

## **Theorizing One Learner's Perceived Affective Experiences and Performances from a Dynamic Perspective**

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### **Abstract**

This paper examines the perceptions of one Chinese learner of English at a university. From a Dynamic System Theory (DST) perspective, the student's perceptions, affective experiences and classroom learning will be explored by identifying the non-linear relationships between them. This paper aims to investigate the relationship between the student's perceived affective experiences and her self-reported performances in a foreign language classroom. The participant was a second-year university student from a foreign language university in China. Diary, questionnaire, semi-structured interview, and class observation were applied to investigate this 6-month longitudinal study. Emotional ambivalence including several different affective patterns and five attractor states, namely, *Integrative Disposition*, *Amotivation*, *Autonomy*, *Actual Learning Process* and *Language Awareness* were identified.

**Keywords:** Foreign Language Acquisition (FLA), Dynamic System Theory (DST), affective experiences, non-linear relationship

## **Introduction**

In terms of the motivational and affective aspects in Foreign Language Acquisition (FLA) studies, currently, most studies tended to provide evidence to support the potential linear relationship between the target emotion, such as anxiety and one aspect of language learning, such as L2 speaking (Chen & Lee, 2011). However, it is possible that similar speaking performances amongst the students may result from different patterns of affective change other than only one emotion. This assumption can be linked to Dörnyei's (2010) reconceptualization of Individual Differences. "... even people with outwardly similar ID patterns can travel very different paths as a result of some difference in a personality constituent that is seemingly irrelevant or of secondary importance" (Dörnyei, 2010, p.262). Therefore, it can be more fruitful if the combinations of different emotions were studied as a whole and from a more open non-linear relationship mapping angle to identify their potential changes over time and their impact on the learner's self-reported performance.

Here, the self-reported performance differs from real exam scores, which are normally used in a linear test study. Instead, I investigated the learner's self-reported performances after she received feedback from the teacher when certain tasks or exams were finished. One reason to explain why to analyse the learner's self-reported performance is because the same test score could be perceived differently by different individuals, which may affect their further motivation to learn in different ways (Orsmond and Merry, 2013).

The purpose of this case study is to investigate the nonlinear dynamic relationship between the learner's perceived affective experiences and self-reported performances. It is important to obtain a fuller understanding of the dynamism of the learner's emotional and motivational change through learning. The traditional '*Variable*' identification, which implied a causal link in the first instance, may not be adequate enough to theorize such dynamism (Dörnyei, 2009; Larsen-Freeman, 2006). Therefore, Dynamic System Theory (DST) was applied as a new paradigm to study the nonlinear relationship between motivation, emotions and performances.

## **Literature Review**

Larsen-Freeman (1997) first introduced DST to FLA studies. She provided a clear link between the limitation of the traditional methods and the possibility to alter the current research paradigm by applying DST. In her paper, she started from Newton's alternative thinking to the linear, reductionist thinking, aiming to call attention to the system application in which DST occurring in nature of language acquisition. Moreover, she argued five aspects of FLA from a DST perspective: mechanisms of acquisition; redefinition of learning; instability of interlanguages; individual differences; and effect of instruction. She provided some fresh images for FLA phenomena from a DST perspective.

As a consequence, she concluded that the traditional methods which were based on the analysis of isolation and collection of complete data of phenomena were not capable to deal with interdependencies under DST paradigm. Therefore, transition of concept and methodology was required (Dörnyei & Ushioda, 2011; de Bot, 2008; Larsen-Freeman, 2007).

### **Evaluation of Current FLA Affective Studies**

As Scherer (2005) argued, “The concept of ‘emotion’ presents a particularly thorny problem...the question ‘What is an emotion?’ rarely generates the same answer from different individuals, scientists or laymen alike” (p. 696). Current affective theories differ greatly in terms of the numbers of emotions and the principles that are evoked to differentiate one emotion from another. The measurement of FLA affective experiences depends on how researchers define the emotions being studied.

In general psychological context, four major theories of emotions were widely studied by researchers. They are dimensional theory of emotion, discrete theory of emotion, meaning oriented theory of emotion and componential theory of emotion. Under foreign language acquisition context, the definitions of emotions or affective experiences vary according to different research aims. In this study, the definition and measurement of affective experiences are in accordance with componential theory from a dynamic perspective. The reason to define and measure the learner's perceived affective experiences with Component Process Model (CPM) is that an emotion was conceptualized “as an emergent, dynamic process based on an individual’s subjective appraisal of significant events” (Scherer 2009, p. 1307), which concept is significantly compatible with the research aim and research questions in this study.

The three examples below provided above presented three different ways to study FLA affective experiences. They have both strength and weakness, with respect to methodological issues and results.

The first example related to the most popular studied emotion, foreign language anxiety. Anxiety was defined by Horwitz, Horwitz and Cope (1986) as “a distinct complex of self-perceptions, beliefs, feelings, and behaviours related to classroom language learning arising from the uniqueness of the language learning processes” (p. 128). Also, they acknowledged the uniqueness of foreign language anxiety and introduced the Foreign Language Classroom Anxiety Scale (FLCAS) as an instrument to measure anxiety levels.

Another example was the study designed by Garrett and Young (2009) who theorized affects in foreign language learning by analysing one learner’s responses to a communicative Portuguese course. Interviews were employed by the researchers and grounded theory was applied to analyse the participant’s affective responses. Rather than identifying what the emotions were, four main topics, namely, language awareness, teacher voice, social relations and culture learning were identified emerging “from the transcripts as eliciting the most affective responses” (Garrett & Young, 2009, p. 212).

A third example was the study designed by López (2011) who argued although “the process of learning a foreign language is replete with emotions, these have not been sufficiently studied in the field of English Language Teaching” (p. 43). López (2011) tried to bridge this gap and argued that five emotions including fear, happiness, worry, calm, sadness and excitement were most experienced by learners through foreign language learning. The findings were based on a

weekly electronic journal written by 20 students over 12 weeks.

