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Understanding motivation-in-action from a Dynamic Systems Approach[1)]

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Abstract

We report on part of an ongoing longitudinal study on students' motivational changes in EFL classrooms. Research on second language (L2) motivation has traditionally focused on a static state, or what type of motivation contributes to successful L2 learning, but such choice motivation is different from executive motivation needed for sustaining a long period of learning. Drawing on a process model of L2 motivation (Dörnyei & Ottó, 1998), this study examines how first year university students' executive motivation changes from the beginning to the end of EFL courses over one year (n=164). In addition to pre-course and post-course questionnaires, short weekly questionnaires are provided at the end of every class for self-assessing students' own motivation towards the class. Together with qualitative analysis of teacher reflection, the findings uncover underlying reasons for motivational fluctuation and evolution in EFL classrooms.

Research backgrounds

Temporal dimension of motivation

At the end of the twentieth century, Dörnyei (2000a) argued that a major challenge for motivation theories in the 21st century would be to describe the temporal organization of motivation, that is to portray motivational processes as they happen in time. Most second language (L2) motivation studies in the twentieth century tended to regard motivation as a more or less static mental state (most notably, dichotomous distinction of integrative and instrumental motivation, defined by Gardner and Lambert), but since around the end of the last century, we have witnessed some thought-provoking studies paying particular attention to time dimension. One good example is a series of work by Ushioda (1996, 1998, 2001), in which she involves a temporal frame of reference for understanding the dynamic nature of L2 motivation, implementing a more qualitative approach to complement the dominant quantitative tradition. Ushioda (2001) postulates that "Motivation is thus viewed not simply as cause or product of particular learning experiences, but as process—in effect, the ongoing process of how the learner thinks about and interprets events in relevant L2-learning and L2-related

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experience and how such cognitions and beliefs then shape subsequent involvement in learning". (p. 122)

Process model of L2 motivation

Although interest in dynamic motivational changes in L2 research began just around a decade ago, focus on process rather than product was recognised early in the area of educational psychology. In their Action Control Theory, Heckhausen and Kuhl (1985) emphasised the distinction between 'predecisional' and 'postdecisional' phases. While in the former initial wishes and desires are articulated, the latter involves motivational maintenance and control during the actual process, and importantly these two phases are directed by largely different motives.

Building on this model, Dörnyei and Ottó (1998) constructed a process model of L2 motivation, synthesizing a number of studies in a unified framework. The entire model involves a series of preactional — actional — postactional stages, each of which is enhanced and hindered by various motivational influences. The first, preactional phase, is called "choice motivation" and is primarily controlled by goal-directed motives. Following Gardner and Lambert's theory, for example, learners may be motivated to learn English by an integrative (e.g., an interest in American pop culture) or instrumental (e.g., working in an airline company) reason. The resulting motivational state becomes a driving force for choosing a language course. However, once the course starts, a different type of motive, called "executive motivation", comes into play. While choice motivation is energised by desires and dreams (e.g., "I wish to improve my English speaking skills while attending the class"), executive motivation concerns the actual classroom experience. According to Dörnyei and Ottó (1998), three basic processes come into effect during this actional phase: subtask generation and implementation, appraisal system and action control mechanisms, and the interplay of the appraisal and control processes yielding some kind of actional outcome. It frequently happens that one who chose a course with high choice motivation may not maintain a sufficient level of executive motivation, being influenced by various external (e.g., the given tasks, teaching styles, peer pressures) as well as internal (e.g., proficiency levels, past learning experience) factors in the classroom. Finally, when the action is terminated, motivation in the postactional phase takes place, involving the evaluation of the accomplished action outcome and contemplating possible inferences to be drawn for future actions. Among these phases, the actional stage, or maintaining and protecting motivation, is key to understanding students' motivation in EFL classrooms because "in institutional contexts many of the decisions and goals are not really the learners' own products but are imposed on them by the system" (Dörnyei, 2000a, p. 523).

