How Foreign Language Enjoyment acts as a buoy for sagging motivation: A longitudinal investigation

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Abstract
The current study contributes to the recent debate on the question whether learner emotions can be intrinsically motivating or whether they are no more than diffuse action tendencies (Dörnyei 2020). Adopting a longitudinal approach, we combined repeated ANOVAs and mixed effects modeling to capture interactions between Language Enjoyment (FLE) and its three dimensions, Foreign Language Classroom Anxiety (FLCA) and Attitudes/Motivation (AM) and its four dimensions over the course of one semester. Participants were 360 FL learners of English, German, French and Spanish in a Kuwaiti university. FLE (and the dimensions FLE Personal and FLE Social) and FLCA remained stable over time but FLE Teacher decreased significantly. Levels of AM also decreased significantly and, more specifically, Motivation and Attitudes toward the Learning Situation. Mixed effects modeling analyses revealed that FLE (including FLE Personal and FLE Social) and FLCA had medium effects on the AM dimensions. Significant interaction effects were found for FLE Teacher and Time for the AM dimensions. We argue that high FLE can act as a buoy for sagging motivation and thus become intrinsically motivating.

Keywords: Foreign Language Enjoyment, Foreign Language Classroom Anxiety, Attitudes/Motivation, longitudinal research

INTRODUCTION

One of the most fascinating debates in the field of Foreign Language Learning research these days is the relationship between well-established concepts of FL motivation and the more recent conceptualizations of FL emotions. As psychologists Chiew and Braver (2011: 7) put it: 'effects of emotion and motivation on one another should be probed to help clarify their relationship'. Just how connected are emotions and motivation? On one side are psychologists such as Reeve (2015) who argue that they are largely unconnected. Others have a more nuanced position, wondering why emotion is absent in motivation research: 'missing in many theories of motivation is emotion' (Weiner 2019: 191). On the opposite side are psychologists influenced by Positive Psychology, who argue that emotions play a central role in motivation and that positive emotions are intrinsically motivating (MacIntyre, Ross and Clément 2019) because they are directly connected to the attitudes, behaviours, and social processes that benefit language learning while negative emotions tend to have the opposite effect and tend to weaken motivation.

Zoltan Dörnyei, one of the leading researchers on FL learning motivation, adopted a 'half-way' position. He agrees that FL learner emotions play an important role in their learning: 'some emotions do possess a certain amount of goal-directed quality' (Dörnyei 2020: 121) but he

does not quite agree with the view that emotions are linked to goal-specific action. He sees them as having more diffuse 'action tendencies' (p. 121). Distancing himself from the position of MacIntyre et al. (2019) that emotions are intrinsically motivating, he argues instead that ''emotions have motivational qualities': they can sustain and amplify existing motivation (…) and they can also instigate the generation of new, goal-directed behavioral scripts (i.e. motives proper) by stirring up people and producing cues for social functioning' (Dörnyei 2020: 121-122). He agrees that positive emotions contribute to FL motivational processes and that the motivational power of vision 'is indeed mediated to motivated behaviour by the emotions that visionary experiences evoke' (p. 122). He points out that 'the reason emotions cannot be equated fully with motives is that a motive energises and gives direction, whereas the direction bit is often missing or is vague with the energy provided by emotions' (personal communication, August 2021). Dörnyei and Henry (2022) argued that emotions provide additional fuel to sustain motivation.

The recent surge of interest in both positive and negative FL learner emotions, among which Foreign Language Enjoyment (FLE) and Foreign Language classroom anxiety (FLCA) are the most frequently studied (Dewaele and MacIntyre 2014) has followed a predictable path. After issues of definition and conceptualization, researchers have delved into the sources of both emotions. The fact that FLE and FLCA are predicted by different learner-internal and learner-external sources confirmed the early finding that FLE and FLCA are separate dimensions rather than opposite poles on the same dimension (Dewaele and MacIntyre 2014) (for overviews, see Dewaele, Chen, Padilla and Lake 2019; Dewaele 2021; Wang, Derakshan and Zhang 2021). The next step in the journey of exploration was the linking of FLE and FLCA with established FL motivation constructs in order to find out whether the emotions would be subsumed by the motivation dimensions or whether they turned out to predict unique variance in FL performance and acquisition. Some prominent authors have recently called this area of research 'Emotions and Affect, a relatively new subfield of language motivation' (Al-Hoorie and Szabo 2022: 2).

While a majority of studies on learner emotions are based on cross-sectional designs, there has been a call for more longitudinal research in order to capture the dynamic processes of the FL learning experience. Longitudinal designs allow researchers to gain a better understanding of causality than correlation designs based on cross-sectional data sets (Dewaele 2021). Dörnyei and Henry (2022) also called for more research on long-term motivation and sustained motivated learning.

The present study is situated in that avenue of research, seeking to find out how stable levels of FLE, FLCA, and AM are over the course of one semester with four data collections among 360 FL learners in Kuwait. This study is an extension of a preliminary study on the same database (Dewaele, Saito and Halimi 2021) that focused on the effect of three teacher behaviour variables (FL use in class, predictability and frequency of joking) on overall levels of FLE, FLCA and AM. The current design does not include teacher behavior variables. Instead, it aims to investigate the stability of FLE and its three dimensions (FLE Personal, FLE Social and FLE Teacher), FLCA and AM and its four dimensions (Integrativeness, Motivation, Attitudes toward the Learning Situation and Instrumental orientation) over the course of one semester. Crucially, it will seek to find out whether the learner emotion variables predict the AM dimensions to the same extent at every data collection point.

LITERATURE REVIEW

Foreign Language Classroom Anxiety and Foreign Language Enjoyment

Horwitz et al. (1986) developed the concept of Foreign Language Classroom Anxiety (FLCA) which reflects an individual's tendency to be anxious in the specific situation of FL learning. Horwitz (2017) explained that 'specific anxieties have characteristics of both trait and state anxieties. When individuals experience Language Anxiety, they have the trait of feeling state anxiety when participating in language learning and/or use. It is also likely that individuals who experience Language Anxiety would feel anxious simply thinking about language learning and/or use' (p. 33). According to Horwitz (2017) FL learners experience anxiety in the FL class because of the ego-threatening nature of using the FL. She compares it jokingly with "pink dress anxiety" (p. 45), namely the discomfort of standing out because of imperfect mastery of the FL which affects the ability to establish authentic connections with fellow students and the teacher. FLCA has been linked to personality traits such as neuroticism and perfectionism (for an overview, see Dewaele 2017). Li and Dewaele (2021) investigated the sources of FLCA among 1526 Chinese EFL students and found that their general grit but also their perception of the classroom environment interacted and co-predicted FLCA (with β = -.322 for general grit, β = -.135 for classroom environment, and β = -.071 for the interaction). It confirmed the general pattern that personality variables are the strongest predictors of FLCA but that contextual variables can also play a role. A meta-analysis (k = 59) has demonstrated that high FLCA is moderately negatively linked to general academic achievement in the FL (r = -.39) (Botes et al. 2020).