To sum up, firstly, the FLCAS is a 33-item individual self-report Likert scale questionnaire and largely applied in different language context by researchers worldwide (Zhao et al., 2013; Darmi & Albion, 2012; Nagahashi, 2007; Gregersen, 2005). The strength is that the data collected by researcher are quantifiable and subjective to computation of some mathematical analysis. However, one significant weakness of FLCAS is that the Likert scale questionnaire only provides five to seven options and the space between each option can hardly be equidistant. Therefore, Liu (2012) pointed out that further data collection methods, for example, semi-structured interviews, classroom observations, and diaries could be applied to supplement FLCAS, in order to obtain a more comprehensive picture of foreign language anxiety.

Secondly, Garrett and Young's (2009) research was inspiring because they applied an inductive method, ground theory, to theorize one learner's affective response in a foreign language learning context. As they argued, the learner's affective responses was unique and "no claim should be made that other learners respond in similar ways to similar experiences" (p. 224). However, Garrett and Young's (2009) research did not identify the specific. On the other hand, López (2011) tried to identify specific emotions and reported that fear, happiness, worry, calm, sadness and excitement were most experienced by learners through foreign language learning. López's (2011) study not only reported negative emotions, it revealed that positive emotions, namely calm, happiness and excitement were possibly experienced by foreign language learners. Similarly, a growing number of researchers started to focus on positive affective experiences through foreign language learning process (Gabrys'-Baker, 2013; Gregersen, 2013; MacIntyre & Gregersen, 2012).

### **Evaluation of Current FLA Performance Studies**

Regarding FLA learner's performances, a large number of publications studied the learner's real test scores (Zhang & Rahimi, 2014; Imai, 2010; Du, 2009). On the other hand, other researchers, for example, Marian, Blumenfeld and Kaushanskaya (2007) studied learner's self-reported performances and found out that "self-reported speaking proficiency was a more accurate predictor of second-language performance" (p. 940). In addition, Huang (2015) examined university learners' self-assessment and self-feedback on performance from one English speaking test.

Self-assessment focused on "the facilitation and development of learners' learning through engaging in self-assessment", rather than 'on assessment itself, nor on correctness or power" (Huang, 2015, p. 2). Similarly, Matsuno (2009) compared Self-, Peer-, and Teacher-assessments in an English writing class at a Japanese University. Furthermore, Orsmond and Merry (2013) elaborated the importance of self-assessment in biological sciences students' use of teachers' feedback. As a result, Orsmond and Merry (2013) identified that the same real test score can be considered differently by different students. Two archetypes of students were identified: high achieving student and non-high achieving student.

### **Link between Existing Gap and DST Research**

There are several gaps from the previous studies in terms of FLA affective changes over time and their nonlinear relationship to other components through learning based on individual studies. First, one gap is that a fuller understanding of the constant changing of emotions in the language learning process needs to study both positive and negative emotions. Current FLA affective studies focus more on discrete affective variables rather than affective patterns. However, most studies in terms of FLA affective experiences focus much more on negative emotions, particularly language anxiety; whereas other emotions such as enjoyment or relief have been understudied. One possible reason may be connected to the preconceived knowledge of the researchers. The anxiety research in FLA is relatively well-established compared to other emotions. Howe and Lewis (2005) provided an explanation of why researchers stick to well-established theories and framework and may explain why other emotions are understudied.

Howe and Lewis (2005) argued:

We think this is because the trajectory of developmental psychology, like other dynamic systems, tends toward stability much of the time. Researchers stick to well-established habits of thinking and working, and their students acquire the same habits, often because that is the easiest road to publication and career advancement. (p. 250)

Second, another gap is the traditional linear relationship mapping. Bates and Carnevale (1992) made the following statement:

A relationship between two variables is linear if it can be fit by a formula of the type ‘ $y=ax+b$ ’, where  $y$  and  $x$  are variables, and  $a$  and  $b$  are constants. Any relationship that cannot be fit by a formula of the kind is, by definition, non-linear (p. 9).

Also, Herdina and Jessner (2002) provided the following two figures to compare traditional linear and non-linear relationship mapping in FLA.

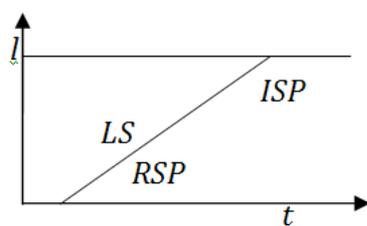


Figure 1. Linear Relationship

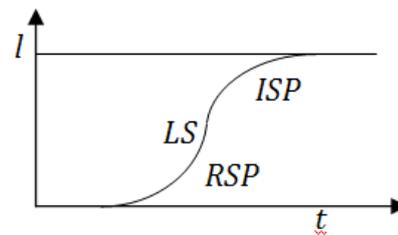


Figure 2. Non-linear Relationship

To be specific, LS refers to Language System,  $t$  refers to time,  $l$  refers to language level, ISP refers to ideal native speaker proficiency, and RSP refers to rudimentary speaker proficiency. In *Figure 1*, most traditional FLA studies presupposed that the process when a learner tried to achieve the ideal native speaker competence over time was linear (Herdina and Jessner, 2002). However, they argued that the language growth or loss was not at the same speed increase or decline. As a result, they developed a non-linear relationship mapping, which had been termed Dynamic Model of Multilingualism (DMM) and *Figure 2* was a part of this model.

