

# Remedial Learners' Non-Linear Motivational Development in an EFL Classroom

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## Abstract

The rising university enrollment rate and the growing number of types of university admission examinations have allowed students who lack fundamental knowledge to enter universities in Japan. Providing students with the necessary knowledge to continue studying at universities is referred to as remedial education. Remedial student motivation is among the most frequently studied topics in this field. This study examined Japanese remedial students' motivational development in English classes using complex dynamic systems theory. Fifteen Japanese university freshmen participated in the study for one year, for a total of 20 sessions. Data were collected from weekly questionnaires, semi-structured retrospective interviews, teaching journals, and classroom observations. The data were analyzed using retrodictive qualitative modelling procedures and change-point analyses. After discerning the eight motivational patterns, they were categorized into three groups. Examination of each group's cases suggested a hypothetical motivational developmental path for remedial students. This path had some similarities to another motivational developmental path hypothesized in a previous study.

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## 1 Introduction

The declining younger population, increasing number of universities, and types of admission examinations in Japan have increased the proportion of high school students enrolled in universities or colleges to 60.4%, a record high, as of 2022 (Ministry of Education, Culture, Sports, Science and Technology [MEXT], 2022). This phenomenon has widened the gap in university students' academic abilities (The Japan Association for Developmental Education, 2005), requiring teachers to supplement this gap for students who lack fundamental knowledge at enrollment. This is referred to as remedial education, and students who require such education are referred to as remedial students. English is a subject extensively investigated in this field (e.g., Kiyota, 2009; Kiyota, 2010; Sakai et al., 2010). Students with low English proficiency also have low motivation and this is an important issue in remedial studies. Therefore, this study addresses remedial students' motivation.

The complex dynamic systems theory (CDST) was applied to examine the in-class motivational changes of remedial students with negative experiences in English classrooms and, thus, have complex mental states (e.g., the sense of inability caused by repeated failures in exams). The use of the CDST enables us to examine the fine-grained motivational development of remedial students since it requires researchers to collect data multiple times for a longer period from individual participants

(Van Dijk et al., 2011). Hence, it clarifies previously overlooked aspects of mental processing and provides useful educational suggestions. Moreover, although CDST was the third most frequently employed theoretical foundation in motivational empirical studies in the mid-2010s (Boo et al., 2015), CDST studies in L2 classrooms are still scarce (Hiver et al., 2021), and those in remedial English classes in Japan are severely limited (Yamaoka, 2019). Therefore, remedial students' classroom motivation needs to be studied using the CDST framework.

In the CDST framework, learners' motivation can be analyzed by incorporating their interactions with external contexts and their internal mental states (Ushioda, 2015). Therefore, this study defines motivation as "the ongoing process of how the learner thinks about and interprets events in relevant L2-learning and L2-related experience and how such cognitions and beliefs then shape subsequent involvement in learning" (Ushioda, 2001, p. 122).

## 2 Literature review

### 2.1 Remedial learners' motivation in Japanese EFL setting

Kiyota (2009) investigated remedial English learners' motivation using questionnaires. Learners were divided into three groups by learning stage, with interviews for the least motivated. Results suggested enhancing EFL learners' motivation based on their learning stages and experiences is important. Kiyota (2010) investigated intermediate- and lower-proficiency learners' self-awareness. He identified negative self-awareness and explored strategies to improve it. Results highlighted the importance of incorporating low-pressure group activities and redefining teachers' roles from knowledge transmitters to coordinators. Sakai et al. (2010) investigated the awareness of remedial students to devise appropriate support measures. They stated the need for teachers to identify appropriate scaffolding for each student, as well as the importance of e-learning. Watari and Nakashima (2020) examined the relationship between test score and motivational variables (self-efficacy, intrinsic value, and self-regulation). They found that only self-efficacy positively influenced test scores. Previous research has often approached the examination of remedial learners' psychological state as static, typically collecting data at a single point in time. To gain a comprehensive understanding of their mental states, it is imperative to shift focus towards elucidating their dynamic nature and how they evolve over time.

### 2.2 Complex Dynamic Systems Theory (CTST)

The CDST focuses on the non-linear progression of a situated complex system that interacts with various factors, rather than the mainstream linear approach of traditional motivational research (Dörnyei et al., 2015; Ushioda, 2009; Ushioda & Dörnyei, 2011). CDST values "when and how changes take place in the process of development" (Van Dijk et al., 2011, pp. 59–60), instead of, for example, whether changes occurred, by conducting a t-test. A dynamic system can be an individual person, classroom, or a person's emotional system (MacIntyre et al., 2015). The type of data needed to analyze these dynamics is "dense (i.e., collected at many regular measurement points), longitudinal (i.e., collected over a longer period of time), and individual (i.e., for one person at a time and not averaged out)" (Van Dijk et al., 2011, p. 62).

The term 'attractor state' plays a crucial role in CDST. Attractor states are defined as the states of a system in which a pattern emerges without intentional forces toward that pattern. For example, a first-year high school class may start with no solidarity, yet gradually stabilize into a supportive class. Consequently, behavioral patterns may emerge (Hiver, 2015). The resulting pattern is this attractor state. This process is known as self-organization. The timescale, time window, and initial conditions are other crucial aspects of the CDST. de Bot (2015) argued that it is impossible to capture the entire developmental process. Therefore, specifying the study duration (time window) and defining how closely the object is examined (timescale) is necessary (de Bot, 2015). Moreover, as each individual develops uniquely over time, it is important to consider the state of the individual during

the initial measurement. MacIntyre and Gregerson (2013) describe this state as an initial condition (as cited in Verspoor, 2015, p. 38). Depending on the stage at which one begins the measurement, the subsequent analysis is quite different. Hence, identifying the state (variable or stable) of each individual's initial condition at the time of measurement is important.

