The Relationship between Learners' Affective Variables and Second Language Achievement

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Abstract
This study examines five affective variables: *motivation*, *attitudes*, *anxiety*, *self-esteem* and *autonomy*, with the aim of establishing their effect, together and individually, on learners' *L2 achievement*. Data were collected from Saudi university students learning English as a second/foreign language as part of their degree. Data collection was conducted, via a questionnaire and a language test, in two waves – approximately three months apart (*N=274* at Time 1, and *N=252* at Time 2). Descriptive and inferential analyses of the data confirmed the importance of *affect* in relation to L2 acquisition: the five affective variables together accounted for between 85% and 91% of the L2 performance variance in our sample. Individually, each of the five variables was found to make a unique contribution to L2 performance, but among them motivation emerged as by far the strongest predictor of L2 achievement; by comparison the effects of the other four on achievement can be described as marginal. This outcome constitutes compelling evidence of the critical role that motivation plays with respect to L2 acquisition generally and achievement more specifically. The study's findings hold a range of potentially important implications for L2 learning and teaching practices. In light of these findings, EFL teachers are in a strong position to influence the operation of the affective factors by consolidating learners' autonomy and self-esteem, reducing anxiety, promoting positive attitudes and enhancing learners' motivation.
Key terms: affect, motivation, attitudes, anxiety, self-esteem, autonomy, EFL teaching/learning

Introduction
It is nowadays widely recognized that the learning of a foreign/second language (L2), especially in adulthood, is a rather complex process involving the interplay of a broad range of biological, cognitive, psychological/affective and environmental variables (Norris & Ortega, 2003), and that they all contribute—to one extent or another—to its product, i.e., the emerging target language (TL) competence.

The role of affect in L2 acquisition is generally acknowledged by most people working in this field. As Horwitz, Horwitz, and Cope (1986, p. 128) point out, the complexity of the mental operations involved in learning and using an L2 can pose severe challenges to learners' self-concepts and can lead "to reticence, self-consciousness, fear, or even panic". They further claim that few other cognitive domains implicate learners' self-concepts to the same extent.

That said, the magnitude of the emotional response that engaging in L2 learning quite commonly induces in adult L2 learners may not always be truly appreciated. This emotional response, according to Cohen and Norst (1989, p. 61), is "quite unexpected in its intensity and vehemence" and, in addition to apprehension and anxiety, it also often involves embarrassment, resentment, frustration, depression, a sense of inadequacy, a sense of inferiority, loss of control, loss of independence and self-esteem: overall a deeply traumatic experience.(1)

It seems inconceivable that an experience of such nature would not seriously affect learners' psychological/emotive state of mind, including their attitudes, motivation, self-esteem, self-confidence, autonomy/self-sufficiency, etc., and—by extension—learners' capacity to perform. This underscores the need for (more) substantive research examining the nature of these variables and their relation to L2 achievement.

The study reports here was specifically set out to examine a group of psychological variables, including *attitudes*, *motivation*, *anxiety*, *learner autonomy* and *self-esteem*, and to establish their link to *L2 achievement*. We have called these "affective variables", with the proviso that the term 'affective' has been used somewhat loosely here as a convenient label for a group of factors closely related to the learner's self, even though some of these may not strictly be regarded as emotive/affective in the same way as others. It is also important to acknowledge that different theories may not conceptualise these variables in absolutely the same—as discussed a little further down, this is certainly true of Gardner's Socio-Educational Model which treats (some) *attitudes* as a component of *motivation*. The study reported here has not followed a particular theoretical framework, nor has it attempted to provide justification for one theory or another: it has been driven by purely empirical considerations.

Attitudes
Ajzen (1989, p. 241) defines *attitude* as "an individual's disposition to respond favourably or unfavourably to an object, person, institution, or event, or any other discriminable aspect of the individual's world." L2 attitudes include attitudes towards the target language (TL), the TL community, the TL culture, the social values associated with TL competence, as well as evaluations of other attitudinal objects, such as teachers, curriculum, and teachings methods (Gardner, 2001); the latter are also commonly referred to as *attitudes to the learning situation*.

The role that L2 attitudes play in the process of L2 acquisition has been researched quite extensively (e.g., Alrahaili, 2014; Dörnyei, 1990, 1994, 2005; Gardner, 1985, 2001, 2010; Gardner & Lambert, 1959; Yashima, 2002, among many others), and there is a general consensus that attitudes influence L2 achievement, albeit indirectly—via motivation (Gardner, 2010). In Gardner's Socio-Educational Model, attitudes to the TL and the TL speakers are in fact one of the components of motivation. Even though Dörnyei's Motivational Self System theory conceptualises motivation differently, he also recognises the important relationship between attitudes and motivation. As Dörnyei (2010, p. 79) puts it, "it is difficult to imagine that we can have a vivid Ideal L2 Self if the L2 is spoken by a community that we despise."

Positive attitudes to the TL and its speakers, as well as positive attitudes to the learning situation, have consistently been found to be related to higher L2 achievement (Alrahaili, 2014; Gardner, 1968, 2001, 2010; Morey, 1971).

Motivation

Historically, the study of L2 motivation can be traced back to Gardner's research in the late 1950s and early 1960s in Canada. In Gardner's (1985) Socio-Educational Model, motivation is conceptualised as having three components: motivational intensity, desire to learn the TL, and attitudes toward learning the TL. The Model involves another separate attitudinal component—attitudes to the learning situation, which is treated not as a part of motivation, but as one of its antecedents.