By the acknowledgement of the dynamism of FLA affects, researchers increasingly attempted to study FLA affects from a DST paradigm (Larsen-Freeman, 2014; Verspoor, 2014; Ushioda, 2014; de Bot, 2014; Dörnyei, 2014; Waninge, 2014). The most recent theoretical framework,

Directed Motivational Currents (DMC), was proposed by Dörnyei, Ibrahim and Muir (2014). A DMC was defined as “a potent motivational pathway, which emerges when a specific set of initial conditions fall into place to allow for directed motivational energy to be channeled into a behavioral sequence that is aimed towards a predefined, explicit goal” (Muir and Dörnyei, 2013, p. 359). In addition, Dörnyei, Ibrahim and Muir (2014) identified four components as central to this construct, namely, Generating Parameters, Goal/vision-orientedness, Salient Facilitative Structure, and Positive Emotionality.

From existing literature on examining FLA affective experiences, the main research methods were retrospective interviews, questionnaires and diary entries. A question may be concerned in terms of methodological issues with the data. How accurate are participant’s retrospective reports of affective experiences? Oatley and Duncan (1992) argued that retrospective diaries were more accurate than questionnaires. Also, Nagurney *et. al.* (2005) argued that retrospective interviews helped to minimize recall bias.

Another issue relating to the accuracy is the participant’s awareness of reality and their expression of reality. This issue concerns the relationship between reality, awareness and theory. Similarly, as MacIntyre and Gregersen (2012) pointed out, “much of the existing qualitative research has tended to take a long view, with retrospective narratives emerging from interviews that may be influenced by a number of factors, such as self-serving bias, hindsight bias, and autobiographical memory biases” (p. 108).

### **Dynamic System Theory (DST)**

Meiss (2007) defined DST as “a trajectory as a function of a single parameter (time) on a set of states (the phase space) is a dynamical system” (p. 105). DST was originally a branch of theoretical mechanics, which was originally designed to mimic the dynamic system. Subsequently, DST developed as a mathematical tool for the analysis of a number of issues, for example, the trajectory of the moon under the influence of the sun, the earth and other planets. In the realistic world, there was a system for each level (de Bot, 1996). Therefore, DST has been adapted and used in different disciplines, from economics to infectious diseases; from meteorology to the solution of practical problems, such as heart rate control, and oil drilling. Although DST was a relatively new theory (van Geert & Steenbeek, 2005), it remained attractive and made more researchers to begin working from a dynamic perspective.

### **Application of DST in FLA**

More scholars tended to apply DST into FLA researches, because of DST’s unique characteristics, for example, self-organization and non-linear, which might fulfill the isolation gaps being revealed from the traditional research. Several examples can support this trend. For example, Larsen-Freeman (2012) argued that DST was a new transdisciplinary theme for FLA. The most important researchers applying DST to FLA included ‘Five Graces Group’<sup>1</sup>, Larsen-Freeman, de Bot, Herdina and Jessner, van Geert and Dörnyei. These researchers have shifted

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<sup>1</sup> Authors of the “Five Graces Group” : Clay Beckner, *University of New Mexico*; Nick C. Ellis, *University of Michigan*; Richard Blythe, *University of Edinburgh*; John Holland, *Santa Fe Institute*; Joan Bybee, *University of New Mexico*; Jinyun Ke, *University of Michigan*; Morten H. Christiansen, *Cornell University*; Diane Larsen-Freeman, *University of Michigan*; William Croft, *University of New Mexico*; Tom Schoenemann, *Indiana University*

from studying discrete factors to studying the whole from moment to moment. Traditional linear studies have revealed the inadequacy of studying the change and individual complexity. For example, Dörnyei (2010) argued that sometimes a seemingly irrelevant tiny difference between learners can lead to a huge difference in their path selection, though they may have very similar ID patterns. Therefore, researchers start to study the combination of traits instead of isolating discrete factors.

### Research Questions

From a dynamic perspective, what is the relationship between the learner's perceived affective experiences and her self-reported performances in a foreign language classroom?

*Sub-1:* What affective experiences do the learner report as she engaged in learning?

*Sub-2:* How do these perceived affective experiences differ in various contexts?

*Sub-3:* What attractor states do the learner report as she engaged in learning?

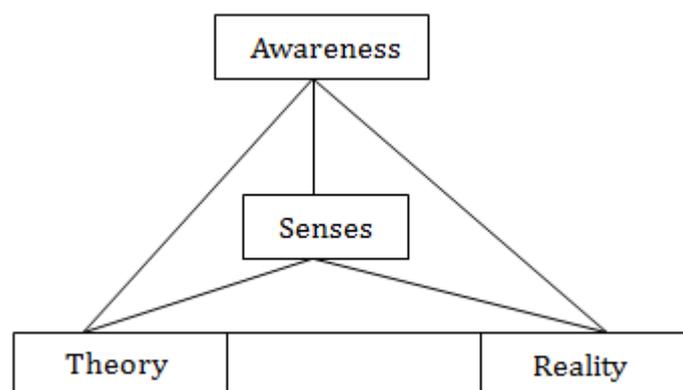
*Sub-4:* How do these perceived affective experiences relate to her self-reported performance?

### Methodology

Dörnyei (2014) argued that “we face serious problems when we want to conduct empirical research within a dynamic systems framework”, because “dynamic systems research is such a new and uncharted territory that there are simply no tried and tested research methodological templates available” (p. 83-84).

### Phenomenographic Approach to This Case Study

The aim of the current study is to investigate the relationship between the learner's perceived affective experiences and her self-reported performances in a foreign language classroom from a DST perspective. For this purpose, phenomenography, developed by Ference Marton (1981) was employed as a qualitative research theoretical framework for this study. Phenomenography is “the empirical study of the qualitatively different ways in which a phenomenon can be experienced, perceived, apprehended, understood, conceptualized” (Marton, 1994). The relationship between the reality, awareness and theory in phenomenography can be illustrated by *Figure 3* below.