### ***2.3 Motivational research from the CDST perspective in classrooms***

Empirical studies on how to intervene in a system's behavior in instructed L2 settings are limited (Hiver, et al., 2021). Shirvan et al. (2020) suggested that learners experienced low foreign language enjoyment moments when they focused on linguistic accuracy and anxiety about embarrassment in front of their peers, whereas they experienced high foreign language enjoyment moments when they received support and positive feedback from their teachers. Tung and Huang (2021) found that learners' initial positive beliefs in learning English played a crucial role in their autonomy. Positive beliefs helped sustain positive affective states, leading to increased motivation. During the learning process, a sense of achievement, fun, peer relationships, and teacher support alleviated negative feelings. Wang and Littlewood (2021) investigated a retrospective motivational graph of English learning between kindergarten and the present drawn from advanced Chinese English as a foreign language (EFL) graduate learners. The L2 learning environment, including teachers' personalities and teaching methods (e.g., the grammar-translation method), was the most salient demotivation element. Participants suggested that both external (e.g., the L2 learning environment) and internal factors, such as the use of English movies/songs, can contribute to remotivation. Pack et al. (2021) indicated that certain motivational patterns, such as teachers as motivators or poor physical conditions as demotivators, whereas motivators and demotivators can be contradictory depending on the initial conditioning and given contexts. These studies highlight learners' motivational patterns by focusing on their changes caused from certain interventions or influences such as teaching methods, teachers' attitudes and learners' physical conditions.

In the Japanese tertiary context, the focus has also been on analysis of learners' motivational patterns or fluctuations. Nitta and Asano (2010) found that initial low-motivation states did not exhibit upward motivational development throughout the course, attributing this result to a one-directional style teaching. However, Nitta (2013) argued that even if initial motivation is not high, motivation develops nonlinearly over time when learners have strong motivational attitudes toward English learning and specific goals. Nitta and Baba (2015) found that EFL students' ideal L2 self (Dörnyei, 2005) evolve over time by repeating writing tasks and employing self-regulatory processes. Yashima and Arano (2015) stated that short-term motivational fluctuations are caused by experiences such as affective reactions to the atmosphere, teachers, friends, and teaching methods/styles. If learners appraise these factors as meaningful, and if the appraisals are strengthened, their motivation would be sustained. In line with Pack et al. (2021), Kikuchi (2017) indicated that each student reacted differently to various aspects of classrooms/their lives by analyzing data using retrodictive qualitative modelling (Dörnyei, 2014). For instance, giving presentations in classes can be demotivating for some students, but motivating for others. Additionally, a highly ideal L2 self in the initial state helps maintain high levels of other motivational constructs over time. Yamaoka (2019) investigated the motivational trajectories of 14 Japanese university freshmen over a one-year period. Their English proficiency was almost equivalent to that of first- or second-year junior high school students in Japan. At the end of each class, students completed the Weekly Motivational Questionnaire (WMQ; Nitta & Asano, 2010). Teaching journals and class observations were also included in the data analysis. Consequently, the trajectories were narrowed down into three categories: 1) stability or transition into stability, 2) change or transition into change, and 3) change to stability to change. A hypothetical motivational developmental path was identified through a subsequent examination of the initial conditions. These findings suggest that the use of enjoyable communicative activities, creating a positive classroom climate, and matching class content or instructions to students' interests are crucial for gradually stabilizing their motivational state at a higher level.

Previous studies have analyzed individual motivational patterns and revealed specific in-class

interventions to motivate students at the micro/macro level, the relationships between initial conditions and motivations, and the complexities of motivators/demotivators. However, participants' English levels were generally high, intermediate, or unstated in these studies. Remedial studies which investigate learners' motivation utilizing the CDST framework are severely constrained. Although Yamaoka (2019) found some aspects of English remedial students' motivation, the data were taken only from questionnaires, teaching journal, and class observation. Moreover, the methodological framework to identify salient patterns of students' motivation was unclear. Therefore, this study fills these gaps by investigating English remedial students' motivation through the CDST framework, adopting retrodictive qualitative modelling (Dörnyei, 2014), including interview data, to identify notable patterns. Furthermore, as there is a scarcity of previous studies, the findings of Yamaoka (2019) are a starting point toward understanding the motivational dynamics of English remedial learners. Thus, it is important to compare the results in the present study with those of Yamaoka (2019).

#### **2.4 Retrodictive qualitative modelling**

To investigate the complex dynamic systems of classrooms, Dörnyei (2014) proposed retrodictive qualitative modelling (RQM), which helps identify a complex system's idiosyncratic patterns. As this study aims to investigate the complex dynamic systems of remedial students' motivation in English classrooms, it adopts retrodictive qualitative modelling (RQM).

### **3 Research questions**

The research questions in this study are as follows:

- RQ1: Have the motivational patterns of remedial students in English classes been identified? If so, what types are they?
- RQ2: What contextual elements affect these motivational patterns?
- RQ3: How do the outcomes obtained through (1) and (2) can be compared to the findings of Yamaoka (2019)?

Pedagogical suggestions were made based on the results.

### **4 Methods**

#### **4.1 Participants**

Fifteen university freshmen (three female, twelve male) took a one-year English course taught by the author, focusing on improving their listening/speaking abilities. Their majors were undecided at the time of the study. The class level was the third lowest among the ten classes, which were classified based on the listening section of the Eiken IBA scores. Eiken IBA was used as a placement test. It has five levels based on the Eiken exam, the most widely administered test in Japan (Eiken Products, n.d.). The class's target level was to achieve the Eiken third grade, meaning that their level was in the fourth or fifth Eiken grade. MEXT sets this grade as a benchmark of the recommended English ability for junior high school graduates (Eiken Research, e.d.). Therefore, having the third grade set as a target level indicates that the students were remedial learners.

#### **4.2 Instrument**

A questionnaire, semi-structured retrospective interviews, teaching journals, and classroom observations were employed.