Gardner's influential Socio-Educational Model (and the related integrative/instrumental motivation dichotomy) dominated the field until the early 1990s after which there has been a shift to cognitive-situated and process-oriented approaches to the study of motivation typically drawing on leading motivation theories from the field of psychology, including theories of expectancy-value, attribution, self-efficacy, and self-worth. This shift marked the emergence of Zoltan Dörnyei's L2 Motivational Self System theory (Dörnyei, 2005; Dörnyei & Ushioda, 2009) which seeks to explain L2 motivation by reference to learners' selves, more specifically via the interplay between the learner's 'ideal self' and their 'ought-to self'.

It is not among the goals of this paper to critique the major theories of L2 motivation. It is noteworthy though that, regardless of how motivation is conceptualised and construed, no one seems to deny its critical importance in relation to L2 acquisition. According to Gardner (2001 and elsewhere), motivation is the strongest determinant of L2 achievement. Cohen and Dörnyei (2002, p. 172) agree, claiming that "nothing much happens" without motivation.

Anxiety

According to one definition, "[a]nxiety is the subjective feeling of tension, apprehension, nervousness, and worry associated with an arousal of the autonomic nervous system" (Spielberger, 1983, p. 1). The study of L2 anxiety is closely associated with the work of Horwitz and her colleagues (e.g., Horwitz, Horwitz, & Cope,1986, as well as subsequent work). Following their pioneering work in the 1980s, the role of L2 anxiety in L2 learning has received a substantial amount of attention by L2 researchers.

In their seminal work, Horwitz et al. (1986, p. 128) posit the existence of a specific type of anxiety, Foreign Language Anxiety, which is "a distinct complex construct of self-perceptions,

beliefs, feelings, and behaviours related to classroom language learning arising from the uniqueness of the language learning process". They define it as a *situation-specific anxiety* (rather than as a stable general personality trait) which is "distinguishable from other specific anxieties" (p. 129).

Studies using the Foreign Language Classroom Anxiety Scale (originally devised by Horwitz) and other specific measures of *L2 anxiety* have found a consistent moderate negative correlation between anxiety and *L2 achievement(2)* (commonly measured via final course grades) (e.g., Anyadubalu, 2010; Atasheneh & Izadi, 2012; Batumlu & Erden, 2007; Gardner & MacIntyre, 1993; Gardner, Tremblay, & Masgoret, 1997; Hewitt & Stephenson 2011; Horwitz, 1991, 2001; Ito, 2008; MacIntyre & Gardner, 1991a; MacIntyre, Noels, & Clément, 1997; Mahmood & Iqbal, 2010; Pyun, Kim, Cho, & Lee, 2014; Tallon, 2009; Wilson, 2006; Young, 1991). This negative correlation has been found to hold at various instructional levels as well as with different target languages (e.g., Aida, 1994; Alrabai, 2014a; Coulombe, 2000; Djigunovic, 2006; Rodriguez, 1995; Saito & Samimy, 1996).

There is some evidence of a possible reverse relationship between level of L2 proficiency and L2 anxiety: at least one study (MacIntyre & Gardner, 1991a) has linked high L2 proficiency to low language anxiety.

Autonomy

The other two affective variables considered in this paper, learner *autonomy* and *self-esteem*, have received much more attention outside of the L2 field (e.g., education, psychology). According to Dickinson (1993, p. 330), *autonomy* is "an attitude towards learning in which the learner is prepared to take, or does take, responsibility for his own learning," while Holec (1985, p. 180) defines *autonomy* as a capacity "to carry out a self-directed learning programme."

Autonomy is regarded as a very desirable characteristic of learners, because individuals who take ownership of their learning tend to be more focused and more purposeful, and are as a result more effective and more successful learners (Little, 1991, p. 8). Also learners who actively engage in their own learning tend to have a higher motivation and, ultimately, better achievement (Dickinson, 1995). It has been suggested that autonomy and self-determination particularly promote intrinsic motivation (Deci & Ryan, 1985).

Self-esteem

One researcher defines *self-esteem* as "a personal judgement of worthiness that is expressed in the attitudes that the individual holds towards himself" (Coopersmith, 1967, pp. 4-5), while another describes *self-esteem* as "an organized configuration of perceptions of the self which are admissible to awareness" (Rogers, 1951, p. 136). As with learner *autonomy*, most of what we know in relation to *self-esteem* comes from research in the fields of education and psychology dating back to the 1950s, 1960s and 1970s. Self-esteem is regarded as a relatively fixed and stable personality trait—one that is generally resistant to change. Self-esteem operates as a strong determinant of behaviour—individuals typically act in accordance with their self-concept (Fitts, 1965; Miskimins, 1973; Rogers, 1951).

Three hierarchically ordered levels of self-esteem are distinguished: *global*, *specific* and *task* self-esteem. For instance, an individual may have a self-esteem which is specific to L2 acquisition (which could be similar or different to their global self-esteem). A *task* self-esteem would emerge in relation to a specific learning task (doing a grammar exercise, engaging in a communicative task, a language test, etc.).

Simpson and Boyle (1975) report that *self-esteem* is positively related with performance/achievement. In other words, individuals with a high self-esteem are more likely to be high achievers. It is notable though that the hierarchically lower levels of *self-esteem*, i.e., *specific self-esteem* and (especially) *task self-esteem*, are much better predictors of actual performance than *global self-esteem* (see also Heyde, 1977).