*Figure 3.* The Relationship between the Reality, Awareness and Theory, (Uljens, 1996, p. 115)

The rationale to choose phenomenography as research methodology is that the ultimate goal of phenomenography is to explore the perceptions individuals hold regarding a given phenomenon through different timescales (Marton, 1981). This study requires a holistic understanding of the dynamic interplay between individual affective experiences, learning context and performance. Regarding ontological assumptions, phenomenography has a non-dualist view of nature. The separation between the internal thinking and external context is abandoned (Uljens, 1996). There is no universal principle of reality existing because the reality to one individual is different from that of another and is not fixed from one moment to the next (Pherali, 2011). This argument can best adapt to the study of dynamism in individual knowledge, awareness and affective changes overtime.

Phenomenographers investigated the individual's awareness of reality and their expressions of reality from a second-order perspective (Bowden, 1995). To be specific, Marton (1981) argued that in a second-order perspective, researchers "orient themselves towards people's ideas about the world and make statements about people's ideas about the world" whereas in first-order perspective, researchers "orient themselves towards the world and make statements about it" (p. 178). That is, a second-order perspective in phenomenographic research is to study the experiences as individuals describe them.

In addition, the current phenomenographic study adopts a second-order perspective to identify how the learners conceive their world rather than a first-order perspective. The definition and measurement of affective experiences are in accordance with componential theory from a DST perspective. The reason to define and measure the learner's perceived affective experiences with Component Process Model (CPM) is that emotion is conceptualized "as an emergent, dynamic process based on an individual's subjective appraisal of significant events" (Scherer 2009, p. 1307), which concept is significantly compatible with the research aim and research questions in this study. A deductive approach was employed for measuring affective patterns by applying Geneva Affect Label Coder (GALC) and Scherer *et. al.* (2013) GRID paradigm.

In the current study, instead of identifying the learner's real test score, I investigated her self-reported performances after she received feedback from her teacher when certain tasks or exams were finished. As Boud (1995) claimed the importance of self-reported procedure was because self-reported performance included the process of making standards of performance expected and making judgments on the quality of the performance accordingly. This argument can be linked to Andrade and Du's (2007).

Andrade and Du (2007) argued that:

Self-assessment is a process of formative assessment during which students reflect on and evaluate the quality of their work and their learning, judge the degree to which they reflect explicitly stated goals or criteria, identify strengths and weaknesses in their work, and revise accordingly. (p. 160)

### **Validity Issues of Self-reporting Data**

Different self-report approaches including diary, questionnaire and semi-structured interview

will be used to gather data. The biggest advantage is that the research is able to obtain the learner's perceptions about herself and the world directly, which cannot be obtained in any other way. However, the main disadvantage of self-reported data is potential validity problems. The data are personal and may have little relationship with reality. Marton (1994) argued that there were two main reasons for this validity problem: first, the learners' reports may limit to their self-knowledge because some of the feelings may be unconscious; second, learners' social self-images will affect their responses. In other words, researchers may face the risk of to obtain misleading data because either the learners do not know the reality or do not want the research to know.

There are debates about how to obtain good quality self-reported data. As Bowden (1995) argued, each method had both advantages and disadvantages. Regarding self-reported data, four procedures will help minimize bias: triangulation, audit trial, consider negative cases and constant comparison (Taylor et al., 2005). This study will follow the above four procedures to validate the data obtained from the learner.

### **Data Coding Procedure**

There are three phases in my data coding process. In the first phase, I have transcribed all diary entries, questionnaires and audio-recorded interviews in the original language Chinese Mandarin. Then I checked all transcripts against the original documents and recordings for accuracy. Furthermore, I read the transcripts several times to familiarize myself with the data collected from the participants. CAQDAS (Computer Assisted Qualitative Data Analysis Software) NVivo was used to assist data analysis, and in the meantime, I inserted memos during my readings of the transcripts. In the second phase, I conducted the first cycle coding by using magnitude coding method, emotion coding method and In Vivo coding method. In the third phase, I conducted the second cycle coding by using pattern coding method and longitudinal coding method for measuring affective patterns and self-reported performance trajectories, respectively. Also, in the third phase, I integrated scholarly literature into the analysis to define themes.

### **Research Design**

**Methods.** Four tools were employed for data collection: Diary, Questionnaire, Semi-structured Interview, and Class Observation. This applied to the first procedure of triangulation to validate phenomenographic data. To be specific, 6 months with an interval of 2 months was covered for this longitudinal study. The data collection was in learner's first language, Chinese Mandarin in order "not to let the lack of L2 proficiency affect the participants' expressiveness" (Zheng 2012, p. 87). The data was then transcribed and translated into English.

First three tools had different emphasis points. To be specific, diary entries were designed for keeping records of her affective experiences. The learner was asked to keep diaries every week. She could write almost anything relating to her affective experiences. These notes could be irrelevant to FLA teaching and learning activities. Questionnaires were designed to obtain the learner's learning and performances. Interviews were designed according to Mercer's (2012) interpersonal and intrapersonal concept, aiming to integrate her perceived affective experiences and self-reported performances.

In this study, the learner was studied over 18 weeks (equals to 6 months with an interval of 2

months) from 28 April to 27 June (9 weeks) and from 1 September to 31 October (9 weeks). The reason for the selection of the above two periods of time is that, in the selected university, this period covers 7 regular tests (twice a month), 2 big exams (one final and one mid-term exam) and one English Oral Competition, which may significantly affect learner's emotions, motivations and English performances.

The learner was observed once a week as she attended the Comprehensive English class. This module has been selected for classroom observation because it included all kinds of English activities, namely, speaking, writing, listening, reading and grammar. Also, the learner was asked to write the diary entry once a week after her attendance at the observed class and provided copies of her diary entries once a week to me for constant comparison. She was interviewed twice a month after she has received feedbacks after her regular tests, big exams and the competition. The interviews were audio-recorded. Each interview lasted around half an hour's time. She was asked to complete a questionnaire consisting largely of open-ended questions to supplement the written information gathered from the diary entries. The questionnaire was distributed twice per month and the learner was given several days in which to complete them. The diary entries and questionnaires may garner similar information from the learner but this was done over different time scales, with the diary entries gathering short term responses and the questionnaires medium term. Class observation was applied for the purpose of being involved in the same context with the learner. Therefore, the researcher was able to obtain the knowledge of the context about the classroom activities.