The questionnaire contained a Weekly Motivational Questionnaire (WMQ; Nitta & Asano, 2010)

section and space for comments on the class. Nitta and Asano (2010) created the WMQ by adapting a measure introduced by Gardner et al. (2004). Gardner et al. (2004) claimed that motivation in foreign language learning classrooms comprises three attributes in the socio-educational model: “to expend effort to learn the material, to want to learn the language, and to enjoy the experience of learning the language” (p. 4). Based on these attributes, they developed and adjusted a state-motivation thermometer (motometer), generating a weekly motivational questionnaire (WMQ) containing the following items: (A) how hard you tried, (B) how much you understood, and (C) how much you enjoyed. At the end of each class, students answered this questionnaire, reporting their state on each item about the class they attended that day. Confining the items to three was appropriate, considering class time constraints and workload. Items were rated on a six-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree).

The teaching journal was included as a data source to obtain more profound understanding about students' state. Questionnaire data is learners' self-report, in which some students might attempt to impress teachers or provide answers without thorough considerations. Therefore, complementing questionnaire data with additional perspectives, such as teacher's perspectives, is important. In addition to writing the teaching journal, the author also conducted semi-structured interviews in students' L1 and participant observations in her classroom.

### ***4.3 Teaching methods and learning materials***

A one-directional teaching style has an adverse effect on low motivation, hindering its development into an upward trend (Nitta & Asano, 2010). Therefore, reflective teaching (Richards & Lockhart, 1996) was adopted, which enables teachers to reflect on their teaching and helps them improve their teaching while considering students' opinions or needs.

As the goal of the course was to learn English focusing on listening/speaking, an American TV drama, *Glee*, was chosen as the core teaching material. More importantly, Tanaka (2009) argued that teaching English communicatively using foreign films/dramas enhances low-motivation students' motivation toward listening/speaking activities; Tung and Huang (2021) also suggested that these materials could remotivate demotivated students. Moreover, linguistic games were actively employed to facilitate students' use and understanding of the grammar that they learned in class.

A typical class followed this procedure: grammar learning or listening quizzes from Eiken, grammar-based games, and watching a scene from *Glee* using a worksheet created by the instructor. Each week, the instructor selected a scene from the drama and created a worksheet with a few blanks that students need to fill in after watching the scene several times. The grammar point for each lesson was chosen based on a key grammatical concept featured in the selected scene.

One purpose of this study was to compare its results with those of Yamaoka (2019); therefore, both English classes surveyed here and in Yamaoka (2019) were taught by the author. Furthermore, while the teaching methods and materials were almost identical, the methods/materials were changed or adjusted according to students' reactions or needs.

### ***4.4 Data collection and analysis***

The weekly motivational questionnaire (WMQ) was distributed at the end of each class throughout the 2017 school year (20 times in total; weeks 1–11 for the first semester, weeks 12–20 for the second semester); five minutes were allocated each time. Students were informed that the collected data would be used solely for this study, that their answers would not affect their grades, and that the confidentiality of their personal information would be protected. Data were also collected from student comments on the questionnaire, classroom observations, retrospective interviews, and teaching journals.

Retrodictive qualitative modelling (RQM) was used to identify a complex system's idiosyncratic patterns following three steps: 1) Identifying salient student types in the classroom, 2) identifying students who are typical of the established prototypes and conducting interviews with them, and 3)

identifying the most salient system components and the signature dynamic of each system.

In this study, first, to identify salient student types, the questionnaire data were first qualitatively and anonymously analyzed using Nitta's (2013) procedure. He categorized degrees of stability into three types according to the range in which each line moved: 1) when a line moves beyond two ranges, the trajectory is classified as "change"; 2) when it is within two ranges, it is labeled as "limited change"; and 3) when the line does not move or moves only within one range, it is identified as "stability" (Nitta, 2013). Through this process, the macro patterns of the class were investigated. Weeks without survey answers due to students' absences were included in the analysis, since that information is also valuable for understanding learners' motivation.

Second, salient motivational types from the macro patterns were identified. Students of salient motivational types participated in semi-structured interviews after each semester (July 2017, January 2018). Interviews were conducted individually in Japanese for 15–20 min. Students made introspective comments based on the fluctuations represented in the WMQ by examining their own sheets that consolidated the results throughout the year. Surrounding information, such as teaching content, was also provided to help students recall their motivational state. The author recorded and transcribed follow-up interviews. Since participation in the interviews was voluntary, only one student (Taro) participated in the interview in the first semester and two (Taro and Sho) in the second semester. At each interview, the interviewees were told that they need not answer any questions they did not want to, that they could quit at any time if they did not want to proceed, and that their answers would not affect their grades. The interview data was analyzed by identifying significant episodes in students' remarks, and these identified segments were interpreted alongside the data from the WMQ.

Thirdly, a change-point analysis (Baba & Nitta, 2014; Nitta & Baba, 2015; Taylor, 2000) was utilized to statistically detect where the changes occurred using the change-point analyzer (CPA). Changes were detected as follows. The cumulative sums of the differences between the values of each data point and the average were calculated, and changes were indicated if they occurred. An estimator of the magnitude of the change was then selected to perform a bootstrap analysis that detected whether the change occurred and determined the confidence level for the change (Taylor, 2000). Detailed information, such as the confidence level and confidence interval (95% confidence interval with 1,000 bootstraps without replacement), was provided for each change (Nitta & Baba, 2015; Taylor, 2000). The detected changes were referred to for individual case analysis. Other data from classroom observations and student comments on the questionnaire were also used to elucidate the factors of the detected changes.

## 5 Results and discussion

Table 1 presents the descriptive statistics of the WMQ results. Cronbach's alpha was calculated using SPSS, and all the values were greater than .90. Thus, the questionnaire results were deemed appropriate for data analysis.

