

Motivational Trajectories in Language Learning: Evidence from Highly-Motivated English as a Foreign Language Learners

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Abstract

This paper aims to provide a thicker description of the motivational profiles of an archetype associated with successful, highly-motivated English as foreign language (EFL) learners from a more holistic approach in an Iranian context. Once the results from a teacher focus group and a cluster analysis of questionnaire data made a robust identification basis for the typical learners of the archetype (N= 6), the study resorted to a corpus of English language learning histories (ELLH) and presented a description of motivational trajectories gaining insights from an interpretive approach within some conceptual tools of Complex Dynamic Systems Theory (CDST). The findings uncovered the unique complex dynamic nature of language learning motivation for each participant with combinations of cognitive, affective, motivational, and contextual variables that functioned as blended driving forces accounting for motivational evolution, where the state space mostly started with the maintenance of self-esteem and ultimately navigated towards the deep attractor state of great fondness for engagement in English and attaining either integrativeness or an international posture. Given that the last attractor state has been entrenched over the course of the senior secondary school years, it is expected that the motivational system will withstand changes in the future. The results might prove beneficial for researchers and teachers in manipulating motivational systems.

1 Introduction

Motivation, traditionally assumed to be a major individual difference (ID) variable in the second language acquisition literature, has been the topic of remarkable levels of research activity. The unique status of learners' motivational profile in L2 learning and achieving proficiency is well established (Boo, Dornyei, & Ryan, 2015; Dornyei, 2009; Dornyei & Ryan, 2015; Murray, Gao, & Lamb, 2011; Thompson & Vasquez, 2015).

Nevertheless, the current landscape of applied linguistics endorses a period of surge in L2 motivation research with a shift to socio-dynamic perspectives in an unprecedented manner (Henry, 2017; Waninge, 2017). The current period does not characterize language learning motivation (LLM) as an ID construct owing to some inherent problematic assumptions. This is, first of all, because a dynamic approach to LLM rejects a modular view of learner characteristics in general and LLM in particular; secondly, it stands against the constant static nature of motivation (Al-Hoorie, 2017; Dornyei, 2009). The dynamically-oriented approaches, rather than thinking of LLM as an isolated attribute, have conceptualized it as a complex dynamic system in the form of a conglomerate integrating cognition, affect, and motivation, which evolves toward a certain preferred pattern (Dornyei, 2009; Dornyei & Ushioda, 2011; Waninge, 2015, 2017). They delve into the temporally and contextually variant nature of LLM (Al-Hoorie, 2017; Boo et al., 2015; Dornyei, 2014; Dornyei, Macintyre, & Henry, 2015; Dornyei & Ryan, 2015; Dornyei & Ushioda, 2011; Park & Hiver, 2017). To take these two important considerations into account, the current period mostly embraces complexity-inspired theories employing one or a combination of Dornyei's (2005, 2009) 'L2 motivation self system' (L2MSS; e.g. studies in Dornyei & Ushioda, 2009; Papi & Teimouri, 2012; Thompson & Vasquez, 2015; You & Dornyei, 2016) and Complex Dynamic Systems Theory (CDST; e.g. Chan, 2014; Waninge, 2017; Waninge, Dornyei, & de Bot, 2014; Yashima & Arano, 2015). Chan (2014), aiming to explore the use of Dornyei's (2014) innovative methodology of retrodictive qualitative methodology (RQM), highlighted seven different motivational archetypes in an instructional setting. Chan used the word 'archetype' by relying on the key influence of certain powerful attractors dominating the self-organization process, and found it more beneficial for future empirical studies to examine the prototypical learners of specific archetypes in order to capture the trodden motivational pathways and the dynamic patterns.

In line with Chan's argument, it appears that no study, to date, has examined the motivational trajectories of a specific learner archetype within the framework of CDST. The problem is that despite the surge in the investigation of learners' ecology of motivation, the status quo of the LLM field shows that the number of longitudinal studies which examine the evolutionary trajectories of the construct is scarce (Al-Hoorie, 2017), and, if there are any, they mostly involve tertiary level students (Boo et al., 2015; Nitta & Baba, 2014). Given the above, the current study aims to identify the motivational patterns characterizing highly-motivated secondary-school learners within an Iranian educational context. There are a wide range of possible factors involved in making a language learner a successful, highly-motivated language user. English language learning histories (ELLHs) are assumed to present a sufficiently detailed picture of the LLM as it unfolds over the process of language development, and a further twist toward CDST principles helps to conceptualize the evolving motivational fluctuations along with its complexities.

Although still under-researched, the investigation has the potential to contribute to manifesting the function of motivation within the ecology of language development while employing a CDST perspective. As such, it helps researchers to retrospectively determine the potential driving force as a way to intervene in a system and explore its association with language development (Baba & Nitta, 2014; Dornyei, 2014; Larsen-Freeman, 2011). Furthermore, it assists teachers to pinpoint the particular patterns which crack the code to the success of manipulating the learning situation as desired.

2 Literature review

2.1 *Basics of CDST and CDST-based motivational studies*

Under the umbrella term of CDST is a plethora of related approaches, including Larsen-Freeman's (1997) 'Chaos/Complexity Theory', de Bot et al.'s (2007) 'Dynamic Systems Theory', Ellis & Larson-Freeman's (2006) 'Emergentism', and Larsen-Freeman and Cameron's (2008) 'Complexity theory'. Despite the fact that the terms have their own foci, they are all involved in the development of complex dynamic systems over time. For our purposes, this study uses the overall combination of these theories as CDST to focus on dynamicity, complexity, and emergence at the same time.

CDST, as an important ‘theoretical maturation’ (Ellis, 2007), employs holistic and system views of reality which discard the isolationist view of research investigating individual factors out of context (Larsen-Freeman & Cameron, 2008). It focuses on the interconnections among components in the system as the essential building blocks of future unpredictable structures which subsequently emerge (de Bot et al., 2007; van Geert, 2008). Rather than establishing straightforward linear cause-effect links between two variables within complex dynamic systems, it thinks of a bidirectional, decentralized, two-way influence of the components (Hiver, 2015; Mercer, 2013a).

In keeping with CDST, systems have a tendency to evolve toward certain outcomes which are called attractor states (Hiver, 2015; van Geert, 2008; Verspoor, 2015). The state space represents the possible attractor states that a system settles in and seeks equilibrium; and the attractor basin determines which states the system can occupy. To unravel the state space landscape of the system, it is imperative to start with the initial conditions (Chan, 2014; de Bot et al., 2007; Verspoor et al., 2008; Verspoor, 2015; Verspoor, de Bot, & Lowie, 2011). Put simply, we have to identify the first attractor state the system gravitates to at the time the investigation begins, since lodging in a powerful attractor state will influence enduringly on the subsequent development of the system (Chan, 2014; Verspoor, 2015).