Data gathered from diary entries, interviews and class observation were used to answer the 1<sup>st</sup> and 2<sup>nd</sup> sub research questions, whereas that gathered from questionnaires, interviews and class observation were used to answer the 3<sup>rd</sup> sub research question. Interviews were used to answer the 4<sup>th</sup> sub research question and integrated all sub research questions in order to answer the main one.

**Sampling.** The learner was from a Foreign Language University in China. She was a second-year Chinese student of English who was selected at random from one class and asked to volunteer to take part in the study. The learner was studying a degree in English. The first reason for choosing a second-year university student instead of year one, three or four is because if the learner may be a very confident English speaker (like year four), she may not have strong negative emotions about learning English as a learner in other years may have. Secondly, another reason is according to the possible access of the learner. Since this study is an in-depth investigation across six months including two semesters and one summer vacation in the middle, year one students are new to university and busy with the military training while year three students are in their intern period. Therefore, the year two students are the most suitable participants for this research.

**Data Analysis.** Nine individual interviews took place at two-week intervals. The interviews were audio-recorded and the transcript of interviews was interpreted and analyzed using NVivo software for qualitative data analysis. Also, the data from the diary entries was analyzed using NVivo as well as those gathered from open-ended questionnaire responses.

Thematic analysis was the system of analysis because it ensured both accessibility and flexibility (Braun & Clarke, 2012). The categories for analysis were not predetermined, and the analysis was carried out inductively. To be specific, the coding framework was based on “recurrent issues in the text” rather than ‘established criteria’ or ‘a set of theoretical constructs” (Attride-Stirling, 2001, p. 390-391). Theme generalization was according to *Basic Themes* which referred to “lowest-order premises evident in the text”; *Organizing Themes* which refers to “categories of basic themes grouped together to summarize more abstract principles”; and *Global Themes* which refers to “super-ordinate themes encapsulating the principal metaphors in the text as a whole” (Attride-Stirling, 2001, p. 388).

**Ethical Consideration.** Regarding ethical issues, please refer to my ethical approval form which was submitted and approved by the University of Warwick.

### **Results and Discussions**

Mary was a self-perceived highly motivated student with great confidence in study and was self-perceived to have very good exam skills. Also, she reported that she was a self-perceived autonomous student who designed detailed study plans and organized her time schedule for the purpose of studying English more effectively. However, her interest focused on how to produce good scores in exams instead of participating in extracurricular activities. She had clear goals for her future. She claimed that she would like to study abroad for a master degree. Therefore, she reported Grade Point Average (GPA) was the most important thing to her.

### **Mary’s Affective Experiences**

Throughout the whole period of this study, eight emotions of different intensities were identified from Mary’s responses including: *Anxiety*, *Apathy*, *Confidence*, *Contempt*, *Contentment*, *Gratitude*, *Relaxation* and *Resignation*. These emotions interacted with each other at different intensities and appeared to coalesce into 21 combinations. Within each combination, the emotions interacted with each other at different levels, and each finally reached a stable state for the duration. According to this stability, these combinations were categorized into four salient affective patterns. These patterns were: Higher Level Positive Affective Pattern, Mixed Lower Level Negative and Higher Level Positive Affective Pattern, Mixed Higher Level Negative and Higher Level Positive Affective Pattern, Higher Level Negative Affective Pattern.

**Perceived Facilitative Affective Experiences.** Four patterns of affective experiences (outlined below) could be identified as more facilitative for Mary’s performance. From her responses, these patterns of affective experiences related to better performance than her perceived English proficiency would have suggested. The affective experiences appeared to have positively affected her performance as she perceived it.

**Higher Level Positive Affective Pattern.** Mary commented that three higher level positive emotions, namely, *Relaxation*, *Confidence* and *Contentment* related to her good vocabulary performance in regular exams in week six.

[Extract 1: Interview]

L: How do you think you performed regarding your vocabulary performance during the exam? (week six)

Mary: “Very good, I think. I have successfully answered all questions during the exam, and I am pretty much sure that I answered them all correctly. And the feedback from the teacher proved that I was right. I am satisfied with the score and I know I have much time left during the exam. No rush at all!”

**Mixed Lower Level Negative and Higher Level Positive Affective Pattern.** Mary reported four higher level positive emotions, namely, *Contentment*, *Relaxation*, *Gratitude* and *Confidence*. Also, she reported four lower level negative emotions, namely, *Anxiety*, *Apathy*, *Contempt* and *Resignation*. From Mary’s responses, these combinations of affective experiences related to better performance than her perceived English proficiency would have suggested. The affective experiences appeared to have positively affected her vocabulary performance in week two and week 12, grammar performance in week two and week six, speaking performance in week 10 and listening and reading performance in week 14.

[Extract 2: Interview]

L: Regarding your speaking performance (week 10), how did you feel after you received the feedback from your teacher?

Mary: “I believed that in terms of the English speaking ability, I was the middle-of-the-road student. Many of my classmates had better English accent than me. But I think my advantage is to speak at a normal speed and make very clear of my points. I felt really thankful to the judges who gave me that high score and I was really satisfied with my performance, though at the beginning of the speech, I guess I felt a bit anxious, when recalling my feelings during the competition after I received the feedback from the judges.”

**Mixed Higher Level Negative and Higher Level Positive Affective Pattern.** Mary reported three higher level positive emotions, namely, *Confidence*, *Contentment* and *Relaxation* and one higher level negative emotion, *Apathy*. The affective experiences appeared to have positively affected her writing performance in week eight.

[Extract 3: Questionnaire]

Question: Please give comments on the writing topic and specify how did you feel after you received the feedback from your teacher?