The capacity of *self-esteem* to affect performance/achievement may at least in part be explained via its relation to factors affecting academic performance, e.g. attitudes, motivation, morale, class participation, etc. (Fitts, 1972, pp. 36-42). The level of one's self-esteem may also impact an individual's processing capacity (Heyde, 1977, p. 227). Generally, an individual with a high self-esteem is "apt to use his intellectual resources more efficiently […]" (Fitts, 1972, p. 43).

The learner's identity/self as the nexus of all affective variables

Few of the sources reviewed here have failed to note how closely interrelated and interdependent the different affective variables are. High *self-esteem* is typically linked to high self-confidence and to low anxiety. Learner beliefs and *attitudes* are found to be strong determinants of learner behaviour, including *autonomy* (Cotterall, 1995). Clement (1980), in fact, defines L2 *anxiety* in terms of how it relates to learners' *self-esteem* and self-confidence, while Barksdale (1972) propose that *self-esteem* is a precursor of *motivation*. In addition, it is not unreasonable to expect that positive *attitudes*, especially *attitudes to the learning situation*, are linked to low(er) *anxiety*. Also, achieving high learner *autonomy* would be hard or impossible without high *motivation*.

In view of the fact that, individually and together, these variables form a substantial part of the individual's identity/self (in the sense of Guiora et al., 1972), their close interrelationship should not really come as a surprise. It is not among the goal of this paper to consider in detail issues of language and identity/the self. No one would dispute, however, that attitudes, motivation, anxiety, self-esteem, independence/autonomy are all very important dimensions of the self, all playing an important role in how the individual interacts and engages with the world around him or her.

The recognition that attempting to learn a new language impacts—to one degree or another—the learner's identity is not new. Over 40 years ago Guiora et al. (1972, p. 422) emphasised that language is an essential part of the self and that "second language learning in all of its dimensions exerts a very specific demand with regard to self-representation. Essentially, to learn a second language is to take on a new identity" (see also Torrey, 1971). We should add that learning a new language may also involve some loss of identity. It is not inconceivable that many of the emotive/affective/attitudinal problems which have been found to occur in L2 learning arise—at least in part—as a consequence of that.

The last two decades have in fact seen a renewed interest in role of the learner's identity and related attempts to explain various aspects of L2 learning by reference to the learner's self/identity. Among them most notable are Oyserman's (2009) identity-based motivation theory, and—perhaps even more so—Dörnyei's L2 Motivational Self System theory (Dörnyei, 2005; Dörnyei & Ushioda, 2009).

Affect and L2 achievement

As we noted earlier, two of the affective variables examined in the current study, *autonomy* and *self-esteem*, have previously received relatively little attention within the L2 domain, especially the latter, and as a result there isn't much evidence showing the role these two play in relation to *L2 achievement*. Based on research in related fields (education and psychology, in particular) it seems reasonable to assume that *self-esteem* and *autonomy* are positively related to *L2 achievement*, but this has not been conclusively established for L2 learning. The other three: *attitudes*, *motivation* and—to a somewhat lesser extent—*L2 anxiety*, have been researched quite extensively, but it should be borne in mind that in many instances researchers have sought to establish how these variables interact with other affective variables (e.g., the formative role of *attitudes* in relation to *motivation*, or the relationship between *motivation* and intended learning efforts) rather than try to establish the effect of these variables on *L2 achievement*. In those instances in which an attempt was made to link an affective variable to achievement, the criterion measure was almost invariably the learners' course grades. Course grades, however, may not be the most accurate and transparent measure of L2 competence: certainly far less so than a dedicated language test. According to Steinberg and Horwitz (1986), the use of final grades as a measure of *L2 achievement* can be blamed for the variability of results reported in the *anxiety* literature.

It is also noteworthy that there has been very little research examining the specific contribution to *L2 achievement* of each of the affective variables relative to each other. Put differently, while previous research may have established quite conclusively that affective factors do influence both the process of L2 learning and its product, no one seems to have tried to establish which of the affective factors plays the most important role in relation to L2 acquisition and contributes most to L2 achievement. One possible exception is Gardner and MacIntyre's (1993) study which did examine a group of variables and found *anxiety* to have the highest level of correlation with *achievement*. It should be borne in mind, though, that their research was conceived in a completely different way, that it had rather different objectives, and that the set of affective variables examined in their study was different from the one considered here. We should also acknowledge Djigunovic's (2006) research examining the relationship between several affective factors and the two L2 productive skills (speaking and writing). However, even though her study conceptualised *affect* as consisting of different components such as *motivation*, *self-esteem*, *anxiety*, etc., it nonetheless treated *affect* as a single construct and used a single unified index to establish its relation to *L2 achievement*. In other words, her results are unrevealing with respect to the relative contribution to achievement of individual variables.

The current study: rationale and objectives

The study reported here has been set out to examine the effect of five affective variables—*attitudes*, *motivation*, *anxiety*, *self-esteem* and *autonomy*, on *L2 achievement* as measured with a dedicated L2 achievement test.

Our study has also been designed to measure the individual effects of the five affective variables on L2 achievement, and thus to establish their influence on achievement relative to each other. Put differently, our study has specifically been designed to address the question: Which of the five affective variables contributes to L2 achievement most?

Method
Design

The study took place in Saudi Arabia during the 2014/15 autumn/winter semester of the Saudi academic year. Three research sites were used: King Khalid University, King Abdulaziz University, and King Saud University. To address our project's objectives, our study collected two sets of data: 1) questionnaire data relating to the 5 affective variables targeted in this study, and 2) L2 proficiency data obtained via an L2 achievement test. Two data collections were conducted, nearly three months apart: one at the start of the semester (Time 1, or T1) and another at the end of the semester (Time 2, or T2). Once collected, the two sets of data were correlated in order to establish the relationships between individual affective variables and L2 achievement. The study's design can be conceptualised graphically as in Figure 1.