Foreign Language Enjoyment (FLE) was defined as 'a complex emotion, capturing interacting dimensions of challenge and perceived ability that reflect the human drive for success in the face of difficult tasks, pleasure is considered simply an agreeable feeling. On the one hand, enjoyment occurs when people not only meet their needs, but exceed them to accomplish something new or even unexpected; on the other hand, pleasure is a simpler feeling that something likable is happening' (Dewaele and MacIntyre 2016: 216-217). The authors drew on Frederickson's (2001) Broaden-and-Build theory of positive emotions which points to the long-term effects of positive emotions which can counter the harmful effects of negative emotions, expand a person's thought-action repertoire and build psychological resources that can be used in the future. Dewaele and MacIntyre (2014) collected quantitative and qualitative data from 1746 FL learners from all over the world through an online questionnaire. They were particularly interested in the relationship between FLE and FLCA, wondering whether they were opposites on the same dimension or two separate dimensions. A moderate negative correlation between FLE and FLCA (r = - .36) was interpreted as evidence that they operate as separate but related dimensions. Looking into the sources of individual differences of FLE and FLCA, they found that learners who were older, female, more multilingual, more advanced, feeling above the average level in their FL class, and at university rather in secondary education, reported higher levels of FLE and lower levels of FLCA (Dewaele and MacIntyre 2014). Western FL learners also reported higher levels of FLE and lower levels of FLCA than Asian FL learners. Later research showed that FLE was much more context-dependent than FLCA. Teacher characteristics and behaviours were much stronger predictors of FLE than of FLCA (Dewaele et al., 2018). Botes et al. (2022) carried out a meta-analysis with a total of k = 97 effect sizes and found that FLE was moderately positively correlated with academic achievement in the FL (r = 0.30).

Attitudes/Motivation

Gardner's (1985) socio-educational model shaped social psychologists and applied linguists' understanding of motivation. The L2 Self theory may have superseded it (Dörnyei 2009), but as Dörnyei (2019: xxi) explains, Gardner's model is 'still relevant', especially when the focus is on the effect of contextual variables such as the classroom, the school and the larger societal context with its attitudes towards different groups and their languages.

Gardner (2019) explained that his original goal was 'to clarify the underlying process linking affective variables to language achievement' (p. 6). His Attitudes/Motivation Test Battery (AMTB)[1], consisting of 104 items, was developed to obtain data on 'the student's affective reaction to the classroom environment, the cultural influences on the learner's reaction to acquiring attributes of the cultural community, anxiety reactions when called upon to use the language, and the effort, persistence and satisfaction associated with the process' (p. 11).

Using the AMTB, MacIntyre and Vincze (2017) investigated the relationship between 19 positive and negative emotions and motivational variables from Gardner's model and the L2 self system. The authors collected data from 183 FL learners of German in Italy. The authors found that positive emotions were consistently strongly positively correlated with motivation variables (97% of the correlations between specific positive emotions and motivation variables were significant (r = .43)). In contrast, relationships between negative emotions and motivation were weaker (ranging from r = 0 to r = .40) and less consistent (only 74% of correlations were significant) (p. 75). The authors concluded that '…the stronger positive emotions are relative to negative emotions, the more favourable the intergroup, interpersonal and intrapersonal outcomes are likely to be' (p. 81).

A similar pattern emerged in MacIntyre et al. (2020). AMTB scales were found to be significantly correlated with both positive and negative emotions (measured with the Positive and Negative Affect Scale (PANAS) in an international sample of 750 FL leaners and a Chinese sample of 157 EFL learners. Attitudes toward the Learning Situation showed the strongest relationships with positive emotions (with values ranging from r = .11 to .46). In contrast, correlations between the AMTB scales and negative emotions were weaker and more inconsistent (with values ranging from r = -.11 to -.28). FL learners 'who felt inspired, enthusiastic, proud, excited and interested were more likely to enjoy the course and the teacher. Inspired, determined and enthusiastic learners in both groups were also more likely to score higher on integrative motivation' (p. 71).

The first study to include AMTB scales, FLE and FLCA in a single research design is Dewaele and Proietti Ergün (2020). The authors focused on relationships and differences in levels of FLE, FLCA and Attitudes/Motivation (AM - measured with the mini AMTB) and Language Anxiety of 110 Turkish pupils in an immersion school in Istanbul in their Italian and English FL classes. AM was found to be significantly positively correlated with FLE in Italian L2 (r = .52) and English L3 (r = .61), and negatively correlated with FLCA in Italian L2 (r = -.39) and English L3 (r = -.45).

Zhang, Dai and Wang (2020) included two motivation dimensions, integrativeness and instrumental orientation, in a research design that also included FLE. Participants were 598 Chinese EFL university students. The authors found significant positive correlations between instrumental motivation, integrative motivation and FLE (r = .30 and r = .49 respectively). They argue that that FLE plays a mediating role between motivational orientations and FL proficiency. In contrast, Teimouri (2018) reported that not all negative emotions are linked to lower

motivation. While shame was indeed linked with reduced motivation among 112 Iranian EFL learners, guilt turned out to be a strong, positive predictor of motivation (β = .21).

Finally, Papi and Khajavy (2021) adopted an integrated regulatory focus approach combining it with Dörnyei's model of L2 self. They investigated the relationships between FLE and FLCA, eager and vigilant L2 use, and L2 achievement of 324 Iranian EFL university students. They found that ideal self predicted FLE positively and FLCA negatively (R^2 = 55% and R^2 = 20% respectively). Ought-other and ideal-other predicted FLCA positively (R^2 = 12% and R^2 = 16% respectively). Moreover, FLE was found to predict eager L2 use positively (R^2 = 55%) and vigilant L2 use negatively (R^2 = 07%), but FLCA was positively linked to vigilant L2 use (R^2 = 56%). The authors conclude that regulatory focus predicts self-guides, which in turn predict emotions, which then shape strategic inclinations and thus ultimately determine L2 learning success.

Longitudinal research

An early attempt at longitudinal research on FLE and FLCA is the study by Dewaele and Dewaele (2017). The authors adopted a pseudo-longitudinal design to look at variation in FLE and FLCA between the start and the end of secondary education. Participants were 189 British FL learners who were divided in three age groups: 12-13 year olds, 14-15 year olds and 16-18 year olds. FLCA was found to be stable but FLE dropped for age group 2 but regained the loss in the oldest group. Closer analysis revealed that predictors of FLE and FLCA changed across the three age groups. Social standing predicted FLE in the youngest group (R^2 = 28%) and language level predicted their FLCA (R^2 = 25%). Attitude towards the FL was the strongest predictor of FLE in the middle group (R^2 = 30%), followed by attitude towards the teacher (R^2 = 10%). In contrast, social standing in the group and language level were strong predictors of FLCA (R^2 = 17% and R^2 = 3% respectively). Attitude towards the teacher was the only predictor of FLE in the oldest group (R^2 = 45%), while social standing predicted FLCA (R^2 = 21%) (Dewaele and Dewaele 2017: 18).

Saito, Dewaele, Abe and In'nami (2018) combined a cross-sectional and a longitudinal approach of 108 intermediate-level Japanese high school EFL students to investigate the effect of motivation, Social and Personal FLE, FLCA, and learning experience on progress in comprehensibility in English over one term. FLCA and strength of the Ideal L2 self predicted comprehensibility in English at the start of the study (R^2 = 11% and R^2 = 15% respectively). Students' comprehensibility gain during the term was found to be positively predicted by Personal FLE (R^2 = 7.5%), more weakly by the Ideal L2 self (R^2 = 3%), and negatively predicted by FLCA ((R^2 = 8%).