Mary: “To be honest, I think if the topic was in Chinese, the topic itself was too childish. The feedback was good! I know arguments in my writing were not important at all. So, I do not care about, well, if my writing meant something. All I need to do was to finish the section. I felt confident in writing, it was a familiar topic, and I know what kind of writing teachers like most. No doubt, I could get the marks I should get.”

**Higher Level Negative Affective Pattern.** Mary reported two higher level negative emotions, namely, *Contempt* and *Resignation* related to her optimal grammar performance in regular exams in week 12.

[Extract 4: Diary]

Mary: “The feedback was fair. I think I am in good conditions for exams. In terms of grammar, my classmates, although they devoted their time to studying, in the wrong way, I guess. They were hard-working, but maybe not good at studying, or suitable to study. I think questions in the exam were not difficult at all, and I would like to prove my better English ability than others. But I strongly felt that I had no choice!”

### **Mary’s Self-reported Performance Trajectory**

**Identified Attractor States.** From Mary's responses regarding her self-reported performance, altogether five attractor states were identified which contained in all five components. These five attractor states were *Integrative Disposition* which contained one component of *Personal Goals*; *Amotivation* which contained one component of *Nonrelevance*; *Autonomy* which contained one component of *Identified Regulation*; *Actual Learning Process* which contained one component of *Personal Satisfaction*; *Language Awareness* which contained one component of *Language Use*.

***Integrative Disposition: Personal Goals.*** Integrative disposition was termed by Dörnyei (2009) according to Ushioda's (2001) classification of motivation dimensions. Dörnyei (2009) argued that from Ushioda's (2001) eight motivation dimensions, integrative disposition represents a broad cluster which consisted of “Personal goals; Desired levels of L2 competence; Academic interest; Feelings about French-speaking countries or people” (p. 30). For example, from Mary's responses, she had clear goals for her future to study abroad for a master degree in best universities in the world. With such career goals in mind, she searched information on different universities.

***Amotivation: Nonrelevance.*** Amotivation is defined by Deci and Ryan (2000) as “the state of lacking an intention to act” (p. 61). For example, Mary did not care about other people's opinions or performances. She believed that she was a student who had very good learning strategies and the test scores met her expectation. This attractor positively interacted with her self-reported performance. These could be found from her responses “other people's performance or judgments are not relevant ' and her constant decrease of 'conversations with peers”.

***Autonomy: Identified Regulation.*** In Self-determination Theory (SDT), three features including competence, relatedness and autonomy were introduced by Deci and Ryan (1985). Identified regulation was claimed to be a more autonomy driven form of extrinsic motivation. This argument can be linked to Dörnyei's (2009) illustration that identified regulation “occurs when people engage in an activity because they highly value and identify with the behaviours, and see its usefulness” (p. 14). For example, Mary was a highly motivated student with clear future goals. Identified regulation could be discovered from her daily exercises, for example, “listen to BBC one hour daily”, and “use Economist to practice reading”.

***Actual Learning Process: Personal Satisfaction.*** Actual learning process is termed by Dörnyei (2009) according to Ushioda's (2001) classification of motivation dimensions.

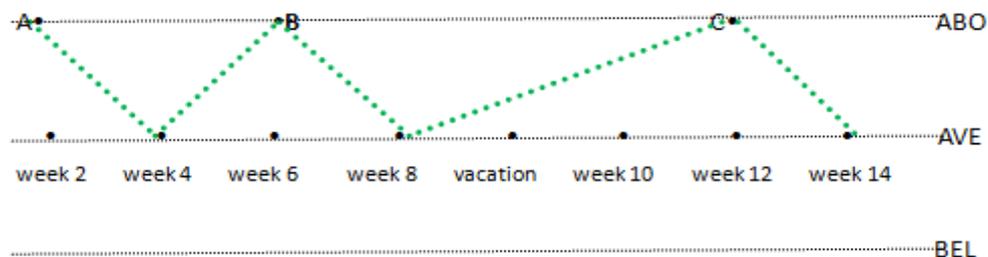
Dörnyei (2009) argues that from Ushioda's (2001) eight motivation dimensions, actual learning process represents a broad cluster which consists of “Language-related enjoyment; Positive learning history; Personal satisfaction” (p. 30). In this study, Mary argued that her “interest in reading newspaper’ made her to ‘use Economist to practice reading’”. And during the time of reading, she was satisfied with the content in the newspaper and reading performance in the exams in the meantime.

**Language Awareness: Language Use.** The Association for Language Awareness (ALA) defines Language Awareness (LA) as “explicit knowledge about language, and conscious perception and sensitivity in language learning, language teaching and language use” (1996 publicity sheet of the Association). For example, Mary particularly focused on how to use English language in her daily life. She tried “to use English in her daily life’ and ‘to talk to foreigners in English”.

Regarding Mary's self-reported performance trajectories, all six trajectories are presented changes in her self-perceived performance over the six-month time window in four figures below for clarity. The interactions between her self-reported performance, different system components and affective patterns were also presented.

*Figure 4* displays Mary's self-reported vocabulary performance (green dashed line) trajectory; *Figure 5* displays her self-reported grammar (blue dashed line) performance trajectory; *Figure 6* displays her self-reported reading (red dashed line) and listening (yellow dashed line) performance trajectories; and *Figure 7* displays her self-reported speaking (orange dashed line) and writing performance (purple dashed line) trajectories.

#### Mary's Self-reported Vocabulary Performance Trajectory.



*Figure 4.* Mary's Self-reported Vocabulary Performance

*Figure 4* shows how Mary's self-reported vocabulary performance changed over time. Three crucial points A, B and C were identified from her responses. From Mary’s responses, the initial condition was identified as “to study a master degree abroad” “the master degree should come from best universities in the world” which can be categorized as the system component “Personal Goals” from the attractor state of “Integrative Disposition”.