Nonetheless, phase shifts can also occur for any system while it is exposed to some perturbations; in other words, the system undergoes a major transition, “what the system does after the phase shift is qualitatively different from what it did before” (Larsen-Freeman & Cameron, 2008, p. 58). Perturbations in dynamic parlance refer to any interventions which cause changes in the developmental trajectories of the system and which can push it into a novel pattern (Hiver, 2015; Larsen-Freeman, 1997).

Drawing on these theoretical underpinnings, the current round of investigations have put emphasis on the complex dynamic nature of motivation as well as its temporal and contextual variation (Al-Hoorie, 2017; Dornyei & Ryan, 2015), in a way that motivation is no more justified as a traditional template of ‘motive-causes-behavior’ (Dornyei, 2014; Dornyei & Ushioda, 2011; Waninge et al., 2014). Indeed, studies on L2 learners’ motivational trajectories through the analytical lens of CDST (e.g. Chan, 2014; Waninge et al., 2014; Yaghoubinejad, Zarrinabadi, & Ketabi, 2017; Yashima & Arano, 2015) have unanimously reported variability and complexity in language learners’ motivation. Waninge, de Bot, and Dornyei (2014) longitudinally micro-inspected classroom motivation of 4 secondary language learners during their language lessons over a period of 2 weeks, using instruments of Motometer, classroom observations and a questionnaire on attitude and motivation. They found that classroom spatial and temporal context were accountable to the variability and stability within students’ in-class motivation. In another case study, Yashima & Arano (2015) argued for the tremendous potentiality of CDST-informed motivation research in helping to “understand why people do what they do” (p. 314), then shedding light into both complex psychological operations and the dynamicity of motivational development. They similarly suggested that the complexity and fluctuations of learners’ motivation were in line with their lived contexts. Recently, Yaghoubinejad, Zarrinabadi, and Ketabi (2017), in a multiple case study into Iranian learners’ motivational fluctuations over a semester-long period, highlighted the robust causal variables such as L2 learning enjoyment, internal incentives for L2 learning, and L2 future image in the system, that brought about variability in the motivational profiles of students in different points of time.

However, among the CDST-oriented studies, Chan (2014) not only provided some insights into the dynamic nature of LLM but also had a special concern about various learner types’ motivational setup in a Hong Kong secondary school. Capitalizing on the system’s tendency to self-organize into certain attractor states, Chan employed the novel method of RQM and hence reversed the traditional predictive way of conducting research to trace back the developmental trajectories leading to the end outcomes. Although Chan expressed concerns regarding the insufficiency of her data with regard to each archetype, she ensured the generalizability of the emerged archetypes and that they would fulfill the requirements of critical case sampling for forthcoming empirical studies.

Again relying on the consistency that the self-organization process provided the dynamic systems with, Waninge (2015) adopted the CDST perspective to understand the nature of the L2 learning experience (the third aspect of the L2MSS). She initially identified the recurring attractor states

making up the past learning experience of a group of English students in the language classroom by using short semi-structured interviews, and then she focused on the development of the states in the attractor basin. Waninge found a combination of cognitive, affective, motivational, and contextual elements as accountable to the underlying attractor basin.

It seems that previous studies, albeit contributory, need to be supplemented by a special focus on motivational trajectories of a specific archetype; in this way, the new study can not only validate the complex dynamics nature of LLM established earlier but also provide a comprehensive picture of the ecology of motivation belonging to a particular attractor landscape. Hence, the current research aims to provide a more detailed description of the motivational system of learners who represent the successful highly-motivated learner archetype while triangulating data by examining multiple cases (not just a single case) and using quantitative and qualitative methods of data collection. It is guided by the following main point of inquiry and two sub-questions:

- RQ. What are the complex dynamics of successful, highly-motivated EFL learners' language learning motivation?
- SQ1. What are the major attractor states that make up the learning experience of the successful highly motivated language learner archetype?
- SQ2. Which factors contribute to the creation of the end motivational state?

3 Method

3.1 Research design

Within the framework of CDST, the current study adopted a qualitatively driven sequential mixed methods design and a multiple-case study methodology to have an intensive description of the motivational trajectories of the target archetype learners. The overall theoretical drive is qualitative, and selection of participants for the core qualitative part of the research was done on the basis of the results of supplemental (more quantitative) components.

3.2 Participants and setting

The present investigation took place in Marand (a medium-sized Iran town) Farzanegan Complex, a girls-only school, administered under the authority of National Organization for Development of Exceptional Talents (NODET). At the time of the study, participants were 17.

Their exposure to English was limited to the classroom context and private English institutes. At school, they attended two English classes per week (135 minutes). Other than conventional exams, students of this school were assessed by the 'Cambridge English practice tests' once a year. Based on the available documentation on 'B1 Preliminary for Schools', the selected participants were at the B2 level¹ according to the Common European Framework of Reference (CEFR), suggesting they were *independent*, *confident* and *upper-intermediate* language learners. The output in Table 1 shows the results for the preliminary practice test.

Table 1. Results of B1 preliminary practice test for schools

	Mahya	Sara	Saba	Maryam	Kosar	Samir	Reliability
Listening	24	23	24	24	23	24	0.85 (Cronbach's alpha)
Speaking	28	28	29	30	28	30	0.97 (ICC)
Reading	30	29	30	29	31	30	0.81 (Cronbach's alpha)
Writing	34	35	36	34	36	35	0.97 (ICC)

The Cronbach's alpha coefficient for Reading and Listening scales of this test suggests that the scales have good internal consistency. Likewise, the inter-rater reliability with interclass correlation coefficient (ICC) for Writing and Speaking reflects that the grades accomplish adequate levels of reliability. The validity of B1 Preliminary Practice Test for Schools is assumed to be satisfactory due to the fact that it is a standard and international test of proficiency that draws on the expertise of Association of Language Testers in Europe; meanwhile, the NODET research and validation teams regard the test fit for the purpose in this specific context, which offers a reasonable representation of the four skills at B2 level.

3.2.1 Selection criteria

To select these participants, a focus group of teachers first conducted critical case sampling (Dornyei, 2007) based on Chan's (2014) description of the perfect language learner archetype, where a set of cognitive, emotional, and motivational characteristics such as committed + independent + confident + emotionally stable + interested + highly-motivated were essential to its motivational makeup.