**Table 1. Descriptive statistics and Cronbach's alpha**

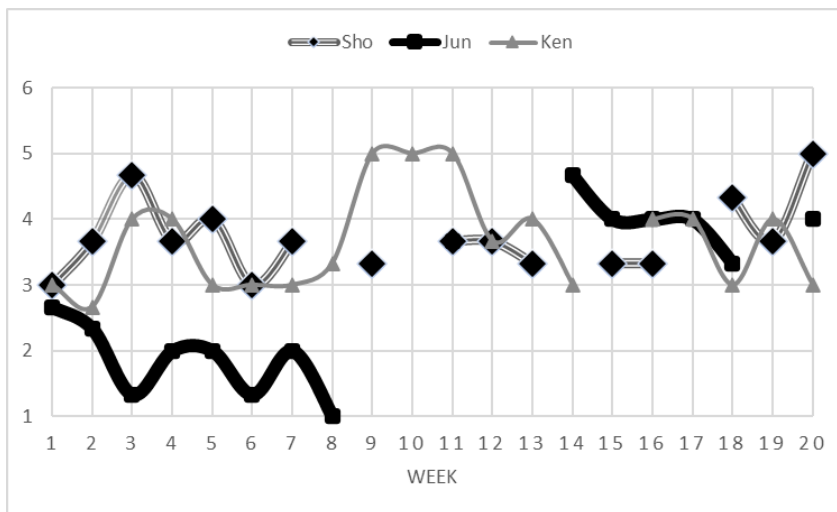
Week	<i>M</i>	<i>SD</i>	$\alpha$	Week	<i>M</i>	<i>SD</i>	$\alpha$
1	4.29	1.05	.92	11	4.84	1.05	.94
2	4.24	1.10	.90	12	4.59	0.93	.95
3	4.49	1.28	.93	13	4.88	1.00	.94
4	4.53	1.20	.93	14	4.89	1.02	.97
5	4.36	1.23	.97	15	4.86	1.01	.98
6	4.10	1.41	.95	16	4.81	1.05	.99
7	4.43	1.22	.98	17	4.93	0.99	.97
8	4.38	1.23	.96	18	4.74	1.10	.95
9	5.00	0.90	.98	19	4.90	1.03	.99
10	5.19	0.91	.98	20	4.84	1.07	.97

The macro patterns of the class as a group are presented in Table 2. The stable patterns, or patterns that settled into stability, account for nearly 70% of the total. While stability was the most frequently recognized pattern in Yamaoka (2019) (21.4%), it was the second-largest pattern in this study, following limited change-stability. Of the eight patterns, two had three phases: change-limited change-stability, and change-stability-change.

**Table 2. Group motivational macro patterns**

Pattern	Number of students	%
Stability	4	26.7
Limited Change-Stability	5	33.3
Change-Stability	1	6.7
Change-Limited Change-Stability	1	6.7
Limited Change	1	6.7
Limited Change-Change	1	6.7
Stability-Limited Change	1	6.7
Change-Stability-Change	1	6.7

The patterns were sorted into three groups for further analysis: 1) transition into stability or stability, 2) transition into change or change, and 3) change to stability to change. In this categorization, changes included limited changes. Pseudonyms were employed for students in the subsequent case examinations: Ken and Taro's cases for 1) transition into stability or stability, Jun's case for 2) transition into change or change, and Sho's case for 3) change to stability to change. Figure 1 shows the patterns for each group.



**Fig. 1. Patterns of the Three Groups**

In Figure 1, Ken's case represents the transition into stability or stability, as Ken's trajectory shows a clearer pattern than Taro's. Three items, namely enjoy, effort, and understanding, were averaged out in this figure, and subtle changes in each item disappeared. Therefore, each case is analyzed in detail in the remainder of Section 5.

## 5.1 Cases of transition into stability or stability

### 5.1.1 Ken's case

The first case is that of Ken. The CPA detected week 9 as a change, with a 92% confidence level. From a qualitative point of view, weeks 2 and 3 also exhibited a significant change. Hence, his case was analyzed by unraveling what occurred around weeks 2 and 9.

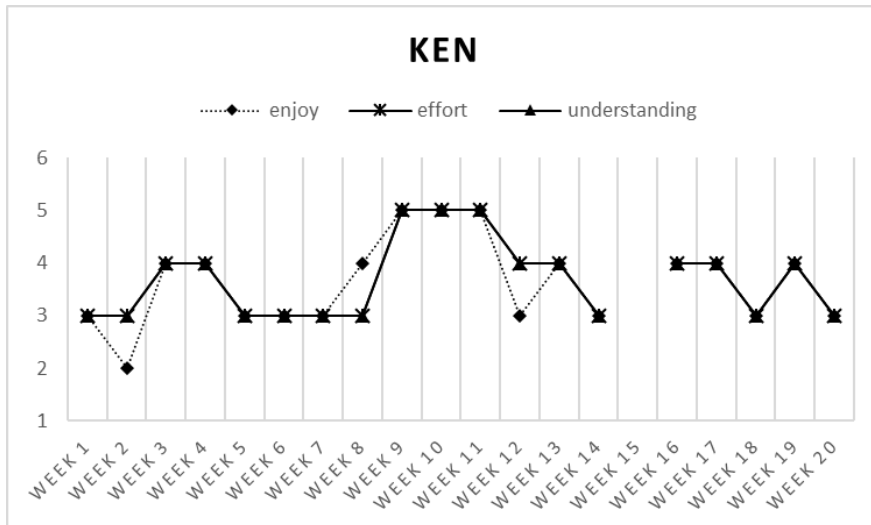


Fig. 2. Case of Change to Stability

Ken was among the most competent students in the class, sometimes voluntarily answering questions asked by the instructor to the entire class or other classmates. However, Ken's most challenging aspect was his attitude toward the instructor. For instance, he almost always responded to the instructor's direct questions angrily saying "Huh?" or "I don't know!".