Over the time window of the study, three attractors, namely, “Autonomy”, “Integrative Disposition” and “Amotivation” were identified. The movement between the system components within each attractor as well as their interactions with the affective combinations

significantly related to the change of her self-reported performance trajectory.

To be specific, from Mary's responses, her self-reported vocabulary performance before vacation was wave-like. It started at the optimal Point A in week two, then went downward to the average point in week four, then went upward to the optimal Point B in week six, and finally reached the average point again in week eight. After vacation, her self-reported performance was very good in week 12 at Point C, and then went downward to the average state in week 14. The attractors 'Autonomy' and 'Integrative Disposition' moved together before vacation, with the facilitative affective experiences of Mixed Lower Level Negative and Higher Level Positive Affective Pattern and Higher Level Positive Affective Pattern correlating with her self-reported excellent performance at Point A and Point B, respectively. After vacation, the attractor "Amotivation" and the facilitative affective experience of Mixed Lower Level Negative and Higher Level Positive Affective Pattern correlated with her self-reported excellent performance at Point C.

### Mary's Self-reported Grammar Performance Trajectory.

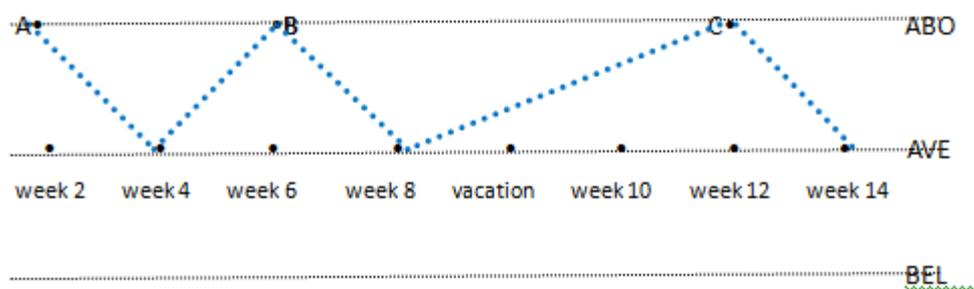


Figure 5. Mary's Self-reported Grammar Performance

Figure 5 shows how Mary's self-reported grammar performance changed over time. Three crucial points A, B and C were identified from her responses. From Mary's responses, three attractors, namely, "Autonomy", "Integrative Disposition" and "Amotivation" were identified.

Mary self-reported grammar performance before vacation was wave-like. It started at the optimal Point A in week two, then went downward to the average point in week four, then went upward to the optimal Point B in week six, and finally reached the average point again in week eight. After vacation, her self-reported performance was very good in week 12 at Point C, and then went downward to the average state in week 14. The attractors "Autonomy" and "Integrative Disposition" moved together before vacation, with the facilitative affective experiences of Mixed Lower Level Negative and Higher Level Positive Affective Pattern correlating with her self-reported excellent performance at Point A and Point B. After vacation, the attractor "Amotivation" and the facilitative affective experience of Higher Level Negative Affective Pattern correlated with her self-reported excellent performance at Point C.

### Mary's Self-reported Listening and Reading Performance Trajectory.

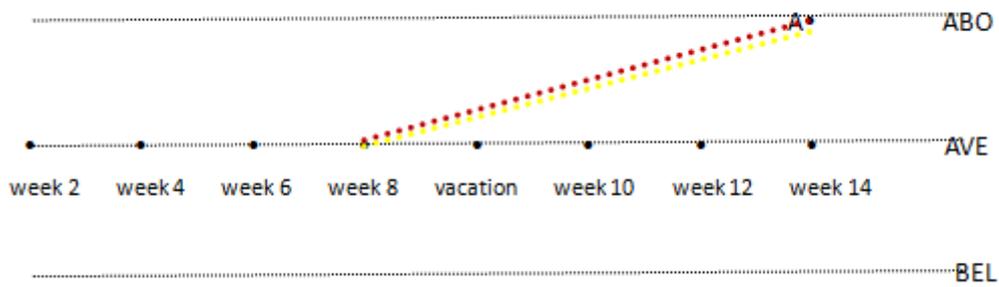


Figure 6. Mary's Self-reported Listening and Reading Performance

The yellow dashed line referred to Mary's self-reported listening performance whereas the red one referred to her reading aspect. Figure 6 shows how Mary's self-reported listening and reading performance changed over time. One crucial point A was identified from her responses. Mary's English listening and reading ability only tested twice during the whole studied time window. The aspects of listening and reading were tested in the final exam in week eight of the first semester and the mid-term exam in week 14 of the second semester. One attractor "Actual Learning Process" and the facilitative affective experience of Mixed Lower Level Negative and Higher Level Positive Affective Pattern correlated with her self-reported excellent performance at Point A.

#### Mary's Self-reported Speaking and Writing Performance Trajectory.

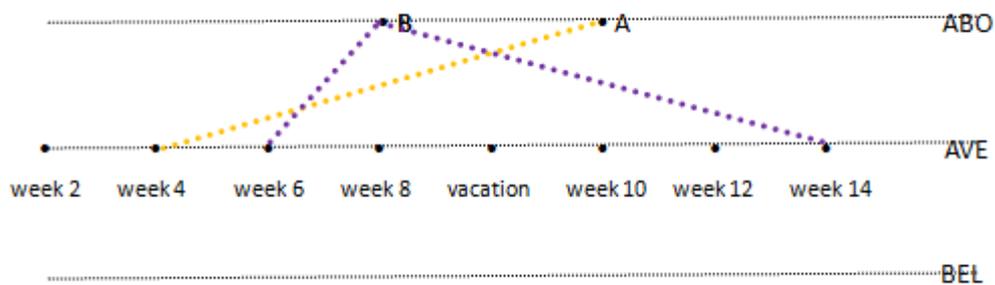


Figure 7. Mary's Self-reported Speaking and Writing Performance

The orange dashed line referred to Mary's self-reported speaking performance whereas the purple one referred to her writing aspect. Regarding Mary's self-reported speaking performance, she reported that she particularly focused on how to use English language in her daily life. She tried "to use English in her daily life" and "to talk to foreigners in English", which can be categorized as the attractor "Language Awareness". This attractor and the facilitative affective experience of Mixed Lower Level Negative and Higher Level Positive Affective Pattern correlated with her self-reported excellent performance at Point A.