The focus group consisted of 4 English teachers of the NODET School (including the third researcher of this study) with experience of over 2 decades of service. Having been informed of the purpose and procedures of the study, the teachers participated in a roundtable discussion and eventually shared the names of 20 students corresponding to the archetype in question (session duration 1hr 30 min). The available documentation, the prior familiarity and long-lasting professional relationships, as well as their shared experience with the target students over the junior or senior English courses, made the process of participant selection much easier.

To resolve possible erroneous judgements and recruit the most representative students, survey data was also elicited through a questionnaire. A two-step cluster analysis was preferred to the other traditional clustering methods to analyze the data, since it could automatically select the number of clusters (Mooi & Sarstedt, 2010). Thus, the survey data for 20 students was cluster analyzed with SPSS version 22.0. As a clustering criterion, the number of clusters was initially chosen according to Schwarz's Bayesian Criterion, and to ensure the stability of the results, it was rerun based on Akaike's Information Criterion; both indicated a two-segment solution.

The output in Table 2 shows each clustering variables' mean values as well as their order of relative importance across the two clusters. All of the variables contribute to the formation of the clusters; nevertheless, the mean for each construct in Cluster 1 is higher, demonstrating that the clusters vary across the segmentation variables. The silhouette measure of cohesion and separation reached a value of more than 0.60, suggesting validity of within- and between-cluster distances, and hence a satisfactory cluster quality.

Table 2. Clustering variable means for profile clusters

Variables determining clustering solution	Cluster 1 (n=6: 30.0%)	Cluster 2 (n=14: 70.0%)
English language confidence	4.77	2.74
Ideal L2 self	5.21	3.36
Attitudes to learning English	5.08	3.47
Criterion measures	5.44	3.92
Integrativeness and attitudes to L2 community	4.88	3.52

To ensure the validity of the cluster solution, the study also gained insights from Mooi and Sarstedt's (2010) argument that objects across clusters can be distinguished from each other provided that they exhibit *significantly* different means in the clustering variables. Thus, it is needed to assess whether the segments are truly distinct. Since assumptions for an independent samples t-test were not met, a Mann-Whitney U test was conducted to evaluate the hypothesis that mean ranks between Cluster 1 (N=6) and Cluster 2 (N=14) would differ along the given 5 variables. The results revealed

significant differences between the two clusters for all of the five areas as shown in Table 3 [Sig. (2-tailed) row is less than 0.05, sig < .05].

Table 3. Two clusters' non-parametric Mann-Whitney U Test

	Criterion Measures	Ideal L2 Self	Attitude	Integrative-ness	Confidence
Mann-Whitney U	.000	3.000	5.500	1.500	.000
Wilcoxon W	105.000	108.000	110.500	106.500	105.000
Z	-3.476	-3.224	-3.020	-3.349	-3.469
Asymp. Sig. (2-tailed)	.001	.001	.003	.001	.001
Exact Sig. [2*(1-tailed Sig.)]	.000	.000	.001	.000	.000

Hence, being assured of the validity of the two-step cluster solution, the study considered the six individuals – Mahya, Sara, Saba, Maryam, Kosar, and Samin (all pseudonyms) – in Cluster 1 as the most representative participants.

3.2.2 Background information

3.2.2.1 Mahya

Mahya grew up with her parents (a teacher mother and a computing engineer father) and older brother. They did not have any experience of living or vacationing outside of Iran. Her family exclusively spoke Turkish. Nevertheless, Mahya was from a family that respected her fantasies about her great desire towards EFL learning and her future career. Mahya started English at the age of six and since then she has not stopped taking English courses regardless of occasional motivational declines and re-growths. Except for a short period in junior-secondary school, she exhibited positive attitudes and appeared motivated enough to follow English learning independently to achieve fluency. Mahya's senior secondary school teacher and her brother's study abroad scholarship award boosted her interest for assimilation with the English community.

3.2.2.2 Sara

Sara was the only child of a stay-at-home mother and a businessman father. She is also the only participant in this study who experienced a stay abroad for three years at an early age when she accompanied her family on a business trip to Dubai at the age of six, during which she made friends with an American neighbor's daughter with whom she spent her time. She picked up the language without conscious learning. When she returned back to Iran, she temporarily experienced a period of decline in her LLM, as she thought everybody shielded themselves from English and spoke in Persian or Turkish. However, a teacher's advice and her own competitive, self-regulated, and autonomous learning behaviors put her on the right path to English. She envisioned an Americanized life, as well as meeting better linguistic, academic, and career achievements.

3.2.2.3 Saba

Saba lived with her affluent parents (a bank clerk and a physician) and older sister, who supported her in improving her English skills. Turkish was always spoken at home. Except for few short-term vacations, they did not have any experience of sojourn outside of Iran. From a young age (seven), despite her reluctance, she attended private English classes. Her unwillingness led to a complete loss of English language learning in the initial years. However, a proficient newcomer classmate triggered a sudden change in her attitudes and motivation toward English. This was enough for

Saba to get enticed to exert some effort to become a fluent English speaker. Her passion and autonomous learning both in and outside class yielded fruits, as she imagined herself a competent English speaker and a prominent international physician.

3.2.2.4 Maryam

Maryam, an only child, grew up in an average family in which both parents were full-time employees. She began her journey of English learning at the age of ten. Yet, it was only the environment and her mother that caused her to embark on English language learning and, hence, she did not achieve any progress in those years. Later, deteriorating school conditions confined her to two options: to cope with the agonizing class circumstances or to persist in learning English. Maryam as a very diligent, competitive, and ambitious student chose the second option and took private English courses from an expert teacher. The presence and influence of the tutor was significant. Maryam was recognized as a learner who had a natural aptitude for English learning. The more she became successful, the more she was inclined to integrate with the English language. Although, Maryam's LLM began with frustration, it ended in enjoyment.

3.2.2.5 Kosar

Kosar grew up in a small town with her parents and older sister. Her mother was a teacher and her father had a small company. Kosar loved English and had an ambition of being an English teacher; yet, she did not have any access to early English programs until she started it formally at junior secondary school. In the initial year, she was always the student sitting at the back of the classroom, and hiding herself behind the other students, as she faced the challenge of keeping up with the English class. Despite a lot of struggle, she was unable to make progress. Her perceived lack of competence motivated her and hence, she decided to bring about changes in her learning environment. The new English learning experiences in a language center revived her. Ultimately, Kosar was acknowledged as a girl who frequently participated in a number of extra-curricular activities, ranging from giving an English mini-presentation to creating an English artefact Telegram channel. These activities established the sense of integrativeness with the English culture.

