as script reliance anxiety. For example, Bench said “This video is going to tell you...” instead of “This video is going to show you...”

Like other students, Bench was anxious due to a lack of self-esteem. He explained that he was unsure if his words were understood by his classmates. He claimed that he was anxious knowing that he might say something wrong and that he needed to repeat some words. He looked at not only his classmates but also his teacher to make sure that he was understood. This situation is coded as teacher-induced anxiety. Accordingly, he subjectively interprets the teacher’s reactions as negatively contributing to spikes in his self-rated anxiety.

### Case 6: Tharin, High Anxiety Participant

Tharin’s average heart rate was 114 *heart beats* for a 75-second talk. The highest heart rate was 126 *heart beats per 5 seconds*, which was registered while speaking between 225 to 230 seconds (see Figure 8). Tharin looked at his script before the highest heart rate was registered at 225 seconds. Based on idiodynamic self-rating, he indicated 5 spikes of anxiety ranging from 2 to 4. The highest spike (+4) was registered when he spoke with hesitations. Other spikes were related to looking at the script and while using gestures.

Based on the interview data, three sources of anxiety were identified. The first is self-doubt. Similar to others, this anxiety refers to questions of one’s self ability to deliver a presentation. He said,

Ummm uhuh. Sometimes I don’t I don’t I don’t know more words. Yeah and sometimes I think its my sentence is wrong. So, I don’t speak too much.

The rest are script reliance and forgetting anxieties. Tharin argued that it was very stressful when he forgot the words that were written in his prepared script.

## General Discussion and Conclusion

Findings appear to show patterns in the average results of their self-reported anxiety and physiological responses. The average heart rate of low anxiety participants’ ( $M=1.70-1.79$ ) was between 50 to 55 heart beats. Additionally, the average heart rate of moderate anxiety participants ( $M=2.15-2.48$ ) was between 99 to 101 heart beats. Lastly, the average heart rate of high anxiety participants ( $M=2.73-2.82$ ) was between 114 to 116 heart beats. Despite the patterns reported above, it is hard to draw solid conclusions from the survey and heart rate results.

The state nature of *fla* seemed to remain as an elusive generalizable concept even in individual level studies. For instance, even though findings revealed that low anxious participants appeared to have very low average heart rates from 50 to 55 heart beats, Ploy’s heart rates increased over time. Unlike Ploy, Max categorically stated that he was not anxious at all. This is why he only talked about his strategies. For example, he mentioned whenever he forgets some words during the presentation. Accordingly, when he forgets a word, he coins a new term. Also, he does not rely on a script when preparing for presentations. Apart from heart rates, it is quite difficult to conclude “neat” results from both participants based on triangulation of idiodynamic self-ratings, interviews, and observations.

Concerning high anxious participants, dips and spikes from heart rates and idiodynamic self-ratings are more varied. Patterns, however, were elicited from “static” sources of data, for example, individual interviews. Accordingly, they were anxious from forgetting words to say, lack of self-esteem, and script-reliance anxiety. Like previous studies, which used individual interviews (see Liu, 2016; Wilang & Singhasiri, 2017a), possible patterns are easily identifiable by coding and thematizing data.