Dynamic group development

Motivation research has tended to be done with an individualistic perspective, but when we consider

language teaching, "group motivation", or how students' motivation changes as a group, is of a particular significance. In line with this, another research tradition, *group dynamics*, provides insights into classroom learning. This area of study aims to understand fundamental common features of groups through investigating various group-making factors, such as leadership styles, group cohesiveness, and group development (e.g., Forsyth, 2009). In our interest in "motivation-in-action", research into group developmental processes is particularly relevant. Groups do not always go through identical processes, but it has been suggested that most groups take very similar macro-steps. Summarising previous studies, Ehrman and Dörnyei (1998) identified four distinctive stages of group development: formation — transition — performing — dissolution. In the first lesson, group members feel uneasy about the class, but the group quickly establishes a social structure involving, for example, intermember relations, group norms, and group goals ("group formation"). In the next "transition" stage, students experience conflicts and tensions. This is a "turbulent" but necessary step to liberate the group from its dependence on the teacher, and through this process the group bond becomes stronger. The following "performing" stage is characterised by decreased emotionality and an increase in cooperation and task orientation, where actual learning takes place. In this stage, "the group structure becomes more solid and members take on more and more responsibility for organising their work, the intensity of the emotional fluctuation decreases and affective energies tend to be channelled into the tasks" (Dörnyei & Murphey, 2003, p.54). The final "dissolution" stage helps students consolidate what the group has accomplished and erect bridges to the future. Through these macro-stages, a matured group develops internal cohesiveness. As "efficient" groups usually go through this sequence, "inefficient" groups are likely to skip some of the stages; as a result, they fail to develop sufficient levels of internal cohesiveness.

Research questions

Despite its relevance to teaching in real language classrooms, few L2 learning studies have involved the area of motivation-in-action. (A notable exception is a study by Ushioda [2001] investigating motivational changes through interviews). One of the main challenges in researching motivation-in-action is 'how to' describe and analyse the fluctuation in temporal motivational changes. As suggested by Ushioda, interviews are a useful method, but due to its retrospective nature, they might be more relevant to an investigation into the postactional phase. In searching ways to understand motivational changes, we attempt to describe and identify features of motivation-in-action in real language classrooms through quantitative and qualitative analyses of various types of data.

The following research questions thus guide this investigation:

1. How does Japanese university students' "choice motivation" change over the length of the course?

2．How does their “executive motivation” change from the beginning to the end? Are there any different motivational trajectories between groups with different choice motivations?
3．What are the underlying reasons for changes in executive motivation in the class?

Methodology

Participants

This study involves 164 first-year, non-English major students attending a private Japanese university. The students took a required two-semester, general English course (called *“Kiso Eigo”*) that met once a week for 90 minutes. We are looking at six classes all of which are being taught by the second author (Table 1). Four classes (1–4) were on economics and the other two (5–6) were on commerce. The goal of the class is to gain basic English knowledge and skills through various learning tasks. Students are required to bring their own laptop regularly, and computer-mediated teaching is often provided (e.g., iTunes, YouTube). The same materials and teaching procedures are adopted in all six classes.

Table 1 The classes

Class	Major	Class size
1	Economics	24
2	Economics	27
3	Economics	26
4	Economics	25
5	Commerce	31
6	Commerce	31
Total		164

Research instruments

Two-wave research designs have usually been used to investigate changes in motivation, identifying the difference between two time points. In the present study, we use the ‘Motivational Factors Questionnaire’ (MFQ) in two occasions; (1) at the beginning of the course to identify initial differences in motivational dispositions among different classes; and (2) at the end of the course to observe any noticeable changes between the beginning and the end of the course. The MFQ, developed by Ryan (2009) for specifically measuring Japanese learners’ motivation, consists of 106 questions involving 18 motivational factors (e.g., ‘instrumentality’, ‘ideal L2 self’, ‘willingness to communicate’).