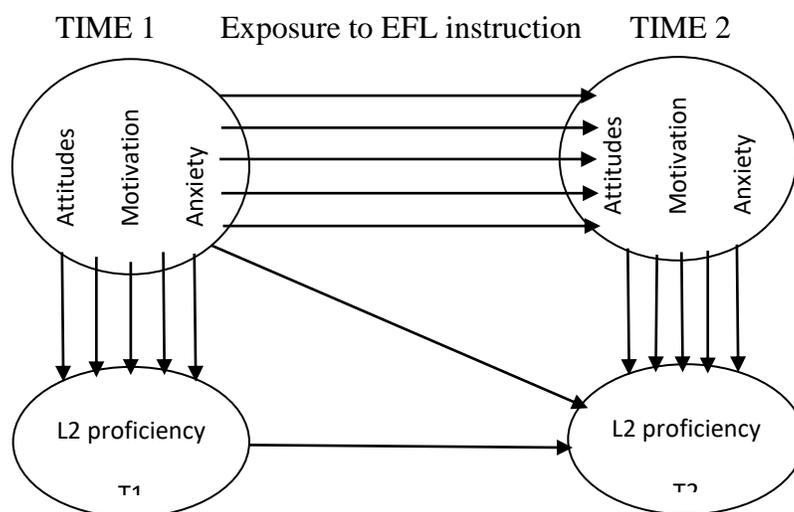*Figure 1.* Affective variables and L2 achievement (measured on two sequential waves).

The study's design enabled us to examine:
(a) the relative stability of the individual affective factors [T1 affective variables vs. T2 affective variables];
(b) the extent to which individual affective variables correlate with EFL achievement [T1 affective variables vs. T1 L2 achievement; T2 affective variables vs. T2 L2 achievement];

(c) the capacity of individual affective variables to predict L2 achievement overtime [T1 affective variables vs. T2 L2 achievement].

Participants

Participants were male university students from the three Saudi universities above learning English as a foreign language (EFL) as part of their undergraduate program. All were Saudi citizens speaking Arabic as their first language. As Table 1 shows, our participants represented a variety of age groups, EFL learning experiences, and social and regional backgrounds. The overall number of participating students involved in the first data collection (T1) was 274. Due to attrition, the number of students who took part in the second data collection (T2) was a bit smaller: 252; 22 of the T1 students did not take part in, or were excluded from, the second data collection due to a variety of reasons (e.g., dropping the course, being absent, giving invalid responses, etc.). The size of our participant sample seems to be adequate to the purposes of a research like ours.(3)

Table 1

Social Demographic Information for the Participating EFL Learners at T1 and T2

	T1 ($N = 274$)		T2 ($N = 252$)	
Demographic variable	FQ	%	FQ	%
Age				
15-18 years old	9	3.28	7	2.78
19-22 years old	231	84.31	221	87.70
23-25 years old	26	9.49	18	7.14
Over 25 years old	8	2.92	6	2.38
EFL learning experience				
5-10 years	177	64.60	172	68.25
11-15 years	78	28.47	69	27.38
Over 15 years	19	6.93	11	4.37
Region of origin				
Capital city	86	31.39	81	32.14

Western region	89	32.48	84	33.34
Southern region	99	36.13	87	34.52

Note. FQ = frequency, % = percentage.

Instruments

Two instruments were deployed in this research. The first was a dedicated questionnaire containing 58 items designed to collect data in relation to the five affective variables targeted in the current study, as follows:

Motivation: Part A (Motivational Intensity, 5 items) and Part C (Intrinsic Motivation, 7 items), 12 items altogether

Attitudes: Part D (Attitudes towards the English course, 7 items) and Part E (Attitudes towards the English teacher, 14 items), 21 items altogether

Self-Esteem: Part B, 6 items (3)

Learner autonomy: Part F, 9 items

Learner anxiety: Part G, 10 items

A five-point Likert scale ranging from Very Untrue to Very True was used.
Numerous sources were drawn upon for the construction of this instrument (including Al-Shammary, 1984; Horwitz et al., 1986; Pintrich & Groot, 1990; Clément et al., 1994; Dörnyei, 1994; Tremblay & Gardner, 1995; Schmidt et al., 1996; Gardner et al., 1997; Clément & Baker, 2001; AlMaiman, 2005; Guilloteaux, 2007; and Alrabai, 2011, 2014b). To avoid the risk that limited English competence would compromise some participants' capacity to respond to all questionnaire items, the questionnaire was administered in Arabic, the learners' native language. The English version of this instrument can be viewed in the Appendix at the end of this paper.
Data in relation to participants' level of L2 proficiency were collected via standardised EFL achievement tests routinely administered at each of the three institutions involved in the current research. These were mid-term syllabus-based progress tests. Readers should bear in mind that while the English syllabi across the three institutions are not identical, they are nevertheless very similar to each other.

Each institution designs and administers its own tests, and each of these tests is carefully moderated, piloted before administration, and tested for reliability (typically yielding high reliability coefficients). That said, the tests which were used as a source of our L2 proficiency data were quite similar in content and practically identical in structure across the three universities. Each test targeted the same types of language skills: listening, reading, writing and grammar. With the exception of writing, which involved a single writing task (evaluated holistically), these were discrete item multiple-choice tests marked objectively. In addition to this, the tests were administered in essentially the same fashion across the three institutions: two blocks of 90 min. each: one testing reading and listening, and the second testing grammar and writing, with a 15-min. break in the middle. The maximum score that students could achieve in these tests (at all three institutions) was 25.