3.2.2.6 Samin

Samin was brought up with her parents and younger sister. Her mother was a housewife and her father was a great English teacher. At home, they spoke Turkish, although her father occasionally prompted her to speak English. Her contact with English began in her childhood under the guidance of her father, who was a competent English teacher. He immersed her as much as possible in the English language. He knew Samin's interest in understanding artifacts in real-life English. Therefore, he exposed her to the songs of the Beatles, Walt Disney's original cartoons, and PS4 games. He helped her to read as many storybooks in English as he could. Currently, Samin enjoys the pleasure and satisfaction of using English.

3.3 Instrumentation

3.3.1 Questionnaire

In line with the background literature (see Chan, 2014; Dornyei, 2009; Dornyei & Ushioda, 2011; Papi & Teimouri, 2012; Taguchi et al., 2009; Waninge, 2015, 2017), descriptive considerations of the teacher focus group for the typical archetype, and the point that Taguchi et al.'s (2009) questionnaire has a version specifically developed to be used in the context of Iran, we developed a five-component questionnaire including four scales from that questionnaire and the scale of English language confidence from Clement and Baker's (2001) to assess motivational factors related to language learning (see Appendix A). Only components with a promotional orientation rather than a

preventional regulatory focus were determined as essential to the cluster membership due to the fact that they were found as powerful predictors of motivated learning behavior (Dornyei, 2005; Papi & Teimouri, 2012; Taguchi et al., 2009).

Nevertheless, we made some minor modifications to the original question-type items in Taguchi et al.'s questionnaire and converted them to statements in order to have a unified format with regard to the items. Additionally, we merged the two separate scales of 'integrativeness' and 'attitudes to L2 community' into one category due to high levels of collinearity ($R = 0.916$). The items in the newly-merged category worked together in a homogeneous manner – in psychometric terms, each item on the scale correlated with the other items and with the total scale score.

The English version of the 30-item questionnaire with a six-point Likert scale (1 = strongly disagree; 6 = strongly agree) was translated into Persian, and then piloted with 20 similar students where it met acceptable psychometric standards. Choosing scales from established motivation questionnaires guaranteed sufficient psychometric properties (Clement & Baker, 2001). Thus, the survey was administered to the selected learners by the teacher focus group during regular class time in fifteen minutes across the following scales; the internal consistency reliability check (Cronbach Alpha coefficient) confirmed the homogeneity of the items:

- (1) English language confidence: this scale was adapted from Clement and Baker (2001) to measure learners' self-confidence in using English (Item Nos. 25 to 30; $\alpha = .92$).
- (2) Ideal L2 self: included statements considering factors with regard to the learners' aspirations and internal desires (Item Nos. 7 to 12; $\alpha = .91$).
- (3) Attitudes towards learning English: This scale dealt with the impact of learners' situation-specific motives on the language learning process (Item Nos. 13 to 18; $\alpha = .91$).
- (4) Criterion measures: this scale included statements with regard to the learners' intended efforts toward learning English, which can predict their L2 proficiency. (Item Nos. 1 to 6; $\alpha = .89$).
- (5) Integrativeness and attitudes to L2 community: these items assessed the learners' positive attitude toward English, its culture, speakers, and community (Item Nos. 19 to 24; $\alpha = .78$).

3.3.2 *English language learning history*

Since the study adopted a complexity perspective, it was thought that ELLHs, as a form of writing qualitative data, can offer deep insights to lay bare the complexity and the dynamism in a learner's psychology and development, as well as the individuality and the nonlinearity of individual lives (Menezes, 2008; Mercer, 2013a; Miura, 2011; Paiva, 2011). Further, the life history of each learner plays a major role in the emergence of language motivation (Al-Hoorie, 2017).

Participants were asked to write in Persian about their experiences of learning English in different periods and places from their first encounter with English up to the present. The use of Persian was justified to let the participants represent their English learning processes smoothly. To provide scaffolding for the writing of the narratives, they were guided in a relatively open way about a sincere content with respect to their thoughts, attempts, beliefs, feelings, goals, and inclinations on English language learning and the English community. The Persian ELLHs were translated into English and an experienced English teacher inspected the translation to enhance reliability. Equivalency of the two versions allowed the researchers to proceed with the data analysis. The elicited ELLHs were 9837 words in length.

3.4 *Procedures and data analysis*

The study embarked on the selection of participants for the core qualitative part of the research with a sequential mixed methods design (Figure 1):

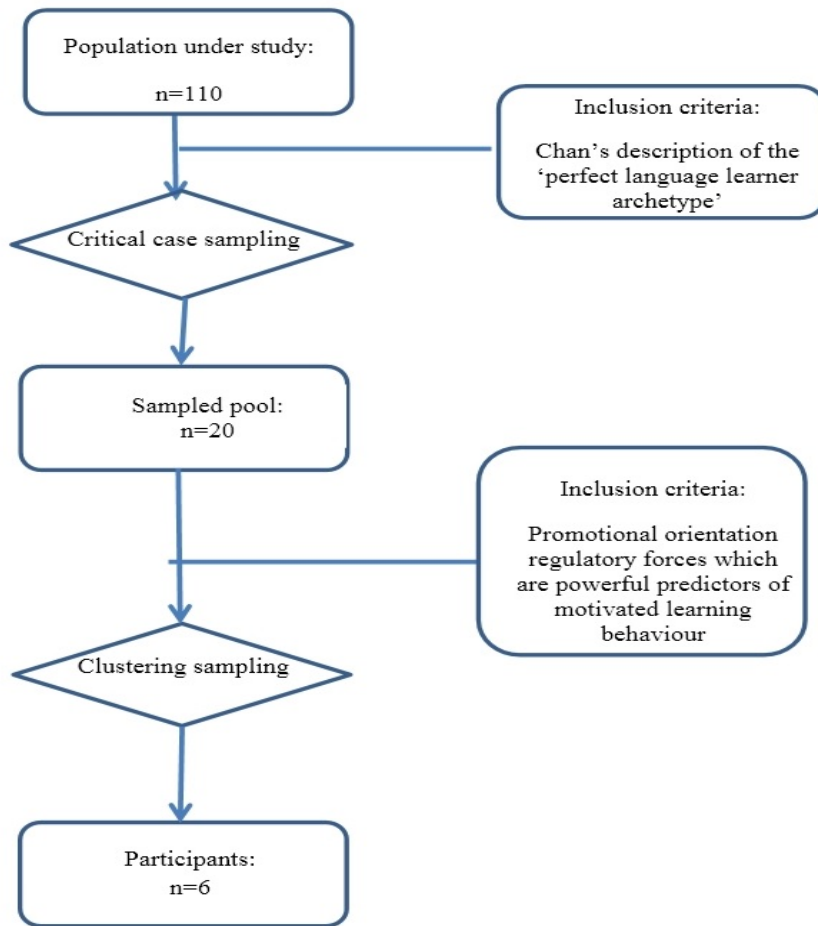


Fig. 1. Flowchart of participant selection procedure

Having identified the total six participants eligible for the final longitudinal analysis, the study addressed the motivational landscape of the target archetype through a close-grained examination of their ELLHs while taking the following points into consideration:

The overall main research question from a CDST perspective is how development takes place in a dynamic system (de Bot et al., 2007; Verspoor et al., 2011), which is often answered by tracing a) a trajectory, b) over time, and c) in the state space. And to manifest the 'interaction' within the trajectory, Dörnyei (2009) introduced the concept of 'conglomerates of cognition-affect-motivation' to motivation research as a possible solution. To retrace the development, retrodiction leads a researcher to discover "why a particular student ended up in one attractor state and not another" (Dörnyei, 2014, p. 85), thereby helping to reveal the nature of the control parameter, too. Meanwhile, 'dynamical description' can provide the researcher with a conceptual apparatus to discover the way systems change over time (Larsen-Freeman, 2006, 2011); these concepts can be drawn eclectically just to offer "meaningful and valid mappings on to the problem spaces" (Larsen-Freeman & Cameron, 2008, p. 25).

Taken all together, the study proceeded with a retrospective account of participants' evolving motivation in order to trace the development of conglomerates of system components, dynamic processes, and perturbations within the learners' ELLHs in order to reconstruct the state space landscape of the system, that is, the way the possible states emerged and then developed. Emergent outcomes

were specified by the attractor states, in CDST terminology; and interaction was conceptualized and practically investigated by Dornyei's conglomerates – although both are two sides of the same coin (Hiver & Al-Hoorie, 2017; Waninge, 2017). Thus, we viewed L2 learning experiences as representing affective-cognitive-motivational conglomerates and focused on their development. The process would shed light on both the underlying interaction and the outcome of interaction. Nonetheless, due to space constraints, the study further analysed this interaction pattern within the ultimate attractor state whose manifestation is the current highly-motivated language learners.

To easily follow the results, the participants' motivational development was divided into three sub-sections in terms of contexts and time, from their first encounters with English up to the moment they offered their history of language learning, which would clearly show how the LLM system evolved over time.

4 Results

4.1 *Participants' LLM before junior secondary school*

Based on their accounts, the participants (except for Kosar) had access to early English programs and started English language learning in their early years, though English was considered a required course from Grade 7 onwards. Nevertheless, they all started learning it in order to act in accordance with family norms, societal expectations, or partially internal desires – conformity with impersonal, external, or somewhat intrinsic sources of motivation, respectively.

The evidence revealed that the makeup of Mahya's motivational system behavior at her preliminary engagement with English was mostly affected by the 'ought to English self'². Her motivation had a somewhat external source and she simply acted to maintain contingent self-esteem. Although Mahya compelled herself to learn English, she indeed sought others' approval and her ego protection.

I often feared that someday they left me speechless. Therefore, I decisively said to myself, "I will never give in to the questions. I never get stuck for words. I never become exhausted." (Mahya)

Likewise, the system's initial conditions for Maryam and Saba were characterized by a desire to comply with family and society norms, in a way that they themselves did not perceive any personal desire for learning English. Hence, the contextual factors within the attractor basin forced the system towards external regulation as the first attractor state:

I myself didn't have any clear idea of why I began this course. The place where I grew up, it is customary for families to send their children to English institutes. (Maryam)

Just like so many Iranian children, thanks to the two mentioned reasons- late language teaching in schools, and a lack of quality teaching - I was forced to start learning English when I was seven. (Saba)

However, for Sara and Samin, LLM was under the influence of an intrinsic desire reflected by their emotional appraisals as they remarked as follows:

I was at the apex of emotional feelings to learn English those years. (Sara).

I am a great English enthusiast. (Samín)

The contextual affordances with regard to Sara's immediate English learning experience at the initial year including residency in Dubai, an American friend, and Sara's prolonged engagement with the newcomer were more fundamental to give rise to motivational fluctuations from within. As Sara commented, "I was submersed in an English-speaking environment where the language would creep into my brain and slowly grew itself". Thus, the system moved to occupy a willingness to interact in English, of which an unconscious affective integration with the English language was the consequence. Sarah's remark that "Fortunately, this affection abided without fading" highlights the strength of the system's initial conditions.

Nonetheless, in the case of Samin, the existence of components such as a supportive father who provided a rich English context, as well as her own interests made the system hold the pursuit of pleasure of English in her domains of interest:

My dad knew well that I was an English music maniac; so as a first step, he inspired me to listen to 'Dream Theater' and The Beatles ... English gradually began playing in my mind. (Samín)

With regard to Kosar, despite her interest in English, her motivational system was prone to an array of contextual constraints such as limited access to English learning resources and late encounter with English; hence, she became too anxious to learn English, and the system was attracted to an unconfident state, while building up a feared English self.

Even though the participants' initial conditions were influenced to a large degree by externally-imposed contributory factors; their subsequent attractor state, indeed, did have quite intrinsically-accommodated standards. The first lodging position after initial conditions captured 'dynamic stability' for Mahya, Samín, and Saba – that is, enthusiastic preoccupation with English did not undergo "wild fluctuations or chaotic change" for a long time (Larsen-Freeman & Cameron, 2008, p. 33). Soon, English learning held a fascination for the participants due to the availability of some motivational perturbations within their English learning experiences:

Fortunately, my parents and teachers removed the given barrier to my enthusiasm and fueled my passion. (Mahya)

For us, the newcomer looked like an alien disembarked from a spaceship from a distant galaxy. This jolted me out of a happy-go-lucky attitude to English. (Saba)

My interests became a big motivation for me to enforce learning English. (Samín)

Conversely, Sara and Maryam lodged in neutral attention state and tended to disengage from the activity. That is because Sara lost the contextual affordances of a stay abroad, and Maryam did not perceive any progress in her linguistic abilities:

After finishing two years with a perfect score, I just could use two phrases with confidence: 'How are you?' and 'Thank you. (Maryam)

After coming back to Iran, my parents enrolled me at an English institute ... They were just a burden on behalf of my parents that I had to carry. (Sara)

4.2 *Participants' motivational trajectories over junior secondary school*

The participants, for the first time, came across a formal English course at junior secondary school. They all unanimously complained about some unpleasant perturbations as exemplified in the following:

I knew that the class was not tailored to my individual needs. The teacher could not do anything for me; she had to follow the students' pace. It was agonizing to tolerate failure. I felt uncomfortable with the class atmosphere. (Maryam)

Students were of different proficiency levels, and the textbook was a disaster. (Saba)

I was rather a beginner whereas the majority of my classmates had already frequented private English institutes... The sense of passivity in junior-secondary school demolished my motivation. (Kosar)

The dull poor content of the English textbook as well as our teacher's lack of creativity were quite agonizing. (Mahya)

I felt that my obsessive enthusiasm for English learning being thwarted with traditional activities. The class would bore me to death. (Samín)

I found that students shielded themselves from English ... This made me lose my motivation. (Sara)

These perturbations caused shifts in their motivational systems and caused a lack of confidence and cognitive stimulation, as well as a sense of total frustration with English; hence, the system

navigated to the state of boredom. Boredom, indeed, was elicited for two reasons. In the case of Sara, Samin, Mahya, and Maryam, despite their high abilities, the cognitive demands in the classroom were low. The opposite was true in the case of Saba and Kosar, who felt unable to follow the ongoing discussion.