While such an approach reveals *whether* L2 learners’ motivation changed, it is not possible to understand *how* their motivation developed over the period, which is crucial for understanding their executive motivation. This is because the two-wave research design assumes linear development,

which is often not the case with L2 motivation. To explore *how* motivation evolves, we adopted an idea inspired by a dynamic systems point of view (e.g., Larsen-Freeman & Cameron, 2008). The exploration of non-linear development requires multiwave data, collected from each student multiple times, through a 'Weekly Motivational Questionnaire' (WMQ), which we adapted from that developed by Gardner et al. (2004). To measure how each student evaluates their own learning, the WMQ consists of three questions regarding the class on that day; (1) 'how hard you tried to learn', (2) 'how much you understood what you learned', and (3) 'how much you enjoyed the class'. The questionnaire includes not only six-point Likert scales for each question but also open sections so that students can write their comment freely.

Although a quantitative investigation into students' motivation may provide clear-cut results, we do not consider that this type of approach entirely uncovers dynamic changes in motivation in the complex nature of classroom life. Quantitative analysis of questionnaires shows the relationship between the factors and describes the trajectories of motivational changes but do not show the underling reasons, for example, why one group sustains a good level of enthusiasm for a long period of time, while the other quickly loses their interest. To complement the incompleteness of the questionnaire data and more detail understanding of motivation in real language classrooms, we decided to take a teacher—researcher role (Li, 2006), qualitatively analyzing teacher reflection, because only the insider may hear real voices behind the statistical results.

Table 2 summarises the research instruments used in this study. At the beginning, an MFQ was given in each class to determine the initial motivational states. From the beginning (Week 1 in the Spring Semester) to the end (Week 13 in the Autumn Semester), a WMQ is provided at the end of every class. In the final class, the same MFQ will be given again to understand changes from the beginning to the end. Interviews will also be conducted, inviting two or three students from each class on a volunteer basis. As we have only collected the data for the Spring Semester at the time of writing, we shall report the results of preactional and the first half of the actional phase (Week 1–13 in the Spring Semester), which are shaded in Table 2.

Table 2 Summary of the research schedule

Stages	Week	Research tools
Preactional phase	Week 1 (Spring Semester)	• Motivational Factors Questionnaire (MFQ): 1st time
Actional phase	Week 1–13 (Spring Semester)	• Weekly Motivational Questionnaire (WMQ) • Teacher reflection
	Week 1–13 (Autumn Semester)	
Postactional phase	Week 13 (Autumn Semester)	• MFQ: 2nd time • Interviews

Results

Preactional phase of motivation

As there are several items in each motivational factor and they need to represent internal consistency, we first checked the Cronbach Alpha coefficients, and then eliminated six factors showing less than 0.7 (i.e., "cultural interest", "international empathy", "fear of assimilation", "ethnocentrism", "milieu", "L2 self confidence") for further analysis. Next, following Ryan (2009), we looked at the correlation between the remaining factors and "intended learning efforts" to see what types of motivation contributed to actual learning efforts (Table 3). Among the ten factors, 'English anxiety' does not significantly correlate with 'intended learning effort', thus the other nine factors were considered for the subsequent analysis.

Table 3 Motivational factors ordered according to the strength of correlation with intended learning effort, with internal reliability coefficients

Motivational factors	Intended learning efforts (α=0.86)	
	Correlation	Cronbach alpha
Attitudes to learning English	.847**	.839
Interest in foreign language	.749**	.804
Ideal L2 self	.736**	.823
International contact	.539**	.804
Travel orientation	.581**	.747
Instrumentality	.498**	.845
Willingness to communicate	.407**	.908
Attitude towards L2 community	.363**	.775
Parental encouragement	.224**	.861
English anxiety	.095	.828

**p<0.001 level

Principal factor analysis was administered to obtain the extraction communalities of the nine factors, which were then entered into an analysis of variance (ANOVA), suggesting a significant difference in initial motivational disposition between the six classes ($F(5,158)=4.337$, $p<.001$). To identify individual relationships, a post hoc Tukey Honestly Significant Difference (HSD) test was conducted, suggesting a significant difference between Classes 2 and 5, 2 and 6, and 4 and 5 (see Appendix for the results).