Elahi Shirvan and his colleagues have produced several longitudinal studies into FLE and FLCA. Elahi Shirvan and Taherian (2018, 2021) looked at change in FLE and FLCA among 367 Iranian university students during one semester using latent growth curve modelling. The authors found a significant increase in FLE and a significant decrease in FLCA at the end of the semester. The authors conclude that the state of FLE and FLCA are quite different between the start and the end of the course. Qualitative data suggested that relatively unpredictable events affected learner emotions such as quality of the teaching material, reactions from teachers and peers during classroom interactions and performance in tests. Elahi Shirvan, Taherian and Yazdanmehr (2020) pursued this path using a time-based sampling scheme of Ecological momentary assessment (EMA) to understand fluctuations in different facets of FLE across different timescales (months, weeks seconds) of two EFL learners. The authors conclude that

'the nature of each learner's enjoyment moments is unique to that individual, which is susceptible to the main ecological drivers of change' (pp. 12-13).

A follow-up study by Elahi Shirvan, Taherian and Yazdanmehr (2021) used longitudinal confirmatory factor analysis-curve of factors model to trace changes in Private and Social FLE among 437 Iranian EFL learners at four points of time with a two-week interval. FLE scores increased on average but there was a lot of inter-individual variation. Participants with lower FLE at the start of the study increased more rapidly over time, possibly because of increased learners' motivation, changing attitudes toward the EFL Learning Situation, including the role of the teacher.

Elahi Shirvan and Talebzadeh (2020) adopted a different methodological approach, namely retrodictive qualitative modelling among 15 Iranian EFL students to gain a better understanding of their FLE and FLCA. They found it linked to 'the influence of the teacher, personal goals, a perfectionist image of oneself and dissatisfactory and unsuccessful experiences in the past' (p. 40).

Pan and Zhang (2021) carried out a longitudinal study into fluctuations in FLE and FLCA of 55 Chinese EFL learners over a period of 14 weeks, linking them to motivation variables and personality traits. They found little change over time but FLCA was more stable than FLE which was significantly positively correlated with motivated behavior or intended efforts including 'Ideal L2 Self, Ought-to L2 Self, Family Influences, English Learning Attitudes, Cultural Interest, and Linguistic Self-confidence' (p. 12) (with values ranging from $r = .11$ to $r = .68$). In contrast, FLCA was only significantly negatively correlated with Criterion Measure and Ought-to L2 Self ($r = -.40$ and $r = -.40$). The authors also found that motivational factors were more closely linked to the amount of change over time in FLCA as compared to FLE.

In a precursor project based on part of the database used in the current study, Dewaele, Saito and Halimi (2021) used linear mixed modeling to focus on the effect of teacher behavior on learner emotions and AM over the course of one semester. More specifically, the authors investigated how FL teachers' frequency of FL use in class, predictability and frequency of joking affected FLE, FLCA, and AM. A positive relationship was found between the teacher behaviours and FLE ($R^2 = 26.2\%$) as well as an interaction effect with time. FLE declined significantly over time among participants whose teacher joked infrequently ($p < .001$, $d = 1.32$). The authors conclude that the absence of teacher jokes had a delayed cumulative effect on learners' FLE. Teacher behaviours had no significant effect on FLCA. A positive relationship was found between the teacher behaviours and AM ($R^2 = 51.9\%$), but there was no interaction effect with time.

Rationale of the present study and research questions

What the literature review has shown is that FLE and FLCA have been included in research designs alongside motivation variables. Longitudinal studies have recently started complementing cross-sectional studies, aiming to establish how classroom emotions fluctuate over time and how they may be predicted by different learner-internal and learner-external variables.

The present study differs from Dewaele et al. (2021) in that it does not include teacher behaviours and adopts a more granular view of the fluctuations of the dimensions of FLE, of FLCA and of the dimensions of AM over time.

The present study will attempt to answer the following research questions:

1. Do learners' overall levels of FLE, FLCA and AM remain stable during one semester of FL teaching?
2. Do learners' FLE dimensions (Personal, Social and Teacher), FLCA and AM dimensions (Integrativeness, Attitudes toward the Learning Situation, Motivation and Instrumental orientation) remain stable during one semester of FL teaching?
3. What relationships exist between overall levels of FLE, FLCA and AM?
4. To what extent do the three FLE dimensions and FLCA predict variance in the four AM dimensions at the four data collection points during the semester?

METHODOLOGY

Participants

A total of 360 university students (280 females, 75 males, 5 did not say) participated in the study. They were enrolled in FL classes including English (*n* = 252), German (*n* = 43), Spanish (*n* = 41) and French (*n* = 24) in Kuwait. Arabic was the first language of participants, sometimes combined with other first languages (English, French, German, Spanish, Turkish, Urdu). The sample consisted of 177 bilinguals, 125 trilinguals, 37 quadrilinguals, 14 pentalinguals and seven participants reported knowing six or more languages. Participants were mostly Kuwaiti (*n* = 317) with smaller numbers of Lebanese, Jordanians, Syrians, Iranians, Bahrainis, Canadians, Egyptians, Indians, Iraqi, Pakistani, Saudi, Swedes and North Americans. Mean age was 20 years (*SD* = 3.25), with a range between 17 and 48, and more than 95% of the sample was under the age of 26.

Institution

The Gulf University for Science and Technology (GUST) offers a Western-style education 'grounded in Kuwait's Islamic cultural setting' with 90% of the student population being Kuwaiti (https://www.higheredjobs.com/InstitutionProfile.cfm?ProfileID=15942). It offers an American-style accredited degree program (University of St. Louis – Missouri), with English as the medium of instruction. Competence in English is a prerequisite for success in academic pursuits. The mission statement of the GUST Foundation Unit, the English Department and the Department of Humanities and Social Sciences states that teachers adopt a 'task-based approach to provide students with a command of modern languages and cultural competencies as well as critical thinking and communication skills that allow for interaction in real-life settings' (https://www.gust.edu.kw/content/languages_0) The language curriculum includes attention to grammar, communicative activities and interest in culture.

Instruments

The questionnaire was presented in English. A first set of questions focused on participants' sociobiographical background and their language learning history. This was followed by the dependent variables.

Foreign Language Enjoyment (FLE) was measured using Botes et al.'s (2021) 9-item short FLE Scale. The psychometric analyses revealed FLE as a higher-order factor and 3 lower-order factors with three items per dimension: FLE Personal ('In class, I feel proud of my accomplishments'; 'I enjoy it'; 'It's fun'), FLE Social ('There is a good atmosphere'; 'We form a tight group' 'We laugh a lot'), and FLE Teacher ('The teacher is encouraging'; 'The teacher is

friendly'; 'The teacher is supportive'). Responses to these items were given on a 5-point Likert scale (1 = 'strongly disagree', 2 = 'disagree', 3 = 'undecided', 4 = 'agree', 5 = 'strongly agree'. Scale analyses revealed high internal consistency (see Table 1).

Foreign Language Classroom Anxiety (FLCA) was measured with the eight-item scale (S-FLCAS) extracted from Horwitz et al.'s (1986) original 33-item scale previously used in Dewaele and MacIntyre (2014). Botes et al. (to appear) tested the psychometric basis of the S-FLCAS and found it to have a unidimensional structure with all items loading on a single latent variable. Items were accompanied by a 5-point Likert-type scale (from 1 = 'strongly disagree' to 5 = 'strongly agree'). They referred to mild and more severe physical symptoms of anxiety ('I can feel my heart pounding when I'm going to be called on in FL class') and to nervousness and self-confidence ('It embarrasses me to volunteer answers in my FL class'; 'I always feel that the other students speak the FL better than I do'). The two positively phrased items were reverse-coded. Reliability statistics were very good (see Table 1).