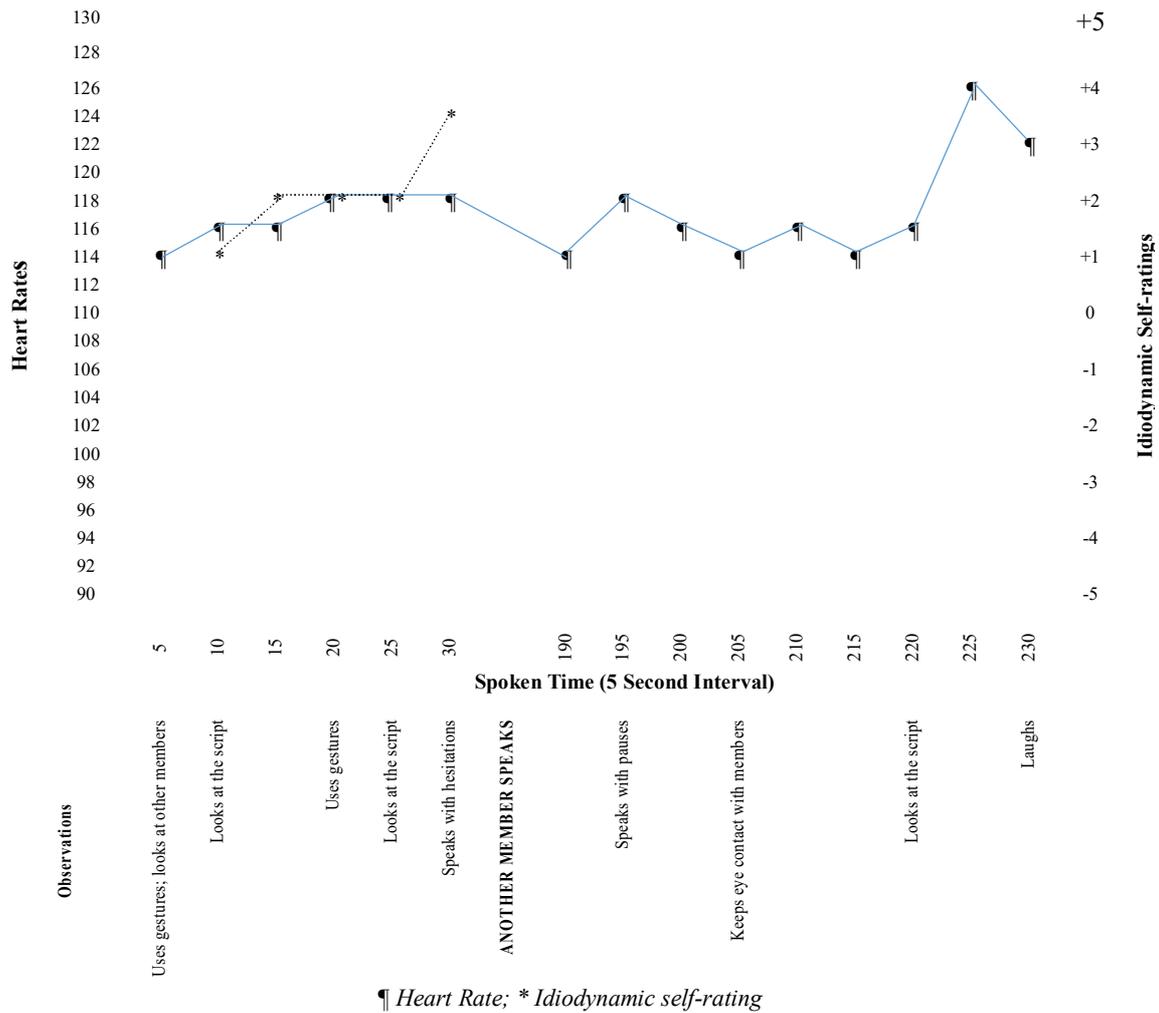


Figure 8. Tharin’s heart rate, idiodynamic self-rating and observations.

Similar to the low anxiety participants, deducing physiological patterns from moderate anxiety participants is impossible. In the findings, Poomjai’s heart rate decreased over time while Jane’s heart rate started to increase in the middle of her presentation. It could be established that fluency in speaking may indicate the speaker’s anxiety.

It appears that methods which provide static sources of data such as surveys and interviews could provide a generalizable concept among the participants in the study. For example, in the coding of data, regardless of the participants’ level of anxiety, themes such as script-reliance anxiety and forgetting as sources of anxiety emerged. On the other hand, methods which provide dynamic sources of data such as heart rates and idiodynamic self-ratings could only provide a “framework” to explore the complex nature of anxiety. For example, future studies may consider shorter periods of time in the data analysis.