The average factor score plot (Figure 1) illustrates how different initial motivation was among the

six classes, suggesting that Class 5 and 6 are located in a remarkably high position, whereas the other four classes are located in a relatively low position. In particular, Class 2 lies in a distinctively low place. Therefore, the classes are classified into three categories: HIGH (Class 5&6), LOW (Class 1, 3&4) and LOW- (Class 2).

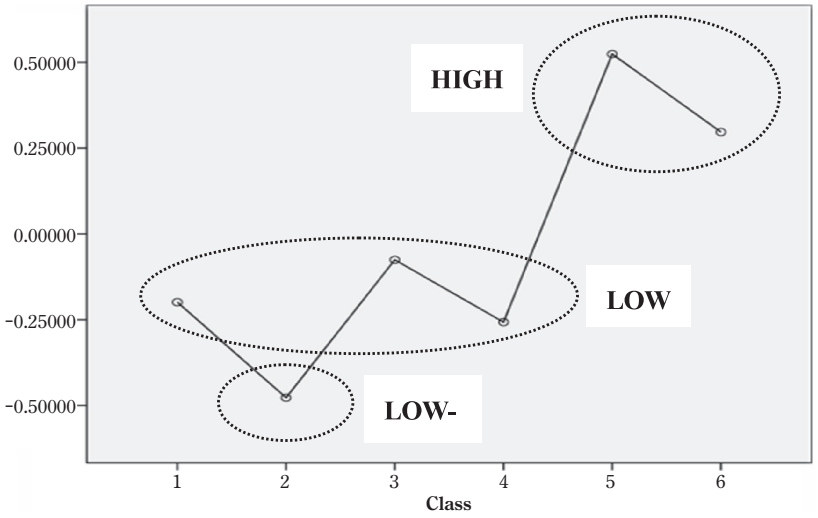


Figure 1 Average factor score plot on the preactional phase

Table 4 shows the relationship between the factor score rankings and the results of the WMQ in the first week. This suggests that classes with high choice motivation tend to show relatively good evaluation in their learning at the beginning of the course.

Table 4 Initial motivational differences with the results of WMQ in the first week

Category	Factor score rank	Class	Average WMQ: Week 1
High	1	Class 5	3.9
	2	Class 6	4.2
Low	3	Class 3	3.1
	4	Class 1	3.2
	5	Class 4	3.2
Low-	6	Class 2	2.9

Actional phase of motivation

Figures 2–4 illustrate how students' executive motivation changed over 13 weeks in the Spring Semester. Although the questions ask about different aspects of the class (i.e., effort, understanding, and enjoyment), students tended to responded to each question similarly each week, probably because the three independent factors are highly interactive. To make them comparable, the figures thus show average scores of the questions. A polynomial trendline of the third degree is added (Verspoor *et al*., 2008) to clarify the general trajectory of each class's motivational development.

Regarding the motivation in HIGH motivation classes (Figure 2), the scores go down first, probably because the actual classroom activities did not meet their high expectation towards the class. However, the downward trend stops around the middle and then moves upwards (Class 6) or levels off (Class 5) towards the end of the semester. This may be because the gap between expectation and reality was being reduced, as the students were becoming accustomed to the class.