The change from week 2 to week 3 was the largest (moving beyond two ranges). His behavior was the worst in week 2, as reflected by his lowest WMQ score (Figure 2). Therefore, the instructor had a small private session to understand his problems in class after week 2; the instructor asked him if there was anything about the class that he did not find satisfactory. However, he said that he did not dislike anything about the class. During the session, he was instructed to use proper verbal expressions in class. Notable changes occurred in the subsequent week. In week 3, he indicated a higher level of motivation, and in the comment, he wrote in Japanese, "Although it is difficult, I do my best because all I can do is memorize." This was his first and last comment. From week 3, his problematic attitude decreased and gradually improved toward the end of the semester. The instructor tried to understand the student first, rather than blaming him for his attitude. Thus, he might have noticed that he was considered a valuable member of the class, which may have led to his attitudinal and motivational improvement.

His change can also be explained by the objective self-awareness (OSA) theory (Duval & Wicklund, 1972). OSA is defined as "when attention is directed inward, and the individual's consciousness is focused on himself. He is the object of his own consciousness – hence 'objective' self-awareness" (p.2). The OSA theory posits that OSA allows people to automatically compare the self with standards of correctness. If the discrepancies between these are perceived as reducible or not too large, people make efforts to conform to the standard (Duval & Wicklund, 1972; Silvia & Duval, 2001). Ken became objectively self-aware by reflecting on his aversive attitude toward the instructor, which initiated his attempt to conform to a more socially acceptable attitude. This psychological change resulted in the comment in week 3, in which he expressed what he can do in the class.



The most substantial motivational surge occurred in week 9. In week 9, the instructor explained the gerund using PowerPoint slides with the word “baseball” in example sentences, such as “I like watching baseball games.” During the class, Ken asked the instructor if the slide was created for students who belonged to a baseball club as he belonged to the university’s baseball club. She said ‘no’ explaining another instructor created slides for general use in any classroom. However, the fact that the teaching materials were connected to something Ken cared about caught his attention, and he actively participated in the class. Moreover, this was the first time he talked to the instructor in a socially appropriate manner. It seemed considerably important for him to learn something related to his own interests. The mere use of familiar words enhanced his motivation. In short, there seems to be a connection between Ken’s biggest change in week 9 and the use of materials matching his interests. Dörnyei (2001) noted that it is important for teaching materials to be related to student interests. Thus, the use of baseball in teaching materials helped enhance his motivation.

Ken’s case suggests that it is crucial to promote self-reflection to develop upward motivational trends. Additionally, it was confirmed that using materials that interest students is important in motivating them.

### 5.1.2 Taro’s case

The second notable case is that of Taro. The CPA detected changes in weeks 9 and 19 with a 92% confidence level. However, based on a qualitative analysis, Taro’s noteworthy changes can be narrowed down to three points: weeks 4, 14, 15, and 19. Therefore, weeks 4, 9, 14, 15, and 19 (Figure 3) were closely examined.

Although his English ability and motivation were relatively high, his confidence in his ability was significantly low. He mostly looked down when he was asked to answer questions and quietly sat in class as if he were trying to hide from others.

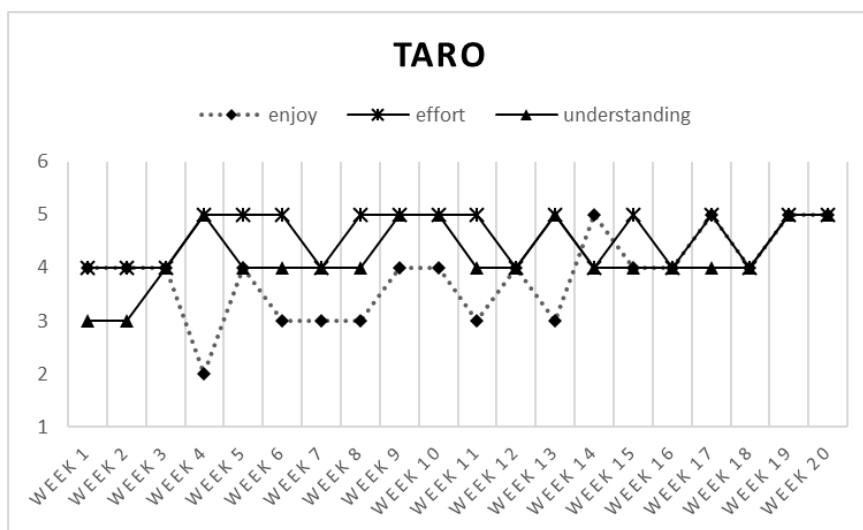


Fig. 3. Case of Change to Stability

In week 4, his motivation, especially “enjoy,” plummeted to level 2. In a newly employed activity, students were to write what they did during consecutive holidays, stand in two lines to form pairs, and converse based on what they wrote. The pairs were changed by moving to the right after a few minutes. The activity was repeated in week 15. The specific reasons why this impacted him unfavorably were discovered in the interviews. In the first interview, he attributed the decline to the activity’s formation by referring to his aversive feelings of standing in front of others and speaking,

which is in line with Shirvan et al. (2020). However, in the second interview six months later, he focused on a different aspect of the activity:

Taro: It is a little difficult to think of a sentence...sentences by myself.

Author: I see.

Taro: I don't really understand the structure.

His evaluation of this activity clearly changed from a negative feeling toward speaking with peers (week 4) to the difficulty in formulating English sentences (week 15).

As the year progressed, his motivation gradually consolidated and settled into an attractor state in a high position (Figure 3). Asked about the cause of the gradual positive stabilization of his motivation in the second interview, he said "That's because I got used to the environment," which explains what occurred in weeks 4 and 15. Although he showed a negative reaction to speaking with classmates in week 4, his motivation did not decline in week 15. Moreover, his focus shifted to the difficulty of writing English rather than a reluctance to speak in front of others, presumably because his classmates were no longer strangers. He became accustomed to the class by week 15.

Regarding the contextual factors represented by Taro's remarks, the CDST considers that the learner and context are inseparably connected, and learners' memories or experiences are also considered internal contexts (Ushioda, 2015). This "person-in-context" (Ushioda, 2009) viewpoint is reflected in Taro's motivational growth, brought about through his interaction with external environmental factors. Yashima and Arano (2015) reported a temporal motivational dent in the first semester attributed to fatigue from attempts to become accustomed to a new environment. However, in Taro's case, it was a kind of refusal toward his environment. His case could be explained from the perspective that remedial students react sensitively to external contexts while having relatively negative previous experiences about learning English as an internal context. Therefore, they are easily perturbed by external factors and may take time to acclimate.