Attitudes/Motivation was measured with the slightly adapted 10-item version of Gardner's mini-Attitudes/Motivation Test Battery (AMTB), which 'corresponds to one of the 11 scales in the larger battery' (Tennant and Gardner 2004: 247). FL Anxiety was left out because it would overlap with FLCA, which is an independent variable. The items have 7-point Likert scales[2]. The dimensions include Integrativeness (integrative orientation + interest in Foreign Languages + attitude toward French Canadians), Attitudes toward the Learning Situation (attitude toward French instructor + attitude toward French course), Motivation (motivational intensity + desire to learn the FL + attitude toward learning French), Instrumental orientation (instrumental orientation). The words 'French' and 'French Canadians' were replaced by 'FL' and 'users of the FL'. Reliability statistics were very good (see Table 1). The item for Parental encouragement was left out of the analyses. Items include: 'My attitude toward FL classes is…' 'unfavorable' to 'favorable'; 'My desire to learn the FL is…' 'weak to strong'; 'I would characterize how hard I work at learning the FL as…' 'very little - very much'.
A series of QQ plots showed that the dependent variables at the four data collection points followed a normal distribution pretty well (available from the authors on request).
Table 1 shows that that the internal consistency of learners' FLE, FLCA and AM was very good, and that it strengthened further over time.

TABLES 1, 2 & 3 HERE

Data collection

Data were collected four times between October and December 2019 in the FL classes. The survey was created with LimeSurvey web application along with calendaring software. FL teachers were invited to a meeting during which an overview of the study was presented and a copy of the consent form for the students. It indicated clearly that students' privacy, anonymity, and the right to drop out would be protected. Groups of students that qualified to participate were identified. Faculty members and one of the researchers explained the study and its purpose to students and invited them to participate. Participants provided informed consent online by ticking the corresponding box. The survey link was sent four times to the students' email addresses attending the target courses of English, German, Spanish and French. The questionnaire was administered after each assignment following the course calendar, and the students were asked to complete and submit the survey by a given date. Also, a reminder was

sent to the students a few days before the deadline. Each course was assigned a unique number of the survey, and the number was used to develop a codebook for data. The last data collection happened on the 10th of December 2019, after the final exams. Ethics approval was obtained from the University's Institutional Review Board (IRB)[3]. The University's IRB approval was also mentioned in the consent.

RESULTS

In the current study, we were interested in the presence of significant change in participants' overall FLE, FLCA, and AM (RQ1) and subcomponents (RQ2). To track such developmental patterns among the participants as a group, we chose to conduct ANOVAs. Focusing on the longitudinal development of AM, we then conducted additional analyses to examine how such change over time could be related to the three FLE dimensions (Personal, Social, and Teacher) and FLCA. To this end, a decision was made to adopt linear mixed effects models. There is some discussion that the use of the growth curve model could be adequate as a part of the Structural Equation Model analyses when researchers are interested in the bidirectional relationship between dependent and predictor variables and vice versa (e.g., FLE, FLCA vs. AM). In the current study, the additional analyses allowed us to examine the extent to which participants' motivation profiles change over time, and how such change could be linearly influenced by FLCA and FLE. Following Barkaoui's (2014) guidelines on the statistical analyses for various types of L2 longitudinal research, the use of mixed effects modeling could be considered adequate with a view of examining how two relatively stable predictors (FLE, FLCA) interacted to influence participants' AM development over time.

Main Analyses: Repeated Measures ANOVAs

Normality checks were carried out on the residuals of FLE which were approximately normally distributed. A repeated measures ANOVA with a Greenhouse-Geisser correction showed that FLE did not differ significantly between time points [$F(2.913, 1045.8) = 2.146$, $p = .095$]. Normality checks were carried out on the residuals of FLCA which were approximately normally distributed. A repeated measures ANOVA with sphericity assumed showed that mean FLCA did not differ significantly between the four time points [$F(3, 1074) = .145$, $p = .933$] (see Fig. 1).

INSERT FIGURE 1 HERE

Normality checks on the residuals of the three dimensions of FLE suggested that they were approximately normally distributed. Repeated measures ANOVA of the three dimensions showed no differences for FLE Personal and FLE Social: [$F(3, 1077) = .779$, $p = .505$] and [$F(3, 1077) = .005$, $p = .999$] respectively. Only FLE Teacher showed a significant drop over time: [$F(3, 1077) = 8.138$, $p < .0001$, $eta^2 = .059$] (see Fig. 2). The effect size is very small (Plonsky and Ghanbar 2018).

INSERT FIGURE 2 HERE

In order to understand more what exactly caused the drop in FLE Teacher dimension, we repeated the analysis on each one of the three items that constitute this scale. Repeated measures

ANOVA of the three items showed a significant change for all three: the teacher being encouraging [F(3, 357) = 4.255, p < .006, eta^2 = .035], the teacher being friendly [F(3, 357) = 10.321, p < .0001, eta^2 = .080], and the teacher being supportive [F(3, 357) = 9.269, p < .0001, eta^2 = .072] (see Fig. 3). The effect size is very small (Plonsky and Ghanbar 2018).

INSERT FIGURE 3 HERE

Normality checks of the residuals of the global measure of AM suggested that they were approximately normally distributed. A repeated measures ANOVA of AM with a Greenhouse-Geisser correction showed a significant drop over time: [F(2.896, 1034.009) = 3.196, p < .026, eta^2 = .009] (see Figure 4). The effect size is very small (Plonsky and Ghanbar 2018).

INSERT FIGURE 4 HERE

Normality checks of the residuals of the four dimensions of AM included in the present study, namely Integrativeness, Attitude toward the Learning Situation, Motivation and Instrumental orientation suggested that they were approximately normally distributed.
Repeated measures ANOVA of Integrativeness (with a Greenhouse-Geisser correction) and Instrumental orientation showed no change over time: [F(2.935, 1047.737) = 1.302, p = .273] and [F(3, 1071) = 1.929, p = .123] respectively. In contrast, Attitude toward the Learning Situation and Motivation (both with a Greenhouse-Geisser correction) showed a significant decrease over time: [F(2.943, 1050.676) = 6.586, p < .0001, eta^2 = .018] and [F(2.939, 1049.262) = 3.567, p < .014, eta^2 = .010] (see Figure 5). The effect size is very small (Plonsky and Ghanbar 2018).

INSERT FIGURE 5 HERE

Additional Analyses: Mixed Effects Models

The final objective of the statistical analyses was to explore how different dimensions of FLE and FLCA were associated with and predictive of changes in AM at the four different time points (T1, T2, T3 and T4). Using the lme4 package in the R environment (version 1.1-23, Bates et al., 2015), a set of mixed effects modeling analyses were performed with participants' AM scores (Integrativeness, Motivation, Attitudes Learning Situation, & Instrumental Orientation) as dependent variables relative to the classroom emotion scores (FLE [Personal, Teacher, and Social] and FLCA) as predictors. Participants' ID was used as random effects. To examine how FLE and FLCA related to AM while controlling for Time (T1-T4), Model 1 was constructed as follows:

- Model 1: Motivation = Construct (Integrativeness, Motivation, Attitudes Learning Situation, & Instrumental Orientation) + Time (T1, T2, T3, & T4) + FLE Personal + FLE Teacher + FLE Social + FLCA

As shown in Table 4, participants' motivation profiles were significantly related to the four emotion variables in the following order, FLE Personal (β = .271), FLE Teacher (β = .169), FLE Social (β = .120), and FLCA (β = -.111). Interestingly, the main effects of Construct did not reach statistical significance (p > .05). This suggests that the relative importance of emotion

(FLE [Personal, Teacher, & Social] > FLCA) was similar across different constructs of AM (Integrativeness, Motivation, Attitudes Learning Situation, & Instrumental Orientation).