Nevertheless, the hindrances towards motivated behavior were not strong enough to settle the system in an apathetic approach to English for a long time. Therefore, instead of procrastination and helplessness, the participants exerted effort to make shifts in the direction of their motivational journey. Regarding Kosar's case, for instance, the metacognitive awareness that "*I found all my struggles as unproductive and useless*" brought changes in her learning environment, whereby her cognitive capabilities in learning good English were raised in the light of the positive impact of a language center and a teacher in charge:

I enrolled at a language center which counted as my salvation and saved me from ruin ... I felt welcomed, empowered, and ready to learn. (Kosar)

Engaging with an English tutor tided Maryam over, as well. The tutor contributed to her motivation from many different aspects. Maryam developed an intrinsic passion for English; moreover, she grasped the importance of fluent English speaking for a career in the future. Then, her motivational system resided in the attractor of capturing the satisfaction of speaking fluent American English.

My tutor discovered my innate propensity to learn good English ... I became aware of the pleasure of speaking fluently in a career in the future. (Maryam)

With regard to Samin, her motivational level increased due to her father's extra-curricular activities, which led to the system's stabilization in the attractor state of pursuit of pleasure of English in her domains of interest:

My father had immersed me as much as possible in English input: graded readers, Walt Disney original cartoons, computer games, PS4 games, films, songs. (Samin)

For Mahya, the availability of some components in a private language center – such as story time, discussion opportunities, good teaching strategies, fun videos, and interactive games – disturbed the system trajectory and moved it back to a feeling of fascination for English. Additionally, the internally-imposed standard of "if I put aside my emotions, opinions, and individual learning styles, I certainly would become frustrated with English" deepened the attractor.

4.3 Participants' LLM over senior secondary school

At senior secondary school, all the participants had already developed a clear vision of themselves with regard to mastering English and achieving better academic and career achievements; thus, they were all perceived as autonomous learners who self-regulated their learning experiences to approach their ideal English selves. Developing a 'growth mindset', they all centered on the belief that their abilities could be enhanced through endeavor (Mercer, 2013a). Nevertheless, participants unanimously pointed to an enthusiastic teacher that acted as an ever present background that influenced their cognitive, affective and motivational forces in a positive way and reinforced their engagement in English:

I became even much more passionate towards English. This time, my new knowledgeable English teacher was the reason ... (Samin)

My teacher persuaded me that I had a natural aptitude for English learning. (Maryam)

She decorated the classroom environment with hopeful and inspiring words... In fact, she enforces my positive attitudes toward English, thereby a perceived rise in my motivation ... (Mahya)

I never forget my senior-high school teacher's positive feedback to my extracurricular activities. (Sara)

She did not spoon-feed as it was usual; she correctly recognized my latent powers and accordingly taught appropriate tactics. (Saba)

For Mahya, there was also another contextual experience that perturbed her motivational system. She brought up her brother's scholarship award which instilled in her a prospective fulfillment of study abroad, too:

The imagination of studying abroad boosted my interest in English twice as much as before

Thus, having benefitted from her parents' support and her new goal orientation, Mahya "put in much effort to be quite competent in English".

In such contexts, participants engaged in different types of extracurricular communicative activities and became motivated by social networking, which immersed them more in English and its culture:

I have the habit of listening to podcasts, and English show programs. (Sara)

I joined an online forum which had my hobbies of interest such as TV shows, movies, and tourism. I engaged with social networking programs. (Maryam)

Samin took pleasure in using English artifacts such as sitcoms and documentaries; Saba found a pen pal from Australia and then joined an English online immersion program called 'Fluent U'; and Kosar created a Telegram channel of English artefacts.

Hence, all these invested cognitive efforts increased the participants' potentiality to integrate with the English culture, and intensified their enthusiasm and intrinsic motivation. Mahya, Maryam, Sara, and Kosar vividly aspired towards assimilating with the American or English community, while Saba and Samin envisioned their ideal English self³ engaging in an international scientific career. In Yashima's (2009) words, Saba and Samin captured the tendency to hold an 'international posture', as one "to see oneself as connected to the international community, have concerns for international affairs, and possess a readiness to interact with people other than Japanese [in our case, other than Iranians]" (p. 146).

I fell excessively in love with English and America ... I became aware of the pleasure of speaking fluently in the future career. (Maryam)

I should confess that I have a dream of Americanized life and culture. (Sara)

I would like to be a prominent international physician. (Saba)

Here, I add that having a number one scientific career is my aspiration, and that I would like to become part of the international scientific community. (Samin)

In summary, a combination of cognitive, affective, and motivational forces surfaced together in the participants' accounts that paved the way for the development of an ideal English self with a desire for integrativeness with the American, English, or international community. All these forces were also under the influence of a positive and facilitating context in which the teacher was the main reason. However, their mutual interactions made it difficult to claim any straightforward causality. The figure below – adapted from Waninge (2017) and modified for the present study – visualizes how the constellation of cognition-affect-and-motivation functioned as a control parameter within the system attractor basin to yield the ultimate attractor state (Fig. 2):