The CPA detected the remarkable change toward consolidation in week 9, when all items were in the highest position. Taro commented that he could understand what was explained in the PowerPoint slides, and correctly answered a question as stated in the teaching journal. The fact that he came to understand the class content might have helped consolidate his motivation in a higher position. This supports Yamaoka's (2018) argument that the enjoyment of understanding is crucial to motivate remedial students. In week 14, when he reported his highest "enjoy" rating, a game of interrogative sentences was used, in which different sets of questions/answers were presented as an interview without mentioning the name of the answerer. Students guessed who or what the interviewee was by referring to their answers. Concerning this activity, he said in the interview "It was kind of fun. I enjoyed a little because I could understand." The surge of the "enjoy" item in this week reflects a remarkable change in his previously negative psychological state. According to the teaching journal, he correctly answered and smiled shyly in the week 19 class. This implies that he gained confidence in learning English and that his smile was evidence of internal improvement.

Creating a cooperative and friendly atmosphere is crucial to supporting this type of student's acclimation to a new environment. This can be achieved by using icebreaker games in the first few classes in Japanese or ideally in English. As the week 14 case indicates, it is important to experience "the enjoyment of understanding and participating without worries" (Yamaoka, 2018, p. 131) to motivate them. Overall, utilizing fun and understandable activities is key to sustaining an upward trend, which leads to an attractor state.

## 5.2 Cases of transition into change or change

Only one student, Jun, was included in this case. His case was analyzed before and after week 11 (Figure 4), as the CPA detected a change in week 11 with a 100% confidence level.

### 5.2.1 Jun's case

Jun was noticeably quiet and often irritated. Although Jun's English ability was classified as high in class, he seemed to underestimate it. This self-evaluation was reflected in his motivational trajectory and comments. He wrote, "It was good to know that I can keep up with this class" in week 1, "Game was good" in week 2, and "I could understand the contents well after I explained to other classmates" in week 3. His comments indicated a positive attitude toward the class and his understanding of its content. However, his ratings indicated that his understanding, effort, and enjoyment were not high enough for him. Therefore, it can be said that he has a strong sense of inability to learn English, which might explain his irritation in class.

His lower mental state before week 11 can also be explained by the use of pair work in class. Jun commented four times, including the last time in week 7, that "I hate pair work." Pair work was used once or twice per class until week 5. However, it was used four and three times in weeks 6 and 7, respectively. His motivation hit the lowest point in week 8 when pair work was used once. In response to his comments from week 7, the instructor allowed students to choose to work individually or in pairs for some of the activities in which pair work was previously compulsory.

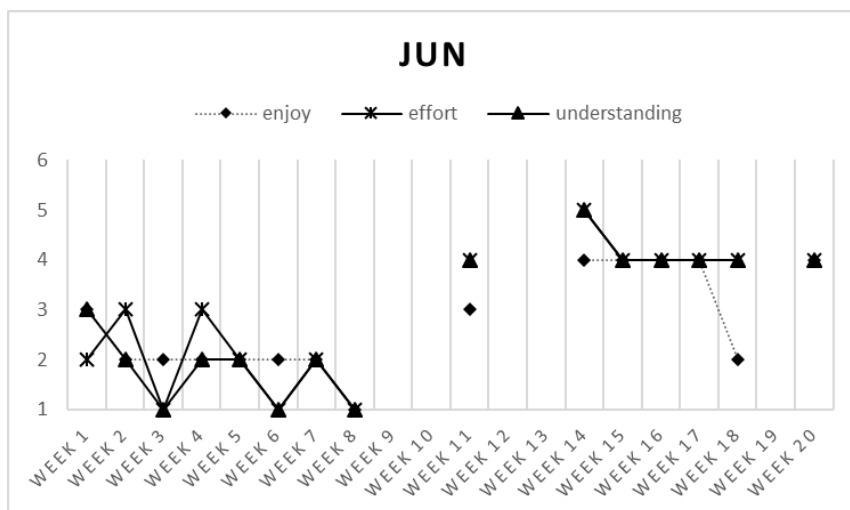


Fig. 4. Case of Change to Change

The CPA detected that Jun's motivation significantly increased at week 11 after two weeks of absence and started to stabilize at a higher level. The increase in week 11 may be because the instructor adjusted the class activity based on his comments, which might have relieved him, resulting in motivational improvement. Interestingly, while his motivation vacillated at a lower state, it did not enter an attractor state. Therefore, he escaped from his lower state.

Despite significant motivational growth after week 11, his reported enjoyment plunged in week 18. A unique aspect of the class content in week 18 was that games or active/communicative learning elements were not used. A passive teaching style could be one of the factors that adversely affected his motivation. However, it reverted to a higher state the following week, implying that his motivation began to show an attractor state. As Verspoor (2015) argued, "once the sub-system is in an attractor state and gets perturbed, it will probably return to the attractor state, unless counteracted very strongly by some external force" (p. 42).

An important factor that can be elicited from this case is that, while ignoring what the teacher thinks effective and designing class content solely based on students' requests should be avoided, it is essential for teachers to remember that teachers and students co-navigate the class. Additionally, even if a student attains a certain attractor state, they can easily be pulled back to a lower state if the

class is taught passively. In short, as stated in previous studies (Nitta & Asano, 2010; Wang & Littlewood, 2021), to generate an upward fluctuation and uphold the pattern, it is important to avoid teaching passively.

### 5.3 Case of change to stability to change

The “change to stability to change” case showed a unique pattern. Sho was the only student who exhibited this transition. His English level was the lowest in class. For example, he could not satisfactorily pronounce the alphabet or basic English words nor could he formulate fundamental English sentences. Although no change was statistically detected by the CPA, weeks 1–3, weeks 4, 6, 9, 10, and 12 were qualitatively analyzed to reveal how his motivation transitioned.