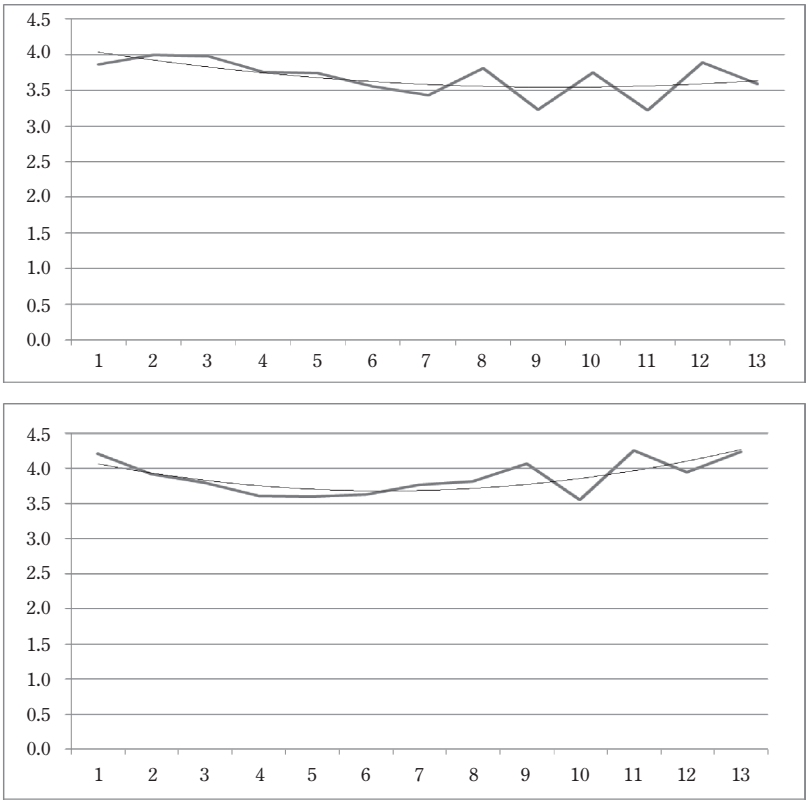


Figure 2 Results of WMQ: HIGH

The motivation in LOW classes is characterised by a more or less horizontal move of their evaluation of the class (Figure 3). The scores in Classes 3 and 4 remained stable throughout the semester, possibly because there was not a large gap between the initial low-choice motivation and actual learning, while the trendline in Class 1 went in a similar way as those of the HIGH classes.

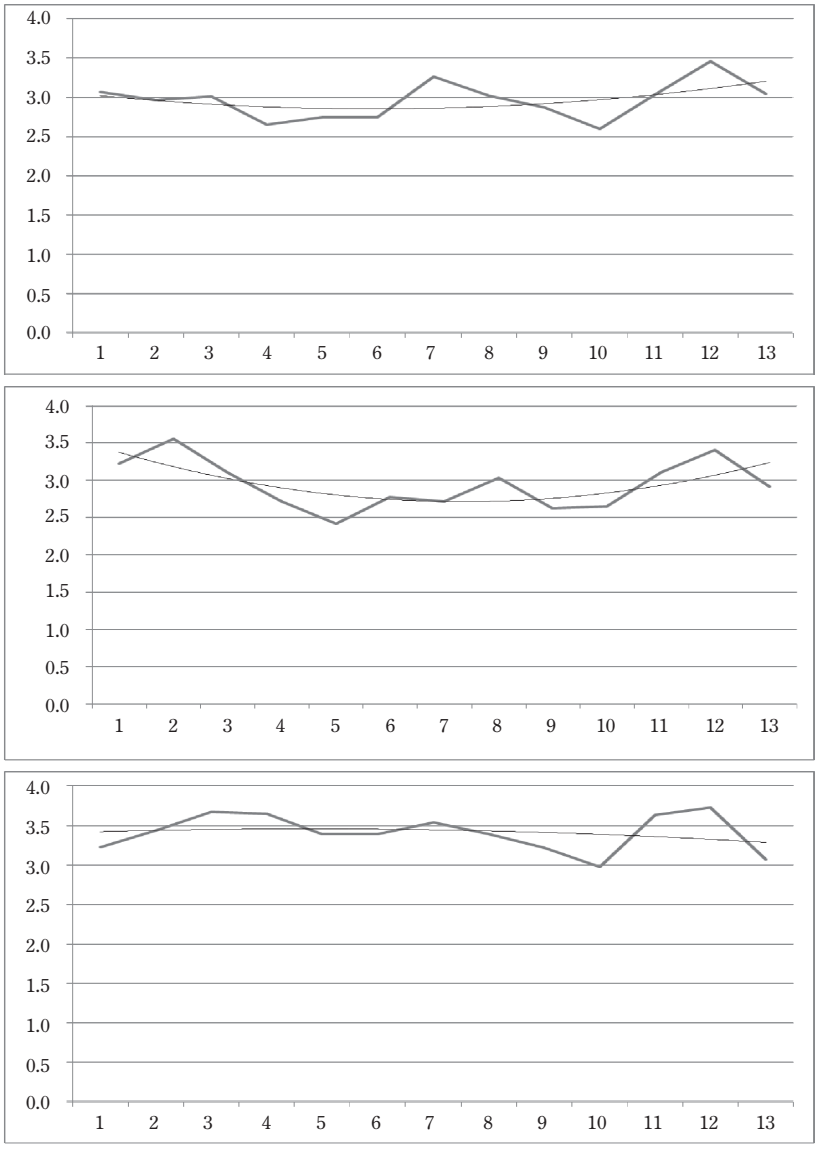
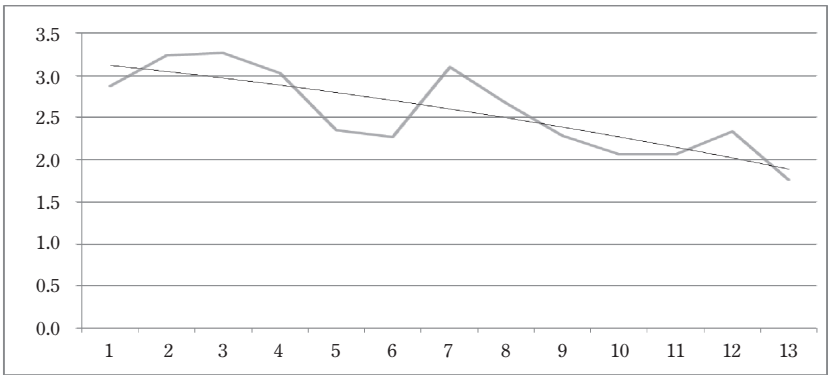