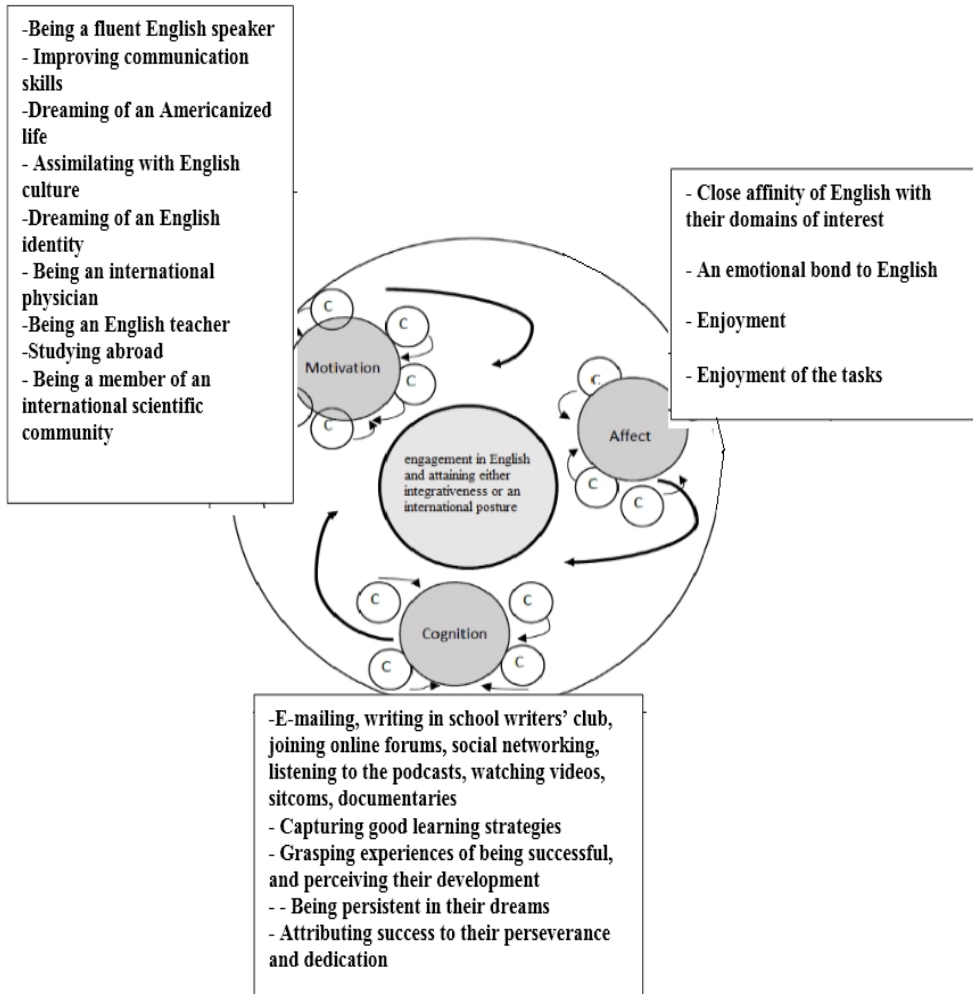


Fig. 2. Driving forces leading to a desire for integrativeness or an international posture

5 Discussion

Looking back at a similar study conducted by Chan (2014), where she provided a portrayal of the motivational dynamics associated with seven completely different prototypical learners (one case for each prototype), this study seemed to gain a better understanding of the motivational progression of an archetype associated with successful, highly-motivated EFL learners over the history of their learning English by triangulating data through examining multiple cases (and not just a single case). Quite in line with the findings in Dörnyei and Ushioda's (2011), Yashima and Arano's (2015) and Waninge's (2017) studies, the participants represented unique motivational trajectories with a limited number of dynamic patterns. However, some commonalities caught the eye.

Despite having unique experiences in their motivational development, the participants (with the exception of Sara and Samin) were similar with regard to the initial conditions of the system. At the initial moment, their motivational systems did not achieve enough maturity; thus they represented some variability over their evolution. The evidence confirmed Verspoor's (2015) argument that initial conditions for each system are in close relationship with its degree of variability or stability; in other words, whether or not the system is settled in a strong attractor state: the more firmly-established a system is in the beginning, the more resistant it becomes to subsequent changes; as a result,

the developmental process and the eventual outcome will remain under the influence of the initial conditions.

The analysis of the attractor landscape vividly shed light on various cognitive, affective, and motivational operations that were all consistently at work in development and subsequent sustaining of the LLM: emotions and wants set the stage for the cognitive activities, and in turn influential cognitive behaviors brought about emotional and motivational growth, and so forth. This not only validates Dornyei's (2009) 'conglomerate' assumption but also accords with Waninge's (2017, p. 136) claim about 'conglomerate attractor states'. Not surprisingly, it was the richness of interaction between cognitive, affective, and motivational experiences that acted as a control parameter in the attractor basin, and triggered different states (e.g. empowerment of self-esteem, boredom, a feeling of fascination for English). Yet, Mercer (2013a) attributed the reason for dramatic changes in an individual's motivational system to some contexts or some specific experiences, and called those changes situated and causal dynamism, respectively. In line with her argument, the motivational systems of all six participants underwent these two types of dynamism. Mahya, for example, developed her ideal English self for the first time at a private language institute, and she reinforced it at senior secondary school by getting support from an insightful English teacher. She also experienced a marked change in language learning motivation due to the power of a prospective study abroad program. However, what is of great concern here is that a blended force of cognition, affect, motivation, and context contributed to the emergence of certain system behaviors. Thus, claiming such straightforward linear links is not logical.

Although there were some periods in which the participants were miles away from the archetype in question, they eventually achieved dynamic stability to maintain an internal desire to develop language learning skills. As a matter of fact, going through different phases, the system eventually fell into a virtuous cycle letting the participants to experience a pattern of increased participation; therefore, learners took any opportunity both to learn and use English at the same time. The finding was already perceived as one of the major characteristics of highly motivated language learners by Papi and Teimouri (2012). This also resonated with Miura's (2011, p. 404) research findings that "motivational fluctuations are a common occurrence" during the process of foreign language acquisition by successful learners. Miura's participants temporarily experienced one or more motivational declines but were able to undergo shifts and sustain motivation in a high level.

Indeed, the inhibitory perturbations were not strong enough to produce considerable long-term changes in the system. After all, in CDST, for instance, "the unsatisfactory pedagogy practices are seen as strange or chaotic attractors in the system" (Paiva, 2013), and a self-organizing behavior of the motivational system was triggered once it confronted with chaotic attractors. Creation of a vigorous and sustained force could dislodge the system from the chaotic attractor (Hiver, 2015), where, in our case, the individuals developed an ideal English self over time. So, they perceived the discrepancies between their current self and possible future self that is important in raising possible future English skills (Dörnyei, 2005). They employed their initiative to ignite persistence in learning English. According to Mercer (2013a), learners' self-beliefs, particularly those belonging to a growth mindset, are one of several key factors prompting their 'personal sense of agency' – "a belief that [their] behavior can make a difference to [their] learning in that setting" (Mercer, 2012, p. 41). Thus, they found the potentiality of their own cognitive, affective, and motivational behaviors in language learning process.