#### 5.3.1 Jun’s case

Sho commented in week 1, “I cannot understand English at all.” In an interview after the second semester, he reminisced, saying, “I thought that the class level was so high that it did not match my level.” In fact, the instructor wrote in the week 1 journal that Sho seemed to have difficulty catching up with the class. Therefore, she slowed down the progress of the class from week 2, and he promptly commented that he had come to understand English a little that week. His motivation climbed three weeks in a row (Figure 5). This drastic change highlights the importance of reflective teaching.

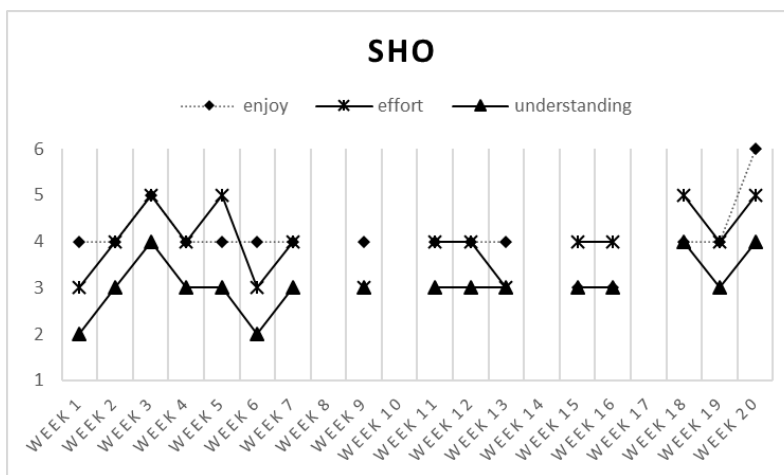


Fig. 5. Case of Change to Stability to Change

In week 3, when his trajectory transitioned to a higher position, the jigsaw method (Aronson & Patnoe, 1997) was applied for the first time to allow students to learn auxiliary verbs. Several groups of three or four students were assigned one auxiliary per group with a copy of the Japanese explanation from a textbook. After studying the usage or definition of auxiliary verbs, each group taught the verb to the rest of the class in Japanese. Perhaps this collaborative and active learning style helped him understand English and enhanced his motivation. In week 3, he commented, “I’m not good at English, but I do my best.”

Nevertheless, his trajectory gradually declined during weeks 4 and 6. As explained in Taro’s case, students wrote about what they did during consecutive holidays and spoke in pairs in week 4. In the WMQ, Sho wrote, “English is difficult.” Given that Taro also reported difficulties with this activity, Sho’s decline in motivation can be ascribed to this activity. Thus, it is reconfirmed that activities requiring students to use English creatively in the early stages of the course must be used carefully with ample scaffolding. Otherwise, it creates the impression that English is difficult and can lower students’ confidence and motivation.

A further decline in week 6 indicated another struggle. Dictogloss was introduced for the first time in week 6, in which students listened to an English passage and reconstructed it afterwards, based on the keywords they noted. The listening materials were taken from past STEP third grade tests, which was the target level of this class, and students worked in pairs. The instructor used this activity until week 10 as students with high ability and motivation found it enjoyable and useful. Based on class observations, however, it seemed to be a difficult task for students like Jun or Sho. In Sho's case, this difficulty decreased his motivation because he did not seem to have problems in pair work. Thus, tasks lower than their actual target level, such as those from the STEP fourth or fifth grade, should be selected for the first period of the course. In short, the task difficulty for remedial students must be at their current level or lower.

Sho started to stabilize at the middle level from around week 9 (Figure 5). Week 12 was the beginning of the second semester, and his motivation did not deteriorate toward the end. In the second semester, along with the teaching procedures in the first semester, the instructor decided to teach word pronunciation using phonics to enable students like Sho to pronounce English words. A few phonics were chosen in each class, and the students practiced by repeating or finding the same sound in the worksheets. When asked about the reason for the stabilization in his motivation, he did not attribute it to familiarization with the new environment, saying "I think I was not nervous from the beginning," and replied as follows:

Sho: Well, probably, I think I could understand more in the second semester.

Author: I see. Is that because of another class you take? Another English class? You are taking another English class, aren't you?

Sho: No, I don't really think that's it...

Author: Not that? Then what would the reason be?

Sho: Well, maybe it's because I learned English through various activities, though I am not sure (laughs).

Author: Such as practicing phonics?

Sho: Yes.

I: And working on Eiken test questions, watching Glee... I see. So, looking back, things such as games are...

Sho: Well, I seemed to enjoy those activities (laughs).

According to him, employing various learning activities, such as authentic materials, games, and phonics, helped improve his understanding and motivation.

In Sho's case, each change described above elucidates meaningful elements. The first reasserted the importance of reflective teaching in remedial classes, particularly during the initial stages of the course. After the initial modification of overall progress, collaborative tasks in Japanese can be effective in boosting motivation. Moreover, the English level in tasks needs to be below or at the same level as that of the learners, at least initially. Ultimately, the continuous use of diverse activities that are rectified or added according to students' needs can help students with low motivation and ability to progress and reach an attractor state.