Figure 3 Results of WMQ: LOW

Clearly the trendline of LOW- class is different from that of the other classes, representing a downwards slide throughout the semester (Figure 4).



Class 2

Figure 4 Results of WMQ: LOW-

Teacher reflection and discussion

Although the same teacher provided the same content through the same procedures, students' evaluation on their learning have shown different trajectories. Looking at each category (i.e., HIGH, LOW vs. LOW-), however, these motivational changes tend to follow similar trends. If this tendency is applied, the initial motivational states can be a litmus-test for predicting the success of classroom learning in spite of the fact that choice motivation and executive motivation are directed by different motives. On reflection, the teacher's perception about students' attitudes towards learning in Classes 5 and 6 (i.e., HIGH) were clearly different from those in Class 2 (i.e., LOW-). Consistent with this, the level of motivation, measured using the MFQ, were generally positive in Classes 5 and 6 (Table 4), in effect contributing to the creation of an initial learning environment in the classroom. In other words, they were ready to learn from the beginning. On the other hand, a lack of interest in learning English in Class 2 led to rather passive attitudes towards learning in the class.

When students are not very eager to learn the language, what helps to increase their motivation in the class? In terms of factors strongly influencing students' motivation, Oxford (1998, cited in Dörnyei, 2000b) identified four teacher-related themes in the analysis of students' essays: (1) teachers' personal relationship with students; (2) teachers' attitudes towards the course and material; (3) style conflicts between teachers and students; and (4) characteristics of the classroom activities. In the teaching environment for this study, the choice of materials and teaching methodologies were left to the teacher, so the most comfortable teaching methods were chosen. The adopted teaching methodology can be characterised by few cooperative learning opportunities, use of the first language, and focus