While previous literature (e.g., Aida, 1994; Horwitz, Horwitz, & Cope, 1986; Kitano, 2001; MacIntyre & Gardner, 1995; Phillips, 1992, Saito et al., 1999; Spielberger, 1965, 1983; among others) strongly supported the existence of state nature of anxiety from surveys and other qualitative measures, little has been explained on how anxiety fluctuates over a short period of time. The use of differing sources of data (for example, qualitative data) seemed to provide empirical evidence on the complex nature of speaking anxiety. Findings revealed factors such as the speaking task itself, lexical knowledge, peer pressure to perform well, and educational background, among others. Although results of each instrument may not necessarily have been complemented to produce “neat results” as opposed to linear and objective measurements, it is possible to draw conclusions based on triangulation of data from individual level

studies in a specific short period of time. For example, using a 5-second interval timescale provided empirical evidence of multiple factors interacting during the speaking task. This could be shown by observable behaviors such as looking at the teacher, looking at the camera, use of hand gestures, and self-repetitions, among others. There is, however, a danger of looking at a specific period of time. For example, excluding contextual interpretations of the whole task could lead to a lesser degree of insights as to how the anxiety is provoked and what happens thereafter.

One of the underreported causes of speaking anxiety is script-reliance anxiety experienced during speaking tasks. This may have an impact on how speaking tasks should be considered. Teachers may provide cues on non-script reliance, for example, on how symbols, keywords, emoticons, among others are incorporated in the presentation slides. In addition, since forgetting a word is identified as a source of anxiety, language teachers may need to introduce vocabulary retrieval strategies. Like Max, teachers may need to teach strategies when vocabulary retrieval fails.

To sum up, this study raises some issues on how complexity of speaking anxiety can be understood by using various methods including a self-report anxiety questionnaire, heart rate monitor, idiodynamic self-rating, observations, and semi-structured interviews. Although the study utilized case studies to explore the complexity of speaking anxiety, patterns suggested generalizable findings from static sources of data such as surveys and individual interviews.

One of the major limitations of the study is the findings from the idiodynamic method. This could be the result of lack of training on how to use a computer-based program. It might also be the case where the participants did not enjoy watching themselves in the video. One of the participants put it as “an embarrassing” situation during the individual interview.

Future investigations might focus on providing training for students on how the idiodynamic method works. Also, data triangulation from differing sources is suggested to provide a more meaningful interpretation of a complex variable, for example, speaking anxiety. By doing individual level case studies, the study was able to present the variability of speaking anxiety. Had the data from the idiodynamic method been excluded, the coded observations would not be sufficient to explain the spikes and dips of heart rates. In addition, had the heart rate monitor not been used, the study would be unable to corroborate the state nature of anxiety with observations and the participants’ insights. For moment-by-moment fluctuations, isolating data analysis in specific period of time, for instance, 5-second intervals, may be useful.

## Acknowledgement

The authors would like to acknowledge the help from Valeriia Samoilova.

## The Authors

*Jeffrey Dawala Wilang* lectures at the Department of Language Studies, School of Liberal Arts, King Mongkut’s University of Technology Thonburi. He received his PhD in Applied Linguistics from King Mongkut’s University of Technology Thonburi. His research interests include language anxiety, English as a Foreign/Second Language, Englishes, and research methodology.

School of Liberal Arts  
King Mongkut’s University of Technology Thonburi  
Email address: jeffrey.wil@mail.kmutt.ac.th

*Thanh Duy Vo* is an English teacher in Thailand. He is now teaching at the Department of Language Studies, School of Liberal Arts, King Mongkut’s University of Technology Thonburi, Bangkok, Thailand.

His research has focused on vocabulary learning strategies, third language learning, and foreign language anxiety.