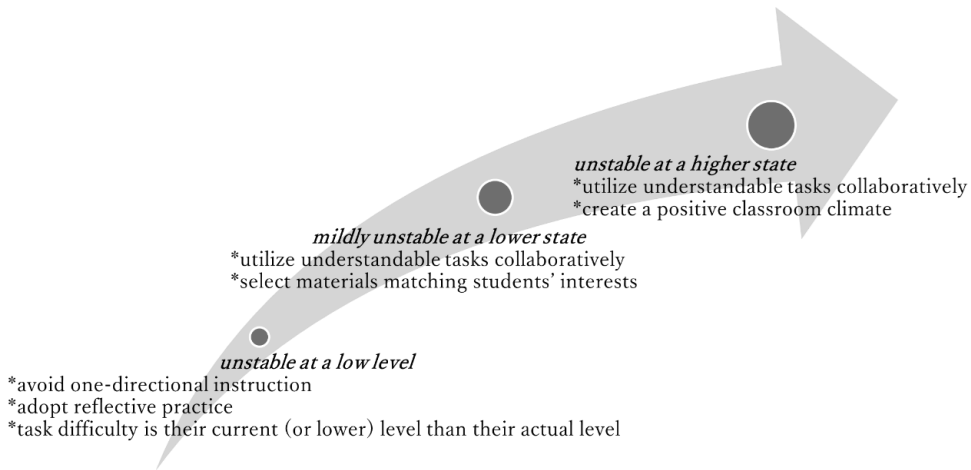
#### ***5.4 Initial conditions and motivational developmental path***

The initial conditions were investigated for further analysis. These were defined as the period from weeks 1 to 6 in this study, considering that the length of the course was one year. The initial state of each student is summarized in Table 3. Their scores on the Eiken IBA were almost identical; thus, their English level was based on the instructor's in-class observations.

**Table 3. Initial conditions**

Initial Condition	Student	English Level
Unstable at a higher state	Taro	Higher
Unstable	Sho	Lower
Mildly unstable at a lower state	Ken	Higher
Unstable at a very low state	Jun	Higher

According to the initial conditions and case analysis, the motivational developmental path of remedial students is illustrated in Figure 6.

**Fig. 6. Hypothetical Motivational Developmental Path**

It is natural for students' motivation to fluctuate unstably at an extremely low level at the outset of the course, as they likely had had repeated negative experiences (Jun's case). However, after learning in a reflective teaching class where their opinions are respected, and one-directional instruction is avoided, they proceed to an unstable state (Sho's case). Then, if the task level is adjusted to the students' current level or slightly lower, the instability would gradually develop into being mildly unstable at a lower state (Ken's case). These tasks must be utilized collaboratively. For instance, discovering and teaching based on students' interests seem to be particularly important at this stage. Thus, another motivational pattern – unstable at a higher state – emerges (Taro's case). In this stage, it is necessary to employ tasks that are understandable and enjoyable in a positive atmosphere.

### 5.5 Comparison of a motivational developmental path

Yamaoka (2019) hypothesized that remedial students' motivation develops sequentially from instability or stability at a lower state to stability at a higher level. Moreover, initially utilizing enjoyable communicative activities that promote participation without anxiety, creating a positive classroom ambience, and finally matching class content or instruction with students' interests, are suggested as crucial facets of advancing to the next phase. By comparing the present model (Figure 6) and that of Yamaoka (2019), previously undiscovered aspects are also recognized.

Utilizing enjoyable communicative tasks that promote participation without anxiety, regardless of the motivational stage differentiates the two models. Although the necessity of such activities was found in the earlier stages of the previous model, it is suggested for both the earlier (Sho's case) and later stages (Taro's case) in the current model. More importantly, according to the findings from the

current model, if motivation is unstable at a low level, respecting students' opinions, avoiding one-directional instruction, and choosing a slightly easier level than students' actual level are vital.

Similarities can also be found between the two models. Taro's case reaffirms the usefulness of creating a positive classroom climate, as found in the previous model. It can be restated that paying attention to creating and maintaining a positive classroom atmosphere is required to stabilize student motivation at a higher position because they are susceptible to external contexts after experiencing instability at a lower state. Matching teaching materials to students' interests is also recurrently mentioned at a relatively later stage in both paths. Hence, this aspect is crucial, as student motivation shows favorable stability to a certain extent.

These aspects can be understood by referring to self-determination theory postulated by Deci and Ryan (2002). They posit that when humans' three fundamental needs (competency, autonomy, and relatedness) are met, we become more intrinsically motivated. When students' motivation is unstable at a low level, it is important to fulfill their need for competency by slightly lowering task difficulty and fulfill their need for relatedness by actively using enjoyable communicative tasks. After students' motivation reaches a mildly unstable at a lower state, in addition to the other two needs, it is vital to satisfy learners' autonomy by matching learning materials with their interests. Finally, when students' motivation is at unstable at a higher state, creating a positive classroom ambient by fulfilling all three needs is crucial to stabilize and enhance learners' upward motivation.

Human development is complex and unique. However, "predictable tendencies in human development" (Verspoor, 2015, p. 39) are undeniably perceivable. For example, infants trace certain patterns as they progress toward walking, such as crawling, sitting up, and standing (Verspoor, 2015). Thus, identifying similar patterns is essential to understand the motivational development of remedial students.

## 6 Conclusion

In this study, eight motivational developmental patterns of remedial English learners (e.g., stability, limited change-stability) were discovered and categorized into three categories: transition into stability or stability, transition into change or change, and change to stability to change. Subsequent micro analyses revealed complex fluctuations in each trajectory. Employing enjoyable communicative tasks at both earlier and later stages, avoiding one-directional instruction through, for instance, listening to students' needs and using a slightly easier level materials were found to be crucial factors. Additionally, comparing the results with those of Yamaoka (2019) revealed recurrent elements, such as creating a positive classroom atmosphere, suggesting that certain aspects can be generalized in remedial students' motivational development. These findings contribute to understanding the complex dynamic system of remedial English students' motivational development in the Japanese university context.

Despite the findings of this study, the following limitations need to be acknowledged. First, the focus was on one classroom for only one year with specified teaching content, and the influences from outside of the classroom were not examined. Hence, the outcome would be one-dimensional. Fully applying the results of this study to the complex system of remedial students' motivation is infeasible. Another limitation is the small number of participants and the gender imbalance among them. Furthermore, various methods of CDST analysis should be utilized, explored, and refined. Therefore, in future research, an accumulation of inquiries under empirically variable conditions with larger number of gender-balanced participants is necessary to shed light on other facets of student motivation from a CDST perspective over a longer investigation period.

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