on written rather than oral skills. Thus, this can be categorised as some form of traditional teaching, despite frequent use of computer-mediated content. The choice of these methodologies came from practical necessities, for example, the large class size and the low proficiency levels of the students. It is not certain whether the adopted traditional teaching approach worked with the current students, but the teacher sensed that high motivated classes seemed to prefer the lesson using computers. In particular, many students tended to be quiet and passive in Class 6, thus they might feel comfortable working with their individual computers. In contrast, judging from the results of the WMQ (Figure 4) and teacher reflection, it did not work well with students with low initial motivation. Research on demotivation suggests that typical traditional methodologies (e.g., one-way teaching, the grammar-translation method, memorisation nature of vocabulary learning) often discourage students in Japanese contexts (Kikuchi, 2009). Together with the present findings, care should be taken in a low-choice motivation class (like Class 2) because these didactic methods play little part in creating a motivating learning environment.

Why do traditional methodologies often contribute little to the creation of a good learning environment? One plausible explanation is that one-way communication from the knowledge provider to the receiver does not foster the reciprocal relationship between the teacher and students. In addition to the teacher — student relationship, the student — student relationship is also vital for making an effective learning group, but a lack of cooperative opportunities in the teaching environment for this study is unlikely to foster a positive relationship between students. Group cohesiveness can be achieved as a consequence of healthy teacher — student and student — student relationships. Teacher reflection suggests that there were very few student — student interactions in the LOW and LOW- classes, while, despite few cooperative opportunities, there were lively talks between students in the HIGH classes. That is, the students in Classes 5 and 6 seem to know each other well (probably meeting in other classes), which also contributes to creating a comfortable classroom atmosphere.

Referring back to the research on group dynamics, it is important to note that the group developmental processes through formation — transition — performing — dissolution lead to a cohesive group through experiencing conflicts. In a cohesive group, "members feel a moral responsibility to contribute to group success, and the group's goal-oriented norms have a strong influence on the individual" (Dörnyei & Murphey, 2003, p.65). Therefore, only after a supportive and goal-directive environment has been established, the group proceeds to respond optimally to the learning goals of the classroom (Jones & Jones, 2000). Establishing cohesiveness is inevitable for successful learning in the performing stage because of its positive relationship with performance (Ehrman & Dörnyei, 1997). By applying the present findings to the group developmental stages, it can be construed that unsuccessful classes (especially, Class 2 in this case), still under forming or transiting conditions, are forced to perform without solid group cohesiveness.

Conclusions

We reported part of our analysis on the on-going research on motivational changes in EFL courses. Although data collecting procedures have not been completed and further analysis is needed, we revealed that a number of social and interpersonal factors (such as teaching styles, intergroup relations, group cohesiveness) have significant impact on students' learning in the classroom. To understand these implicit structures of the class, teacher reflection is extremely useful for exploring underlying reasons for successful and unsuccessful classes. On the other hand, analyses of the questionnaires provided insights into the general picture of motivational changes. The present study thus suggests the importance of mixed quantitative and qualitative analyses of various types of data for understanding a complex classroom learning structure. Senior (2001) argues that classroom-based research tends to focus on issues drawn from a pedagogic perspective (e.g., classroom interaction elicited by certain pedagogic tasks), but pedagogically and socially-oriented behaviours are closely intertwined in classrooms, proposing a 'class-centered' approach. Experienced teachers know, as reported by Senior (1997), that an atmosphere of classroom cohesion is a necessary precondition for the development of linguistic proficiency. The findings of the study have provided support for this argument.

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Appendix: Results of post hoc Tukey HSD test

Class		Mean Difference	Sig.
1	**2**	.27850371	.906
	3	-.12343543	.997
	4	.05809219	1.000
	5	-.72300094	.054
	6	-.49575142	.372
2	**3**	-.40193914	.680
	4	-.22041152	.963
	5	-1.00150465*	.002
	6	-.77425513*	.037
3	**4**	.18152762	.983
	5	-.59956550	.184
	6	-.37231598	.694
4	**5**	-.78109312*	.026
	6	-.55384360	.239
5	**6**	.22724952	.936

*Mean difference is significant at .05 level.