School of Liberal Arts  
King Mongkut's University of Technology Thonburi  
Email address: vo.tha@kmutt.ac.th

## References

- Aida, Y. (1994). Examination of Horwitz, Horwitz, and Cope's construct of foreign language anxiety: The case of students of Japanese. *The Modern Language Journal*, 78(2), 155-168.
- Chen, H. (2002). *College students' English learning anxiety and their coping styles* (Unpublished master's thesis). Southwest Normal University, China.
- Cheng, Y., Horwitz, E. K., & Schallert, D. L. (1999). Language anxiety: Differentiating writing and speaking components. *Language Learning*, 49(3), 417-446.
- De Bot, K., & Makoni, S. (2005). *Language and aging in multilingual contexts* (Vol. 53). Bristol, UK: Multilingual Matters.
- De Bot, K., Lowie, W., & Verspoor, M. (2005a). *Second language acquisition: An advanced resource book*. London, UK: Routledge.
- De Bot, K., Lowie, W., & Verspoor, M. (2005b). Dynamic systems theory and applied linguistics: The ultimate "so what"? *International Journal of Applied Linguistics*, 15(1), 116-118.
- DeBot, K., Lowie, W., & Verspoor, M. (2007). A dynamic systems theory approach to second language acquisition. *Bilingualism: Language and Cognition*, 10(1), 7-21.
- Dörnyei, Z. (2003). Attitudes, orientations, and motivations in language learning: Advances in theory, research and applications. *Language Learning: A Journal of Research in Language Studies*, 51(1), 1-213.
- Elkhafaifi, H. (2005). Listening comprehension and anxiety in the Arabic language classroom. *The Modern Language Journal*, 89(2), 206-220.
- Gardner, R., & MacIntyre, P. (1993). A student's contribution to second language learning. Part II: Affect variables. *Language Teaching*, 26(1), 1-11.
- Gregersen, T., MacIntyre, P., & Meza, M. (2014). The motion of emotion: Idiodynamic case studies of learners' foreign language anxiety. *The Modern Language Journal*, 98(2), 574-588.
- Gregersen, T., & Horwitz, E. K. (2002). Language learning and perfectionism: Anxious and non-anxious language learners' reactions to their own oral performance. *Modern Language Journal*, 86(4), 562-570.
- Herdina, P., & Jessner, U. (2002). *A dynamic model of multilingualism perspectives of change in psycholinguistics*. Clevedon, UK: Multilingual Matters.
- Horwitz, E. K. (2010). Foreign and second language anxiety. *Language Teaching*, 43(2), 154-167.
- Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. *The Modern Language Journal*, 70(2), 125-132.
- Horwitz, E. K. (2001). Language anxiety and achievement. *Annual Review of Applied Linguistics*, 21, 112-126.
- Horwitz, E. K. (2000). Horwitz comments: It ain't over 'til it's over: On foreign language anxiety, first language deficits, and the confounding of variables. *The Modern Language Journal*, 84(2), 256-259.
- Horwitz, E. K., & Young, D. J. (1991). *Language anxiety: From theory and research to classroom implications*. Englewood Cliffs, NJ: Prentice Hall.
- Jennifer, M. J., & Ponniah, J. R. (2017). Investigating the levels, types and causes of second language writing anxiety among Indian freshmen. *The Journal of Asia TEFL*, 14(3), 557-563.
- Kitano, K. (2001). Anxiety in the college Japanese language classroom. *The Modern Language Journal*,

85(4), 549-566.