To explore how FLE and FLCA predicted *changes* in AM over time, Model 2 was constructed as follows. Given that the relative weights of FLE and FLCA in AM may have varied as per different time points (T1-T4), interaction terms were also included in the models.

- Model 2: Motivation = Construct (Integrativeness, Motivation, Attitudes toward Learning Situation, & Instrumental Orientation) + Time (T1, T2, T3, & T4) + FLE Personal + FLE Teacher + FLE Social + FLCA + FLE Personal × Time + FLE Teacher × Time + FLE Social × Time + FLCA × Time

According to the results (summarized in Table 4), the main effects of three emotion variables (FLE Personal, FLE Social, FLCA) reached statistical significance ($p < .005$), suggesting that both positive and negative emotion variables were related to AM across different time points (T1-T4). Interestingly, the significant interaction effects of FLE Teacher and Time were found ($p < .001$). This in turn indicates that the relationship between FLE Teacher and AM could be specific to certain time points (T1-T4).

INSERT TABLE 4 HERE

To unpack the FLE Teacher × Time interaction effects, Models 3, 4, 5 and 6 were constructed as follows and performed at T1, T2, T3, and T4, respectively. In each model, participants' AM scores were used as dependent variables relative to the four emotion variables as predictors. Participants' ID was used as random effects.

- Models 3-6: Motivation = Construct (Integrativeness, Motivation, Attitudes toward Learning Situation, & Instrumental Orientation) + FLE Personal + FLE Teacher + FLE Social + FLCA at T1, T2, T3, and T4, respectively.

As summarized in Table 5, there seemed to be a general trend that the relationship between participating students' FLE Teacher and AM scores was initially non-significant at T1 ($p > .05$). Yet, the FLE Teacher and AM link reached significant at T2, T3, and T4. This indicates that the role of FLE Teacher became stronger as they spent more time in interacting with their teachers.

INSERT TABLE 5 HERE

DISCUSSION

The analysis of our university FL learners' overall levels of FLE, FLCA and AM at four data collection points spread over one semester of FL teaching revealed that FLE and FLCA remained stable -in contrast with the findings of Elahi Shirvan and Taherian 2021- but that overall levels of AM dropped significantly. This is a rather surprising finding, considering that learners' motivation that reflect specific longer-term goal-specific action ends up being more variable than the emotions that are assumed to sustain them and that have been found to fluctuate from minute to minute (Elahi Shirvan and Talebzadeh 2018), from class to class (Pan and Zhang 2021) or even from year to year (Dewaele & Dewaele 2017). Muir and Dörnyei (2013) acknowledge that 'levels of motivation ebb and flow throughout the course of a lesson, a day or even far longer periods of time' (p. 359). Learners may even experience relatively extended periods of Directed

Motivational Currents (DMCs) in the pursuit of a highly valued goal/vision. This self-renewing and sustainable process is characterized by intense motivation and positive emotions (Dörnyei, Henry and Muir 2016). However, the general downward trend in motivation over one semester in our data suggest that fluctuations and occasional upward currents have at best a marginal effect. Also, the absence of peaks in FLE suggests weak DMCs. The stability of FLE over time suggests that it might in fact be more trait-like than previously assumed in the literature (Dewaele et al. 2018). Paraphrasing Horwitz's (2017) description of FLCA, we could argue that FLE develops gradually through positive experiences in the FL class and that at some point learners have the trait of feeling state enjoyment when participating in FL activities.

A closer look at patterns of learners' FLE dimensions revealed that while FLE Personal and FLE Social remained unchanged over the semester, values for FLE Teacher dropped significantly. In other words, learners continued to enjoy themselves, and kept enjoying the group solidarity between the start and the end of the course despite the fact that their teacher appreciation dropped. Zooming in on the three items that make up this dimension revealed that the teacher was perceived as being less friendly, less supportive and less encouraging at the end of the semester than at the beginning. It is worth pointing out that the scores remained above 4 on a 5-point scale, so the students remained, on average, very positive about their teacher. The reason for this drop could be the findings reported in Dewaele, Saito and Halimi (2021) for the same sample, namely that the absence of joking in class by some teachers eroded their students' FLE. Another possibility is that disappointing performance in class or unexpected bad test results may have demotivated learners and they may have blamed the teacher for this (Dewaele and Proietti Ergün 2020). The different pattern of FLE teacher in comparison to FLE Personal and FLE Social does not imply that FLE teacher is a variable in its own right that functions uniquely in the nomological network of emotions, motivation and attitudes rather than being one of three lower-order dimensions of FLE as established by Botes et al. (2021). However, it raises interesting questions about the complex interconnections between learners' emotions and perceptions of their environment.

The pattern for FLE was partially replicated for the four AM dimensions. Integrativeness and Instrumental orientation remained stable during the semester – two dimensions that are independent of the teacher and the course- but values for Attitudes toward the Learning Situation and Motivation dropped, suggesting that some aspect in the way the courses were organized, or taught, or assessed, was linked to a drop in students' levels of AM. It is also possible that the looming exam at the end of the semester weighed heavily on the mood of the learners. Similarly, Dewaele and Dewaele (2017) found that levels of FLE dropped off most sharply in the year in which students had national GCSE exams before recovering in later years.

In line with previous studies, a positive relationship was found between overall levels of FLE and AM, and a weaker negative relationship between FLCA and AM (cf. Dewaele and Proietti Ergün 2020; Papi and Khajavy 2021; Zhang et al. 2020). This pattern also confirms the finding in MacIntyre et al. (2020) that various positive emotions that learners had experienced in the previous weeks were more strongly connected with the positive AM dimensions than negative emotions.

A set of mixed effects modeling analyses revealed that FLE and FLCA had medium effects on Integrativeness, Motivation, and Attitudes toward the Learning Situation and small effects on Instrumental orientation across the academic semester. Further analyses showed that FLE Personal and FLE Social had a significant effect on Integrativeness, Motivation, Attitudes toward the Learning Situation and Instrumental orientation across the four data collection points.

In contrast, FLE Teacher was the only significant positive predictor of Attitudes toward the Learning Situation.

FCLA emerged as a significant but weaker negative predictor of Integrativeness, Motivation, and Attitudes toward the Learning Situation but had no significant effect on Instrumental orientation. One of the few studies that did report a negative link between anxiety and motivation is Clément, Gardner and Smyth (1977). The authors labeled one dimension emerging from a factor analysis 'Self confidence with English' in which low anxiety when speaking in public had high loadings together with high proficiency, frequent use, multilingualism, positive attitudes towards the language and the course, and strong motivation. More recently MacIntyre and Vincze (2017) reported similar negative relationships, suggesting that anxiety acts as a limited but constant drag on Integrativeness, Motivation, and Attitudes toward the Learning Situation (MacIntyre et al. 2020).