Data collection and procedures

The affective variables questionnaire was administered twice: at the beginning (T1) and end (T2) of the semester, during class time. For reasons of anonymity and confidentiality teachers were asked to remain outside of the classroom during the questionnaire's administration.   Participants took between 30 and 40 minutes to complete the entire questionnaire in one sitting.

The achievement tests were also conducted twice: at the beginning (T1) and end (T2) of the semester. They were conducted either a day before or a day after the administration of the questionnaire. Participants completed the two tests routinely in class, as part of their program.

Data analyses

The collected data were subjected to preliminary statistical analyses, such as scale reliability analysis with Cronbach's alpha as an indicator of internal consistency, item analysis, and normality tests. The latter showed all data to be reliable and normally distributed on all constructs. As can be seen in Table 2, the questionnaire was found to have a reliability index of .91 at T1 and .88 at T2. These values are higher than what Dörnyei (2001a, p. 204) has proposed as the desirable level for internal consistency of attitudinal scales (.80).

Table 2

Cronbach Alphas and Descriptive Statistics for the Affective Variables at T1 and T2

Affective variables	T1			T2		
	α	Mean	SD	α	Mean	SD
Motivation	.80	3.26	.58	.80	3.27	.59
Attitudes	.86	3.46	.52	.83	3.45	.48
Anxiety	.79	3.01	.48	.79	2.99	.43
Autonomy	.71	2.74	.56	.69	2.80	.53
Self-esteem	.78	3.40	.63	.73	3.34	.59

Note. α = Cronbach alpha coefficient, SD= standard deviation.

Frequency counts and measures of central tendency were applied to the L2 proficiency data derived via the two EFL tests to determine our participants' EFL competence. Multiple regression analyses were performed to establish the capacity of the affective variables under consideration to predict learner achievement. This procedure was further used to identify which of these variables had the greatest impact on learners' achievement.

Results
L2 achievement
We start with a summary of our participants' achievement, based on the analysis of the results of the two EFL achievement tests.

Table 3
Learners' L2 Achievement Levels at T1 (N = 274) and T2 (N = 252)

	TIME 1		TIME 2	
ACHIEVEMENT LEVEL	FQ	%	FQ	%
Very high (90-100%)	0	0.00 %	0	0.00 %
High (80-90%)	12	4.38 %	14	5.55 %
Moderate (70-80%)	54	19.71 %	54	21.43%
Low (60-70%)	129	47.08 %	120	47.62 %
Very low (below 60%)	79	28.83 %	64	25.40 %

Note. FQ = frequency, % = percentage.

Perhaps the most notable aspect of the data presented in Table 3 above is the remarkable consistency of the levels across the two testing events. This finding seems to provide further evidence of the reliability of the tests used as instruments in this study. Other than that, the data in Table 3 show a relatively low level of achievement, with nearly 70% of learners falling within the low-to-moderate range. Also notable is the complete lack of very high achievers, i.e. not a single participant scored within the 90-100% range.

Relationships among affective variables
Inferential statistical analyses were used to examine the relationships among the five affective variables considered in this study. A summary of our findings is presented in Table 4.
Table 4
Relationships among the Affective Variables at T1 and T2

Affective variables	Motivation		Attitudes		Anxiety		Autonomy		Self-esteem	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Motivation	-	-	.533**	.332**	-.255**	-.310**	.484**	.394**	.589**	.558**

Attitudes	.533**	.332**	-	-	-.198**	-.167**	.386**	.261**	.579**	.431**
Anxiety	-.255**	-.310**	-.198**	-.167**	-	-	-.136*	-.213**	-.262**	-.342**
Autonomy	.484**	.394**	.386**	.261**	-.136*	-.213**	-	-	.428**	.300**
Self-esteem	.589**	.558**	.579**	.431**	-.262**	-.342**	.428**	.300**	-	-

Note. **p < 0.01, *p < 0.05.

There are several aspects of the data presented in Table 4 which deserve to be noted. One is that statistically significant correlations (at the 0.01 and 0.05 level) were found, both at T1 and T2, among all of the affective variables examined in this study. Another is in relation to *anxiety*: in line with expectations, *anxiety* was found to be negatively correlated with the other affective variables.

It is also interesting to see that both at T1 and T2 the strongest correlation held between *motivation* and *self-esteem* (*r* = .589 and *r* = .558, respectively). The *anxiety* variable scored the weakest correlation with *autonomy* at T1 (*r* = -.136) and with *attitudes* at T2 (*r* = -.167). Overall, *anxiety*'s correlation values were noticeably lower than any of the other affective variables.
The 2-wave design of our data collection has provided a valuable longitudinal dimension to our study: one which we very rarely find in other related research. We ran a series of t-tests to establish T1-T2 correlations for the individual variables (e.g., T1 motivation vs. T2 motivation) and thus examine their relative stability over time.
Table 5
Descriptive Statistics and t-test Results for the Affective Variables over Time

	T1		T2					
Affective variables	M	SD	M	SD	*r*	t	df	*p*
Motivation	3.34	.52	3.27	.59	.405**	1.86	251	.064
Attitudes	3.49	.52	3.45	.48	.065	1.14	251	.254
Anxiety	2.99	.47	2.99	.43	.060	.020	251	.984
Autonomy	2.78	.55	2.80	.53	.113	-.536	251	.593

| Self-esteem | 3.46 | .61 | 3.34 | .59 | .120 | 2.34 | 251 | .020 |

Note. M= mean, SD= standard deviation, r= correlation coefficient, t= the t-value, df= the degrees of freedom, p= the p-value (significance level), **p < 0.01.