Regarding Mary's self-reported writing performance, she reported that she did not take exercises to develop her English writing ability. Her writing performance largely depended on

her own familiarization and understanding of the tested topics, which were presented in each exam. She reported that she performed normally in week six. The performance went upward to the optimal Point B in week eight, then downward to the average state in week 14. Also, she reported that “other people's performances or judgments are not relevant”, which can be categorized as the attractor “Amotivation”. This attractor and the facilitative affective experience of Mixed Higher Level Negative and Higher Level Positive Affective Pattern correlated with her self-reported optimal writing performance at Point B in week eight.

### **Signature Dynamics**

From a DST perspective, typical dynamic outcome patterns refer to “the system’s self-organizing capacity that aims to increase the orderly nature of the initially transient, fluid and nonlinear system behaviours...complex systems display a few well-recognizable outcomes or behavioral patterns rather than the unlimited variation that we could, in theory, anticipate in an erratic system” (Dörnyei, 2014, p. 84-85).

Dörnyei (2014) proposed a three-step template to study different learner types. As he argued, learner types were predictable and although in principle, from a class of 30 learners could be identified 30 very different learner types, actually the number was usually rarely exceeding four to six. This template was validated by two other PhD researchers, conducted by Hamish Gillies and Letty Chan, respectively. In the following section, I will compare the findings from my current research with from most recent researches under DST paradigm.

Regarding my current case study, it is not a validation study of Dörnyei’s three-step template which “Retrodictive Qualitative Modelling” (RQM) was taken into account. Foreign language learners’ archetypes were not pre-identified by the teacher focus group. Instead of initially identifying learner types from a list of learner archetypes generated by the teacher focus group (Chan, 2014), this research identified learner’s signature dynamics of the interplay between affective patterns, attractor states and self-reported performances inductively.

First, regarding all six subsystems, namely vocabulary, grammar, listening, reading, speaking and writing of this study, no below average performance was reported from Mary’s self-reported performances.

Second, initial conditions which were defined by Verspoor (2014) as “the conditions subsystems are in when the researcher starts measuring” (p. 45) were reported significantly relating to the student’s group recognition and career goals. As Mary reported, in her class, two groups existed relating to three career goals. To be specific, *Civil Service Exam Group* related to career goals of *Studying for a Master Degree in China* and *Going for a Job Directly after Graduation*; whereas *GRE Group* related to the career goal of *Studying a Master Degree Abroad*. Mary was reported that she would like to study abroad after graduation and she reported that she belonged to GRE group at the beginning of this research.

Third, same self-reported performance trajectory and same attractor states were reported in terms of vocabulary subsystem and grammar subsystem. These attractor states were identified

to interact with different affective patterns at different optimal points of their self-reported performances. According to the same timescale, before vacation, it was reported by Mary that the attractor states, namely, “Autonomy” and “Integrative Disposition” strongly governed her self-reported vocabulary and grammar performances. This finding can be related to Dörnyei’s (2014) attractor-governed phenomena. From a DST perspective, strong attractor-governed phenomena refer to “stable and predictable phases when the system is governed by strong attractors, resulting in settled, non-dynamic attractor states” (Dörnyei, 2014, p. 84). However, with respect to the same timescale, other subsystems, for example, the writing subsystem, was not reported as the same attractor-governed phenomenon before vacation. As a result, within the same dynamic system, different subsystems may be governed by different attractor states in the range of the same timescale.

Fourth, the learner’s perceived affective patterns are more complicated than a dualistic view of not being positive, then should go for negative. As responses from Mary, four affective patterns were reported including simultaneous affects at different intensities. This finding left a question relating to the predictability issue from Dörnyei’s three-step template which “Retrodictive Qualitative Modelling” (RQM). How to predict the learner’s affective experiences from a non-dualistic view? It was clear that even belonged to the same affective pattern, different affects were identified at different timescales and different research contexts. These affects were reported as simultaneous affective groups rather than discrete affects. The learner’s affective state was more complex from a DST perspective.

### **Conclusion**

To conclude, this study reports the perceived affective experiences and self-reported performances of one Chinese learner’s of English from a foreign language classroom. Four salient affective patterns and five attractor states were identified interacting with six different self-reported performance trajectories. The learner’s specific affective patterns, attractor states and self-reported performance trajectories over time are unique. No claim should be made that other foreign language learners respond similarly to similar contexts.

The application of Dynamic System Theory (DST) into the study of Foreign Language Acquisition (FLA) affective experiences reveals both its strengths and its limitations. On the positive side, DST enables researchers to identify salient patterns, attractor states and the performance trajectories from the learners, which it is seen as a powerful framework for future FLA affective research. On the other hand, researchers still face the methodological challenges in researching DST under FLA context, because “dynamic systems research is such a new and uncharted territory that there are simply no tried and tested research methodological templates available” (Dörnyei, 2014, p. 84). However, an increasing number of researchers see DST’s strength and design empirical studies to examine different aspects within FLA settings (Nitta & Baba, 2014; Yashima & Arano, 2014; Henry, 2014; Hiver, 2014; Waninge, 2014; Mercer, 2014). As MacIntyre and Serroul (2014) said, “The nitty-gritty detail of this complex process, observed as it unfolds in idiodynamic studies of the L2 learning and communication process, provides an *embarrasse de riches* that hopefully will motivate future research” (p. 133).



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