The significant interaction effects of FLE Teacher and Time for Integrativeness, Motivation, and Instrumental orientation -and to a lesser extent Attitudes towards the Learning Situation- suggest that the relationship between FLE Teacher and the AM dimensions changes over time. In other words, the relationships between an independent variable (FLE Teacher) and the dependent variables (AM dimensions) for which values drop significantly over the course of one semester also become stronger. This suggests that teacher appreciation was only loosely connected with learners' AM at the start of the course. This is not surprising because upon meeting the new teacher at the start of the course, learners may compare the teacher with previous teachers and assess the new teacher's personality, teaching style, content knowledge and quirky habits. In other words, FLE Teacher is the only FLE dimension that is 'rebooted' every time a learner meets a new teacher. FLE Personal is carried over from previous FL classes and it is likely that a good proportion of the group members are familiar from previous classes, which means FLE Social is also quite stable over time. Only the teacher changes at the start of a new academic year (except for first year students for whom the peers are also new). Motivation to learn the FL has not collapsed during the holiday preceding the new academic year, but in the absence of a teacher it had to survive on its own. After the first few classes with the new teacher, students could start linking their teacher appreciation with their AM. The teacher becomes the new temporary embodiment of learners' motivation. Only interviews could shed light on the causes. It is possible that learners start on a high (like a honeymoon) and then come down a little (maybe after unrealistic expectations of progress are adjusted). The phenomenon is familiar to teachers: 'Language teachers understand well that not only can it often be a struggle to generate motivation in students, but that it is equally difficult to *maintain* levels of motivation for a period of time sufficient for measurable academic progress to be made' (Muir and Dörnyei 2013: 360). The weakening of FLE Teacher and AM dimensions may paradoxically lead to a stronger relationship because the teacher has moved from the margin to center stage in the learners' motivation. The teacher provides the input that allows learners to progress and the same teacher judges whether that progress is satisfactory. It is thus important for learners to trust and to please the teacher by getting a good grade (i.e. Instrumental orientation), despite the realization that there are no ideal teachers just as there are no ideal learners.

What these findings suggest is that the debate on the relationship between learner emotions and motivation requires a little bit more nuance. The learner emotions do shape motivation, but they are more than an indistinct "fuel" (Dörnyei and Henry 2022) as they do not affect all dimensions to the same extent, and less so at the start of the course than at the end. Moreover, positive emotions play a much more important role than negative emotions (cf.

MacIntyre et al. 2020; Pan and Zhang 2021). It means that a feeling of anxiety might slightly erode motivation without actually undermining it. In contrast, FLE can establish a solid and wide basis for motivation, protecting it from a disappointing teacher or curriculum. The greater stability over time of the learner emotions compared to learner motivation suggests that learner emotions are less fleeting that previously envisaged and that they may in fact be more trait-like. In contrast, learner motivation is more susceptible to deflate because of the way the course progresses (Elahi Shirvan and Taherian 2018, 2021). Further research could investigate whether some learners are better able to maintain their motivation in suboptimal conditions just like learners with higher levels of Trait Emotional Intelligence and autonomy were found to enjoy their FL classes more after the abrupt move to online teaching during the pandemic (Resnik and Dewaele 2021), which caused a significant drop in FLE. Multiple case studies could also shed further light on the unique dynamic interactions between learner-internal and learner-external variables and the effects on emotions and motivation (Elahi Shirvan et al. 2020, 2021).

Although in the present research design learner emotions were the predictor variables and AM dimensions constituted the dependent variables, it is highly likely that there is a reciprocal effect. In other words, strong motivation is likely to be linked to higher student engagement and active participation in classroom activities, establishing positive classroom dynamics boosting learners' enjoyment and helping them to control their anxiety (Mercer and Dörnyei 2020).

The main limitation of the present study is that without the voices of participants, and direct observation of classroom interactions, it is impossible to know exactly whether other factors -in addition to the lack of joking- caused the decrease in teacher appreciation and the drop in Motivation and Attitudes towards the Learning Situation.

The pedagogical implication of our findings is that teachers face a continuing challenge in creating and maintaining a classroom atmosphere where anxiety is controlled and where positive emotions can flourish thereby sustaining and amplifying learners' motivation over time, even beyond the end of the course. The strategies to build and sustain motivation and engagement (Mercer and Dörnyei 2020) are not different from those needed to create a positive, enjoyable classroom environment: engaging verbal and non-verbal behaviour (Talebzadeh et al. 2019, 2020) and regular joking by the teacher (Dewaele et al. 2021) helps maintaining FLE over time. Just like in a race, a good start is crucial, but it is equally important to maintain speed when the road climbs, when an occasional shower drenches the participants, when a blister may start developing, and when some weaker participants despair of not getting in front. A good FL teacher is like a good sports coach, defined by the Olympic Committee as somebody who is 'positive, enthusiastic, supportive, trusting, focused, goal-oriented, knowledgeable, observant, respectful, patient and a clear communicator'
https://stillmed.olympic.org/media/Document%20Library/OlympicOrg/IOC/What-We-Do/Protecting-Clean-Athletes/Athletes-Space/Athletes-Entourage/Coaches/EN-Qualities-of-a-coach.pdf.

CONCLUSION

The present study was framed in light of the current debate on the relationship between classroom emotions and motivation. The findings offer solid evidence of a strong link between both, thus rejecting the view that emotions and motivation are unconnected. The findings could be interpreted as support for MacIntyre et al.'s (2019) position that positive emotions can be powerful motivators in themselves. We would argue that, depending on the emotion and on the point in time, learner emotions may morph from rather diffuse 'action tendencies' at the start of a course to become more goal-specific towards the end. Negative emotions may not be goal-

specific but a positive emotion like FLE becomes increasingly goal-specific over time. In other words, FL learners able to control their FLCA who experience repeated pleasure in managing to interact in the FL may gradually start enjoying it more deeply (Dewaele and MacIntyre 2016). We argue that repeated superficial and fleeting pleasurable experiences in FL learning leads to a much more profound and stable trait of feeling state enjoyment which acts as a self-reinforcing motivator alongside traditional motivational variables such as the L2 ideal self, Integrativeness, Instrumental orientation, Attitudes toward the Learning Situation and the more general drive to master the FL combined with the effort needed to achieve this aim. Our findings suggest that FLE can survive a drop in motivation caused by a (slight) disenchantment with the teacher and the class. In that case, FLE Personal and FLE Social, in addition to the shrinking FLE Teacher, become the buoys that keep learners afloat.

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Table 1
Internal consistency of FLE, FLCA and AM at Time 1, Time 2, Time 3 and Time 4 (Cronbach's alpha)

Time	FLE (9 items)	FLCA (8 items)	AM (11 items)
T1	.810	.766	.874
T2	.889	.784	.933
T3	.906	.801	.945
T4	.927	.832	.949

Table 2
Internal consistency of FLE Personal, FLE Teacher and FLE Social at Time 1, Time 2, Time 3 and Time 4 (Cronbach's alpha)

Time	FLE Personal (3 items)	FLE Social (3 items)	FLE Teacher (3 items)
T1	.715	.615	.867
T2	.791	.745	.925
T3	.813	.798	.923
T4	.857	.827	.943

Table 3
Internal consistency of Integrativeness, Attitudes toward the Learning Situation and Motivation at Time 1, Time 2, Time 3 and Time 4 (Cronbach's alpha)

Time	Integrativeness (3 items)	Attitudes toward the Learning Situation (2 items)	Motivation (3 items)
T1	.628	.697	.856
T2	.828	.744	.915
T3	.861	.809	.924
T4	.874	.854	.935

Note: No scale analysis was performed for Instrumental orientation as it consisted of a single item.