6 Conclusion

This study focused on the complex and dynamic nature of the development of the motivational systems of six highly-motivated individuals with the integration of their ELLHs, in retrospective accounts, and revealed the considerable amount of change in their motivational profiles as long as their motivational systems had not reached maturity. Within their ELLHs, all of the participants gave an account of three types of social settings that affected their motivational trajectories at different educational levels: the family, the school (junior/senior secondary school) and language institutes;

further, they reported how they differed individually with respect to the intensity of effort and emotion, opportunities for English language interactions and motivational themes within these contexts.

Nonetheless, all the six ultimately had great fondness for engagement in English, attaining integrativeness or an international posture. A number of interacting components, such as purposeful activities, metacognitive awareness, interest, agency, growth mindset, a well thought-out goal orientation, and a pleasing future self-image of English, acted as indispensable drives behind such motivated behavior. 'These ingredients non-linearly developed committed, passionate, and motivated EFL learners for whom LLM functioned as a control parameter in language development. Given that the last attractor state has been entrenched over the course of the senior secondary school years, it seems unlikely to change further, even if the system is exposed to other perturbations (Dornyei, MacIntyre, & Henry, 2015; Verspoor, 2015; Waninge, 2015).

In terms of theory and methodology, the study not only underscored the importance of using personal reflections in ELLHs as a research tool to offer a bigger picture of ecology of motivation, but also reestablished the significance of the CDST as a powerful framework to lay bare the multifaceted and dynamic nature of motivation to learn English. Characterization of the attractor landscape revealed the motivational trajectories in the English learning experiences; indeed, it introduced the condition that functioned as a control parameter thereby filtering out the impact of so many other possible variables and paving the way to intervene in a system (Baba & Nitta, 2014; Dornyei, 2014; Larsen-Freeman, 2011).

From pedagogical aspects, the study could imply that teachers' involvement with the students' retrospective records of language learning experience might lead the way towards prospective directions for language learning and teaching improvement. All the participants in their ELLHs did attribute some part of their motivation to a supportive home, a rich learning environment, or their own agentic behavior. Identifying such influential forces accountable for a system development, according to Mercer (2013b), helps teachers gain insights from complexity-informed teaching methodologies to manipulate the direction of system evolutions toward favorable learner archetypes.

Nevertheless, this study suffered limitations in several ways. It is not aimed to generalize the findings based on just a small sample of six narrative excerpts and to draw any conclusions about the motivational trajectories of the given archetype, but it seems that the analyzed samples are fractals that represent guidelines in this respect. Future research does need multiple longitudinal data (such as real-time interviews), as well as more participants to comprehensively map the motivational setup of a wider community of highly-motivated language learners and to compensate for any doubts about the degree of consistency and the depth of reflection in representing the experiences through the use of retrospective accounts.

Notes

¹ Explanation of the converting practice test scores to Cambridge English Scale scores and then CEFR level can be found on the webpage: <https://www.cambridgeenglish.org/Images/210434-converting-practice-test-scores-to-cambridge-english-scale-scores.pdf>

² Renaming Dornyei's (2005, 2009) 'ought-to L2 self' in L2 Motivational Self System (L2MSS) theory which accounts for someone else's expectations from the person, beyond his/her own aspirations.

³ The term was drawn on Dornyei's 'ideal L2 self', an aspect of L2MSS that is presumed to be the strongest motivator in language learning.

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Appendix 1

English Learning Motivation Questionnaire

We would like to ask you to help us better understand your thoughts, beliefs, feelings, and inclinations concerning English learning. This is not a test so there are no "right" or "wrong" answers; just please give your answers sincerely to let the researcher uncover your motivational trajectories as the survey purpose. The questionnaire consists of three sections related to your cognition, motivation, and attitudes towards English language learning. Your honest answers will guarantee the success of the investigation. Thank you very much for your cooperation.

We would like you to tell us how much you agree or disagree with the following statements by simply circling a number from 1 to 6. Please do not leave out any of the items.

Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1	2	3	4	5	6

Part 1: Criterion measures							
1.	If an English course was offered somewhere in the future, I would like to take it.	1	2	3	4	5	6
2.	I am prepared to expend a lot of effort in learning English.	1	2	3	4	5	6
3.	I would like to spend lots of time studying English.	1	2	3	4	5	6
4.	I would like to concentrate on studying English more than any other topic.	1	2	3	4	5	6
5.	If my teacher would give the class an optional assignment, I would certainly volunteer to do it.	1	2	3	4	5	6
6.	I would like to study English even if I were not required.	1	2	3	4	5	6
Part 2: Ideal L2 self							
7.	I can imagine myself living abroad and using English effectively for communicating with the locals.	1	2	3	4	5	6

8. I can imagine myself speaking English with international friends or colleagues.	1 2 3 4 5 6
9. I can imagine myself speaking English as if I were a native speaker of English.	1 2 3 4 5 6
10. Whenever I think of my future career, I imagine myself using English.	1 2 3 4 5 6
11. I can imagine myself studying in a university where all my courses are taught in English.	1 2 3 4 5 6
12. I can imagine myself writing e-mails fluently.	1 2 3 4 5 6
Part 3: Attitudes to learning English	
13. I like the atmosphere of my English classes.	1 2 3 4 5 6
14. I find learning English really interesting.	1 2 3 4 5 6
15. I always look forward to English classes.	1 2 3 4 5 6
16. I really enjoy learning English.	1 2 3 4 5 6
17. I would you like to have more English lessons at school.	1 2 3 4 5 6
18. I think time passes faster while studying English.	1 2 3 4 5 6
Part 4: Integrativeness and attitudes to L2 community	
19. I think learning English is very important in order to learn more about the culture and art of its speakers.	1 2 3 4 5 6
20. I would like to become similar to the people who speak English.	1 2 3 4 5 6
21. I like English very much.	1 2 3 4 5 6
22. I like the people who live in English-speaking countries.	1 2 3 4 5 6
23. I like to travel to English-speaking countries.	1 2 3 4 5 6
24. I like meeting people from English-speaking countries.	1 2 3 4 5 6
Part 5: English Language Confidence	
25. In my opinion, I know enough English to be able to write comfortably.	1 2 3 4 5 6
26. I really believe that I am capable of reading and understanding most texts in English.	1 2 3 4 5 6
27. Personally, I believe that I know enough English to speak correctly.	1 2 3 4 5 6
28. I am very confident in my ability to write English correctly.	1 2 3 4 5 6
29. I feel that I can understand someone speaking English quite well.	1 2 3 4 5 6
30. I believe that my knowledge of English allows me to cope with most situations where I have to use that language.	1 2 3 4 5 6