The data in Table 5 suggest that, as far as our participant sample is concerned, the only truly stable and durable factor among the five variables is *motivation*. The other four seem to be of more transient nature.

Relationships between the affective variables and L2 achievement

We next examined the extent to which the five affective variables considered in this study are linked to *L2 achievement*. A summary of our findings is presented in the Table 6.

Table 6

Correlations between the Affective Variables and L2 Achievement at T1 and T2

Affective variables	Motivation		Attitudes		Anxiety		Autonomy		Self-esteem	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
Achievement	.820**	.775**	.755**	.612**	-.393**	-.461**	.636**	.532**	.753**	.706**

Note. **p < 0.01.

As Table 6 shows, significant correlations were established between each of the five affective variables and *L2 achievement*—both at T1 and T2. Unsurprisingly, *anxiety* was again found to be negatively correlated with *achievement*. It is noteworthy that by far the strongest correlations held between *motivation* and *L2 achievement*. *Anxiety* again came a distant last in terms of the strength of its correlations with *achievement*.

The longitudinal dimension of our study has also enabled us to examine the relationships between the five affective variables and *L2 achievement* over time. Table 7 presents the correlation values of T1 affective variables and T2 *achievement*.

Table 7

Longitudinal Correlations between T1 Affective Variables and T2 Achievement

Affective variables T1	Motivation	Attitudes	Anxiety	Autonomy	Self-esteem
Achievement T2	.388**	.205**	-.046	.189**	.101

Note. **p < 0.01.

It is interesting to note that, while cross-sectionally all of the five affective variables were found to have significant correlations with *achievement*, longitudinally the effects of *anxiety* and *self-esteem* on *achievement* seem to fade away—below statistical significance. The reader will also note that *motivation* again has by far the strongest correlation with *achievement*.

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Affective variables as predictors of L2 achievement

Some of our most interesting findings come from the multiple mediation regression analyses that we conducted on our data to examine the affective variables' capacity to predict *achievement*. We found that the independent variables (the affective factors) statistically significantly predicted the dependent variable (i.e., learners' achievement) both at T1 and T2: F (5, 268) = 540, $p < .001$; and F (5, 246) = 270, $p < .001$, respectively(4) A summary of our findings is presented in Table 8.

Table 8

Multiple Regression Coefficients for the Affective Variables as Predictors of Learners' Achievement at T1 and T2

Affective variables	R^2		Beta Coefficients	
	T1	T2	*B* T1	*B* T2
Motivation	.673 (.673^)	.600 (.600^)	.385 (.094*)	.425 (.115*)
Attitudes	.814 (.141^)	.742 (.142^)	.314 (.100*)	.296 (.124*)
Anxiety	.859 (.045^)	.791 (.049^)	-.148 (.089*)	-.162 (.134*)
Autonomy	.890 (.031^)	.823 (.032^)	.218 (.085*)	.184 (110*)
Self-esteem	.910 (.02^)	.846 (.023^)	.213 (.087*)	.230 (118*)

Note: R^2 = correlation coefficient squared, ^ = the value of the variable's individual R^2, B = regression coefficients, * = standard error of unstandardized coefficient, all *p*s = .000.

These results are quite remarkable in a number of ways. Perhaps the most remarkable among them is the magnitude of the affective variables' effect on *achievement*: at T1 the five affective variables together explained 91% of the variance in learner achievement, while at T2 that was nearly 85%. The other really striking aspect of these results is the immensely superior predictive power of *motivation* relative to that of the other four factors: *motivation* alone explains 67% (T1) and 60% (T2) of the variance in learner achievement. The relative contribution of *attitudes*, *anxiety*, *autonomy*, and *self-esteem* to achievement, although statistically significant, is quite small.

Again we took advantage of the longitudinal dimension of the study's design to explore the affective variables' capacity to predict *achievement* over time (see Table 9).

Table 9

Multiple Regression Coefficients for the T1 Affective Variables as Predictors of Learners' Achievement at T2

Predictor	R^2	B
Motivation T1	.151 (.151^)	.388 (.237*)
Self-esteem T1	.167 (.016^)	-.150 (.238*)

Note. R^2 = correlation coefficient squared, ^ = the value of the variable's individual R^2, B = regression coefficients, * = standard error of unstandardized coefficient, ps = .05.

As can be seen in Table 9, a model with only learners' T1 *motivation* and T1 *self-esteem* as predictors of learners' T2 *achievement* was found to be significant (F (5, 246) = 10.13, p < .05) explaining 17% of the variance in achievement scores, although *motivation* again claims the "lion's share" of the two variables' effect on *achievement*.

Discussion

A range of potentially very significant findings emerge from the research data we reported in the preceding section. One is in relation to the magnitude of the role that *affect* plays in L2 acquisition. Our analyses showed that *motivation, attitudes, anxiety, self-esteem* and *autonomy* together account for between 85% and 91% of the variance in our participants' performance on the language tests (which we have used as a measure of *L2 achievement*). This is a truly remarkable finding underscoring the tremendous importance of affect in relation to the learning of a second language.