Table 4

Results of Mixed Effects Modeling Analyses on Classroom Emotion Factors Affecting Motivation Factors (Omnibus Analyses)

	Fixed effects: Factor	*Estimate (Standardized β)*	*SE*	*t*	*p*
Model 1	Intercepts	.062	.039	1.592	0.112
	Construct	.000	.010	< 0.001	.999
	Time	-.025	.010	-2.583	.010*
	FLE Personal	.271	.016	17.068	< .001*
	FLE Teacher	.169	.016	10.476	< .001*
	FLE Social	.120	.016	7.763	< .001*
	FLCA	-.111	.012	-9.508	< .001*
	Random effects	Variances	*SD*		
	Participants	.096	.310		
	Conditional R^2	.352			
	Marginal R^2	.257			
Model 2	Intercepts	.077	.039	1.964	.050
	Construct	.000	.009	< 0.001	.999
	Time	-.027	.010	-2.790	.005*
	FLE Personal	.268	.038	7.018	< .001*
	FLE Teacher	-.015	.038	-0.392	.695
	FLE Social	.189	.037	5.042	< .001*
	FLCA	-.142	.029	-4.843	< .001*
	Time × FLE Personal	-.002	.014	-0.138	.890
	Time × FLE Teacher	.075	.014	5.318	< .001*
	Time × FLE Social	-.029	.014	-1.878	.055
	Time × FLCA	.013	.010	1.256	.209
	Random effects	Variances	*SD*		
	Participants	.097	.311		
	Conditional R^2	.357			
	Marginal R^2	.260			

Note. * indicates $p < .05$; The following R code was used:

Model 1 <- lmer(formula = Motivation ~ Construct + Time + FLE Personal + FLE Teacher + FLE Social + FLCA (1| Participant ID)

Model 2 <- lmer(formula = Motivation ~ Construct + Time + FLE Personal + FLE Teacher + FLE Social + FLCA + FLE Personal: Time + FLE Teacher: Time + FLE Social: Time + (1| Participant ID)

Table 5

Results of Mixed Effects Modeling Analyses on FLE Personal Factors Affecting Motivation Factors (Post-Hoc Analyses)

	Fixed effects: Factor	*Estimate (Standardized β)*	*SE*	*t*	*p*
Model 3 (T1)	Intercepts	.093	.053	1.767	.077
	Construct	-.004	.015	-0.252	.801
	FLE Personal	.270	.046	5.831	< .000*
	FLE Teacher	.033	.047	0.707	.480
	FLE Social	.096	.046	2.108	< .036*
	FLCA	-.110	.037	-2.987	< .003*
	Random effects	Variances	*SD*		
	Participants	.350	.591		
	Conditional R^2	.529			
	Marginal R^2	.125			
Model 4 (T2)	Intercepts	-.055	.049	-1.139	.255
	Construct	.029	.013	2.305	.021*
	FLE Personal	.249	.051	4.914	< .000*
	FLE Teacher	.138	.050	2.784	.006
	FLE Social	.205	.051	3.997	< .000*
	FLCA	-.112	.041	-2.755	.006*
	Random effects	Variances	*SD*		
	Participants	.425	.651		
	Conditional R^2	.709			
	Marginal R^2	.275			
Model 5 (T3)	Intercepts	-.033	.050	-0.664	.507
	Construct	-.015	.013	-1.158	.247
	FLE Personal	.240	.055	4.376	< .000*
	FLE Teacher	.319	.055	5.791	< .000*
	FLE Social	.054	.050	1.063	.288
	FLCA	-.099	.040	-2.487	.013*
	Random effects	Variances	*SD*		
	Participants	.483	.695		
	Conditional R^2	.740			
	Marginal R^2	.297			
Model 6 (T4)	Intercepts	.037	.050	0.744	.457
	Construct	-.011	.012	-0.879	.379
	FLE Personal	.288	.054	5.292	< .000*
	FLE Teacher	.218	.055	3.953	< .000*
	FLE Social	.061	.052	1.183	.238
	FLCA	-.103	.036	-2.839	.005*
	Random effects	Variances	*SD*		
	Participants	.470	.686		
	Conditional R^2	.753			
	Marginal R^2	.313			

Note. * indicates $p < .05$; The following R code was used:
Models 3-6 <- lmer(formula = Motivation (T1-T4) ~ Construct + FLE Teacher + (1| Participant ID)