- Kim, O. J. (2018). Ongoing speaking anxiety of Korean EFL learners: Case study of a TOEIC Intensive Program. *The Journal of Asia TEFL*, 15(1), 17-31.
- Larsen-Freeman, D. (1997). Chaos/complexity science and second language acquisition. *Applied linguistics*, 18(2), 141-165.
- Larsen-Freeman, D., & Cameron, L. (2008). *Complex systems and applied linguistics*. New York, NY: Oxford University Press.
- Liu, M. (2006). Anxiety in Chinese EFL students at different proficiency levels. *System* 34(3), 301-316.
- MacIntyre, P., & Gardner, R. (1991). Methods and results in the study of anxiety and language learning: A review of literature. *Language Learning*, 41(1), 85-117.
- MacIntyre, P. D. (2012b). The idiodynamic method: A closer look at the dynamics of communication traits. *Communication Research Reports*, 29(4), 361-367.
- MacIntyre, P. D., & Gregersen, T. (2012). Emotions that facilitate language learning: The positive-broadening power of the imagination. *Studies in Second Language Learning and Teaching*, 2(2), 193-213.
- MacIntyre, P. D., & Legatto, J. J. (2011). A dynamic system approach to willingness to communicate: Developing an idiodynamic method to capture rapidly changing affect. *Applied Linguistics*, 32(2), 149-171.
- Mahmoodzadeh, M., & Gkonou, C. (2015). A complex dynamic systems perspective on foreign language anxiety. *KSJ*, 3(1), 89-108.
- Mak, B. (2011). An exploration of speaking-in-class anxiety with Chinese ESL learners. *System*, 39(2), 202-214.
- Marcos-Llinás, M., & Garau, M. J. (2009). Effects of language anxiety on three proficiency-level courses of Spanish as a foreign language. *Foreign Language Annals*, 42(1), 94-111.
- Mates, A. W., & Joaquin, A. D. L. (2013). Affect and the brain. In J. Herschensohn, & M. Young-Scholten (Eds.), *Cambridge handbook of second language acquisition* (pp. 417-435). Cambridge, UK: Cambridge University Press.
- Mischel, W. (1973). Toward a cognitive social learning reconceptualization of personality. *Psychological Review*, 80(4), 252-283.
- Phillips, E. M. (1992). The effects of language anxiety on students' oral test performance and attitudes. *The Modern Language Journal*, 76(1), 14-26.
- Saito, Y., Horwitz, E. K., & Garza, T. J. (1999). Foreign language reading anxiety. *The Modern Language Journal*, 83(2), 202-218.
- Samoilova, V., Vo, T. D., & Wilang, J. D. (2017). Anxiety among Engineering students in a graduate EFL classroom. Proceedings of the 3rd International Conference on Innovation in Education. Thailand: Institute for Innovative Learning, Mahidol University.
- Spielberger, C. D. (1983). *Mutual for the state-trait anxiety inventory (Form Y)*. Palo Alto, CA: Consulting Psychologists Press.
- Verspoor, M., De Bot, K., & Lowie, W. (2004). Dynamic systems theory and variation: A case study in L2 writing. In H. Aertsen, M. Hannay, & R. Lyall (Eds.), *Words in their places: A Festschrift for J. Lachlan Mackenzie* (pp. 407-421). Amsterdam, the Netherlands: Free University Press.
- Vo, T. D., Samoilova, V., & Wilang, J. D. (2017). Debilitating effects of anxiety on Engineering students' language performances. Proceedings of the 3rd International Conference on Innovation in Education. Thailand: Institute for Innovative Learning, Mahidol University.
- Wang, Q., & Ding, X. (2001). Language anxiety among rural middle school students in west China. *Journal of Northwest Normal University*, 38(5), 68-73.
- Wilang, J. D., & Singhasiri, W. (2017a). Specific anxiety situations in the intelligibility of Englishes. *Asian EFL Journal*, 99, 4-37.
- Wilang, J. D., & Singhasiri, W. (2017b). Out-of-class anxiety in a non-English speaking context and its effects on intelligibility and comprehensibility. *Issues in Educational Research*, 27(3), 620-638.

- Woodrow, L. (2006). Anxiety and speaking English as a second language. *RELC Journal*, 37(3), 308-328.
- Worde, R. V. (2003). Students' perspectives on Foreign Language Anxiety. *Inquiry*, 8(1), 1-15.
- Zhang, W., & Liu, M. (2013). Evaluating the impact of oral test anxiety and speaking strategy use on oral English performance. *The Journal of Asia TEFL*, 10(2), 115-148.