Another truly remarkable result is with regard to the magnitude of the role that *motivation* plays—relative to the other four variables—in L2 acquisition. As we emphasized in the introductory part of the paper, it seems undeniable that *motivation* is a major factor in the learning of foreign/second languages, perhaps the most determining one (see, e.g., Gardner, 2001). Our results provide compelling evidence in support of such a view, showing that *motivation* accounts for between 60% and 67% of the variance in *achievement* in our sample. The critical role of *motivation* with regard to *achievement* is further manifested in the extent to which the current study found *motivation* to be correlated with *achievement*: by far stronger than any of the other four. Last but not least, among the five affective variables examined here, *motivation* emerged as the only truly stable and durable factor, further emphasizing its importance to L2 learning.

As regards the other four affective variables, our study did find that each of them made a unique contribution to *L2 achievement*, but the magnitude of that contribution can at best be described as marginal. Among them *anxiety* specifically deserves a brief commentary. It has long been treated as a major force in L2 learning (see Horwitz, 2010 and elsewhere, as well as Gardner & MacIntyre, 1993), but our data tell a different story. Our analyses showed *anxiety* to have the lowest correlations with *L2 achievement*: twice as low as the correlations between *motivation* and *achievement*, and well lower than the rest of the affective variables. It is also worth noting that over time the link between *anxiety* and *achievement* disappeared altogether.

Our results confirm the very close interrelationships among the five affective variables. Statistically significant correlations were found between each two of the variables supporting the idea that they are all dimensions of one encompassing construct: the learner's self. It is perhaps noteworthy that *anxiety* showed the lowest levels of correlation with the other variables. This

seems to suggest that, by comparison with the other four variables, *anxiety* is a less prominent part of the self. Such a view is not entirely implausible given that *language anxiety* is conceptualised as a *situation-specific anxiety* (Horwitz, Horwitz, & Cope, 1986)—i.e., as a form of affect triggered by a specific aspect of the situation, not an inherent durable personality trait (i.e., a component of the self).

Conclusions and implications

The study presented here set out to examine the effects that five affective variables: *motivation*, *attitudes*, *anxiety*, *self-esteem* and *autonomy*, have—together and separately—on *L2 achievement*. Our study has produced some very robust findings emphatically demonstrating the importance of *affect*, as a composite construct, in relation to the learning of non-primary languages. Our results also confirm that, individually, each of the five variables affects L2 learning and its outcomes, but their "share" is not equal. Among them *motivation* has emerged as by far the most important one. Our results in fact constitute compelling evidence of the absolutely critical role that *motivation* plays with respect to L2 acquisition generally and achievement more specifically. By comparison, the individual effects of the other four affective variables can be described as marginal. This appears particularly true of *anxiety* which our results have shown to have the weakest predictive capacity among them.

There are a few points that the reader should keep in mind when considering these results and their implications. One is that there exist other well-established forces in L2 acquisition—outside of affect, including a range of social, cognitive, environmental and biological factors. The true impact of affect on L2 acquisition can only be established relative to the impact of other, non-affective, variables.

In the second place, most of the data we have presented here are correlational, and as such they do not strictly allow causality inferences—such data can show a strong link between two constructs, but would not have the capacity to reveal much beyond that. Regression analyses data however can be used to infer causality between constructs, and we do have two sets of data (see Tables 8 and 9)—one cross-sectional and one longitudinal—which clearly show the affective variables' capacity to determine achievement.

In relation to the last point, it is well established that the relationships between the different affective variables and achievement are almost never uni-directional. Take motivation for instance—we know that while motivation does contribute to achievement, (level of) achievement can in its turn affect motivation. The same is likely to occur with the other affective variables—it seems quite reasonable to expect that high achievement will lead to higher self-esteem, lower anxiety, etc. It is necessary acknowledge that the study presented here has strictly been about the effects of the affective variables on achievement, not the other way round.

With that in mind, our findings hold a range of potentially important implications for L2 learning and teaching practices. In the domain of education (and more broadly) it has long been recognised that while classroom learning is sensitive to quite a large number of social, psychological, environmental and pedagogical factors, the teacher is by far the most critical among them—practically everything that the teacher does (or doesn't do) in the classroom can have a more or less significant impact on the learning process and, by extension, on its outcomes

(Dörnyei, 2001b). Teachers are therefore in a particularly strong position to influence the operation of the affective factors. Through carefully planned and executed behaviours in the classroom teachers can consolidate learners' autonomy and self-esteem, reduce anxiety, promote positive attitudes and enhance motivation. That said, our study's findings strongly suggest that most (or, perhaps, even all) of teachers' efforts should be channelled towards enhancing motivation. Given the robust link that our analyses revealed between motivation and achievement, increasing learner motivation can confidently be expected to lead to improved learning outcomes. The latter may seem like a statement of the obvious, but in practical reality not all teachers choose to undertake deliberate actions towards enhancing their students' motivation, and many of those who do often lack the knowledge of how to achieve it effectively. This leads us to our next and final point. While it is true that motivation has been one of the most profoundly researched issues in the field of L2 acquisition, the bulk of the research effort seems to have been devoted to developing a theory of L2 motivation. It has only been relatively recently that research has taken a more practical classroom-oriented approach to the study of motivation and has focused on examining teacher behaviours in the classroom (motivational strategies, in particular) designed to boost learners' levels of motivation (Dörnyei & Csizér, 1998; Cheng & Dörnyei, 2007; Guilloteaux & Dörnyei, 2008; Moskovsky et al., 2013). In terms of its practical value for classroom language education and its outcomes, this is, in our view, a research direction which deserves to be pursued further.