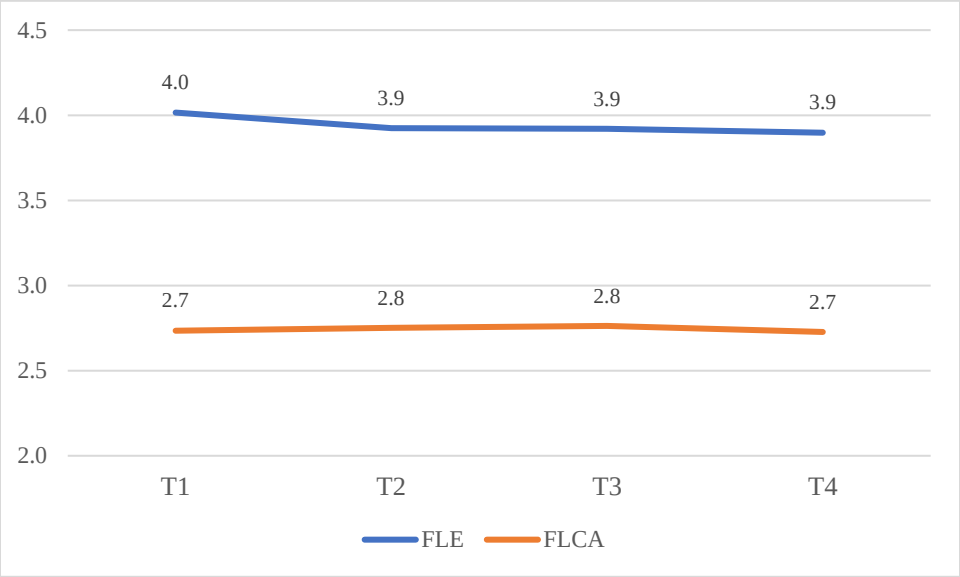

Figure 1. Mean scores of FLE and FLCA at Time 1, Time 2, Time 3 and Time 4

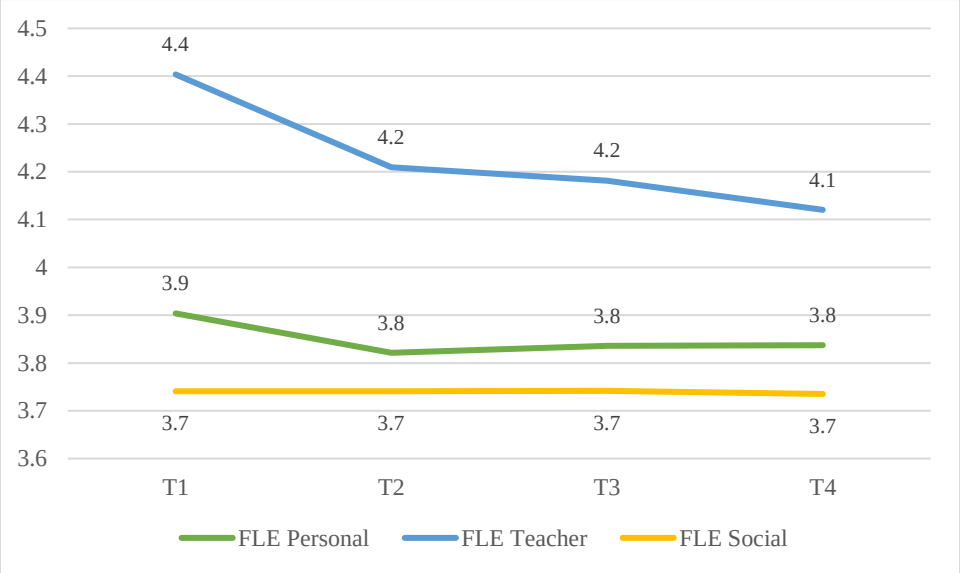

Figure 2. Mean scores for FLE Personal, FLE Teacher and FLE Social at Time 1, Time 2, Time 3 and Time 4

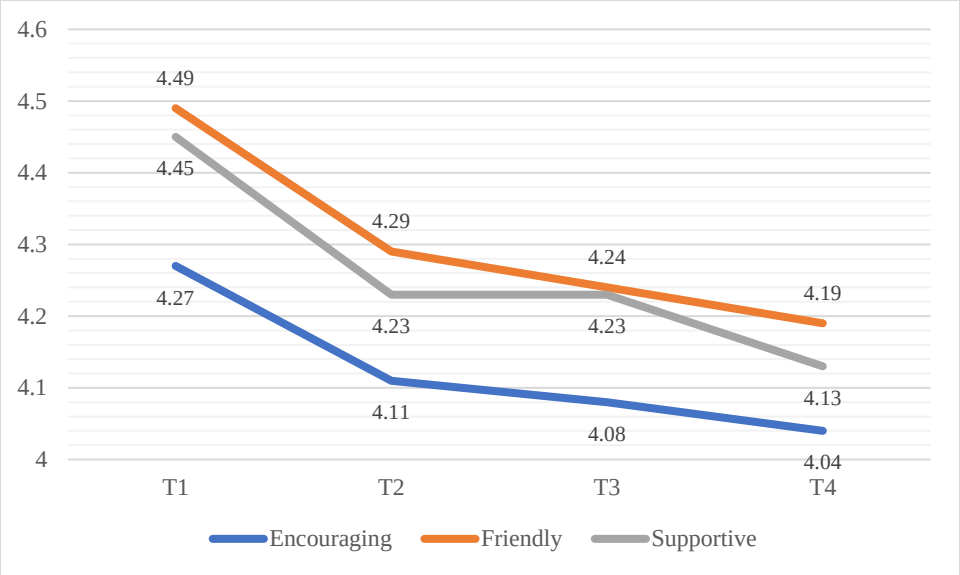

Figure 3. Mean scores for Teacher being encouraging, friendly and supportive at Time 1, Time 2, Time 3 and Time 4

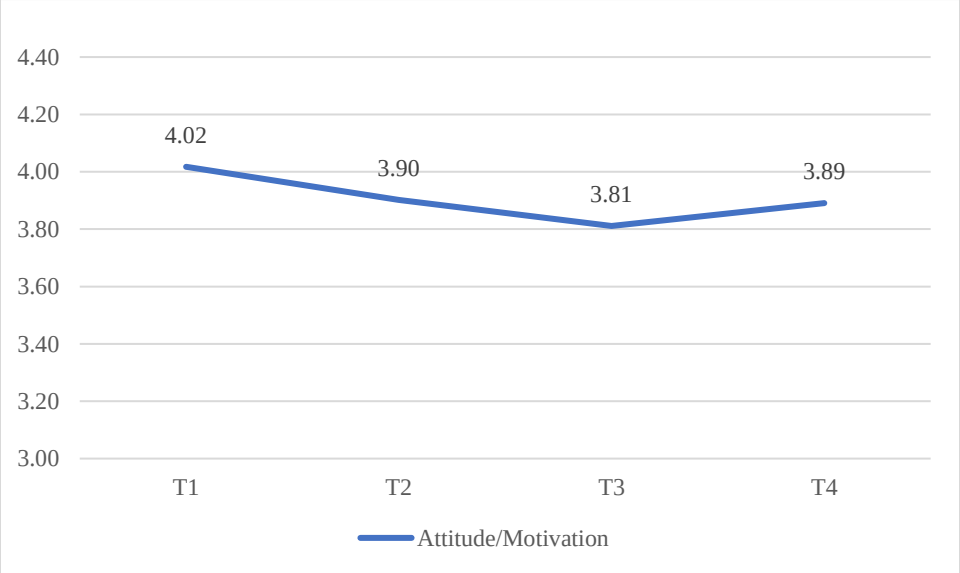

Figure 4. Mean scores for Attitude/Motivation at Time 1, Time 2, Time 3 and Time 4

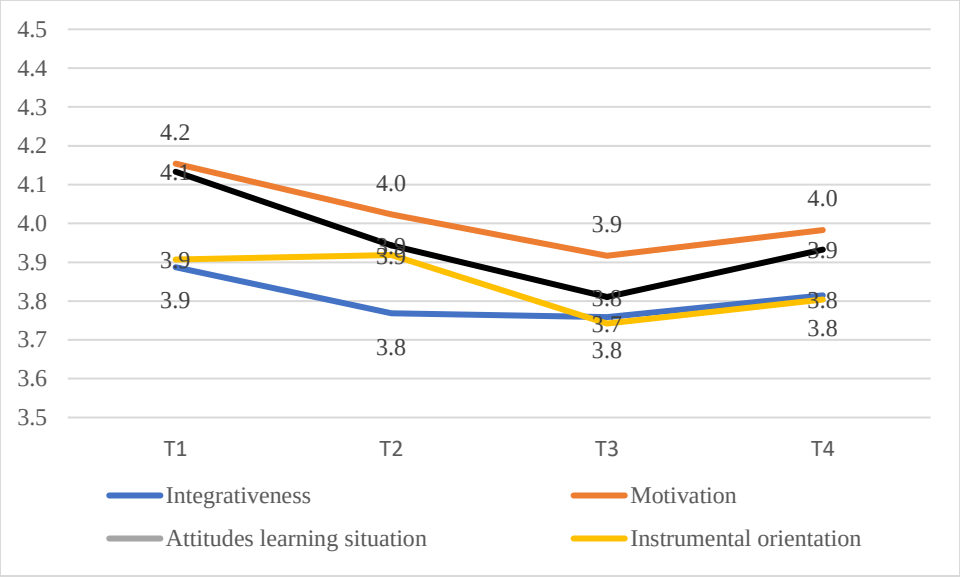

Figure 5. Mean scores for Integrativeness, Attitude toward the Learning Situation, Motivation and Instrumental orientation at Time 1, Time 2, Time 3 and Time 4

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[1] Available at https://publish.uwo.ca/~gardner/docs/englishamtb.pdf

[2] They were recalculated on a 5-point scale in order to facilitate comparison with the FLE and FLCA scales.

[3] IRB approval number: 173695