Notes
Note 1. Based on the results from their study, Cohen and Norst (1989, p. 66) suggest that "[t]he loss of control, of self-esteem involved seems to be of a different order than in the case of other fields requiring cognitive and/or performance effort."
Note 2. Some have disputed the causality of the relationship between anxiety and achievement, suggesting that anxiety is rather the consequence of low achievement, not its cause (Argaman & Abu-Rabia, 2002; Ganschow et al., 1994; Sparks & Ganschow, 1991, 1995). Sparks and her associates, for instance, have claimed that low language learning ability generates anxiety. MacIntyre (1995b) disagrees, arguing that anxiety can severely impede L2 performance even in individuals whose high L2 competence is established beyond any doubt.
Note 3. According to Dörnyei (2003, p. 74), for studies using multivariate statistical procedures a participant sample of at least 100 subjects is required.
Note 4. Dörnyei (2002, p. 34) recommends (sub)scales containing between 4 and 10 items; anything shorter would significantly diminish the scale's psychometric reliability.
Note 5. These values indicate that the regression model is a good fit of the data on which the regression analyses were performed.

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Appendix: Affective variables questionnaire

The current research is being conducted to examine the role of affective variables (e.g. motivation, anxiety, attitudes, self-esteem, personality, etc.) in relation to learners' achievement in a second language. In order to achieve the project's aims, we are going to ask you a number of questions about your experience of learning English language this semester.

Each questionnaire item has the form of a statement or a question followed by five possible answers.

Example:

 1) I like watching movies.

VERY UNTRUE	UNTRUE	NEUTRAL	TRUE	VERY TRUE

Please select just <u>one</u> of these answers, and then move onto the next question.

Part A. Motivational intensity

Thinking of my effort to learn English this semester, ...
1. I have been working hard to learn English.
2. I have been spending a lot of time at home working on my English assignments and preparing for the coming lessons.
3. I have been paying close attention to, and actively participating in, the class discussion.
4. I haven't spent sufficient time working on my English homework.
5. I haven't been participating enough in discussions that take place in our English class.

Part B. Self-esteem
In English classes this semester, ...
6. On the whole, I am satisfied with myself.
7. I feel that I am able to do things as well as most other students.
8. I feel I do not have much to be proud of.
9. I take a positive attitude toward myself.
10. All in all, I am inclined to feel that I am a failure.
11. I feel that I'm a person of worth, at least on an equal plane with other students.

Part C. Intrinsic motivation
Thinking of learning English this semester, I feel that.............................
12. I am enjoying learning English.
13. When English classes end, I often wish they would continue.
14. I would study English even if it were not required by this school/university.
15. I would like to continue to learn English even after I leave this school/college.
16. My goal of learning English is far more than just passing exams.
17. Learning English is a boring activity for me.
18. I wouldn't study English if I didn't have to.

Part D. Attitudes towards the English course
Thinking of my English course this semester, ...
19. I wish we had more English lessons.
20. English is one of my favourite subjects.
21. I enjoy my English lessons because what we do is neither too hard nor too easy.
22. I would rather spend time on subjects other than English this semester.
23. In English lessons, we are learning things that will be useful to me in the future.
24. In English lessons, we are learning things that will be useful to me in my daily life activities.
25. The content of this English course is a burden for me.

Part E. Attitudes towards the English teacher
Thinking of my English teacher this semester, ...
26. My English teacher is linguistically competent.
27. My English teacher is insincere.
28. My English teacher is helpful.
29. My English teacher is considerate.
30. My English teacher is approachable.
31. My English teacher appears hesitant and unconfident.
32. The teaching style of my English teacher is unclear and confusing.

33. My English teacher tolerates his students' mistakes.
34. I rely a lot on my English teacher to do learning tasks.
35. My English teacher criticizes me when I give wrong answers in the classroom.
36. My English teacher encourages and inspires me to give my best efforts to learning.
37. My English teacher believes in my abilities to succeed in this course.
38. My English teacher compliments me when I give a correct answer in the classroom.
39. If I do well in English this semester, it is because of the efforts and the professional teaching style of my English teacher.

Part F. Learner autonomy
In English classes this semester, ...
40. I take part in deciding on the content of our English course this semester.
41. I take part in deciding due dates for assignments and exams in our English course this semester.
42. I easily express my own ideas and participate in the discussions in our English class this semester.
43. The ideas and suggestions I offer in English class are usually welcomed by my English teacher.

44. I feel that other students take part in English class discussions much more than me.
45. Most students don't participate in the discussions that take place in our English class this semester.
46. I usually take part in choosing the activities that we do in English class this semester.
47. I set clear goals for myself for learning English this semester.
48. I set clear strategies for myself for achieving my goals of learning English this semester.

Part G. Learner anxiety
In English classes this semester, ...
49. I never feel quite sure of myself when I speak in English this semester.
50. I am usually at ease (comfortable) during tests in my English language class this semester.
51. I start to panic when I have to speak without preparation in language class this semester.
52. I feel worried about the consequences of failing my language class this semester.
53. It embarrasses me to volunteer answers in my language class this semester.
54. I feel confident when I speak in English in my language class this semester.
55. I am afraid that my language teacher is ready to correct every mistake I make in class this semester.
56. I can feel my heart pounding when I'm going to be called on in language class.
57. I feel more tense and nervous in my language class than in any other classes this semester.
58. I am afraid that the other students in the class will laugh at me when I speak in English.