

Exploring the Motivation-Engagement Link: The Moderating Role of Positive Emotion

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ABSTRACT

In self-determination theory (SDT), the role of positive emotion in the motivational process is undertheorized. Most previous research considered emotion as an outcome variable, rather than a main construct of the motivational process. There is, however, some evidence in domains outside language learning suggesting that positive emotion moderates the motivation-engagement link. The extent to which this could be applied to the domain of language learning remains unknown. Therefore, this study aimed to examine the role of positive emotion as a moderator of the motivational process of language learning. Moreover, a comparative multilingual perspective was adopted to better understand simultaneous language learning. Specifically, this study assessed whether positive emotion moderated the relationship between two types of motivation (i.e., autonomous and controlled motivation) and behavioral engagement in two foreign languages. A sample of 108 Chinese university students concurrently learning English as L2 and French as L3 participated in the survey study. Results of regression analysis suggest the differential role of positive emotion and motivation in English and French: For French learning, positive emotion served as a moderator that optimized the motivation-engagement link (i.e., positive interaction between emotion and motivation). For English learning, no moderating effect was discovered, with positive emotion being the significant and strong predictor of engagement. The findings supplied initial evidence of the potential role of positive emotion as a moderator of the motivation-engagement link, contributing to the theoretical incorporation of emotion as a more central player in the motivational process proposed by SDT. The differential role of positive emotion and motivation in learning English and languages other than English points to the value of a multilingual comparative perspective to uncovering the language-specific characteristics of the motivational processes.

Keywords: SDT, positive emotion, motivation, engagement, simultaneous language learning, LOTEs

INTRODUCTION

In self-determination theory (SDT), the role of emotion in the motivational process is undertheorized. Previous research has concentrated on establishing the link between motivation and a variety of key learning variables such as engagement, both in the broader SDT literature and the SDT-informed language learning literature. For instance, in one of the most comprehensive models of the motivational processes in language learning (Noels et al., 2019), engagement is accorded a central role as the “the most proximal predictor of three types of capital that are often the desired outcomes of language learning” (p.102). In contrast, the role of emotion in this motivational process is of a secondary position, i.e., as a subdimension of engagement. This conceptualization to some extent reflects the long tradition of the cognitive paradigm, and thereby the limited attention on emotion, in psychological science in general and applied linguistics in specific (Dewaele, 2020). Notwithstanding the exponential growth of interest in emotion in recent years (Dewaele & Li, 2020), the exact role of emotion in the motivational process under the SDT framework remains somewhat ambiguous. To quote Isen and Reeve, “positive affect may play a more central role in understanding intrinsic motivational process than is currently recognized by self-determination theory” (2005, p. 321). To this end, this study hopes to contribute to the discussion of the “elephant in the room” (Dewaele, 2005, 2011, 2019) and complement the research on the SDT-informed motivational processes (e.g., Dincer et al., 2019) by placing emotion in a more central position. Specifically, there has been some existing evidence in SDT literature outside the domain of language learning that suggests the moderating role of emotion in the link between autonomous motivation and engagement (Yoo, 2015). Therefore, one of the objectives of this study was to replicate this pattern in the domain of language learning. Also, this study expands on previous research by examining this moderator role in the link between controlled motivation and engagement as well, in order to achieve a more comprehensive understanding of the role of emotion across different types of motivation.

As part of the collective effort to address the monolingual bias identified in the literature (e.g., Dörnyei & Al-Hoorie, 2017; Henry, 2010), this study adopted a multilingual comparative perspective by concentrating on language learners who were concurrently studying English

in conjunction with a language other than English (LOTE), a group of learners who have received comparatively less attention in L2 motivational literature (e.g., Henry, 2010; Liu, 2020; Siridetkoon & Dewaele, 2018) and scant attention in SDT literature. The examination of the motivation of learners of multiple foreign languages is important as it provides a more holistic and nuanced understanding of learners’ multilingual experience. More importantly, leading scholars have theorized motivation for English and LOTEs learning to be rather different, with the former being characterized by a primarily instrumentalist rationale and the latter a more individualist and personal rationale (e.g., Dörnyei & Al-Hoorie, 2017; Ushioda, 2017). Therefore, it is theoretically and practically important to explore the extent to which the language specificity of motivation would manifest in the potential moderating role of emotion in the motivation-engagement link.

LITERATURE REVIEW

Motivation and Engagement

The interconnectedness between motivation and engagement has rendered a clear distinction between motivation and engagement challenging (Reschly & Christenson, 2012): Both motivation and engagement have been conceptualized as multidimensional, with some dimensions overlapping more than others depending on the theoretical framework. When asked to differentiate motivation and engagement, scholars seem to converge on viewing motivation as intent (i.e., cognitive and learner internal) and engagement as action (i.e., behavioral and observable) (Christenson et al., 2012). Accordingly, to better flesh out the connection between motivation and engagement while minimizing potential conflation, the present study concentrated on behavioral engagement as it is most clearly differentiated from motivation under the SDT framework, which approaches motivation from a primarily cognitive perspective.

The organismic integration theory, one of the six mini-theories of SDT (Ryan & Deci, 2017), is the theoretical underpinning of this study. According to this theory, students volitionally internalize (i.e., organismically integrate) from their surroundings values and ways of behaving as acquired motivations. A unique feature of this theory is the differentiation of motivational quality on a

continuum of autonomy. Three broad categories of motivation can be differentiated on this continuum, with amotivation and autonomous motivation at the two ends and controlled motivation in between (Ryan & Deci, 2017, 2020). External regulation and introjected regulation fall into controlled forms of motivation whereas intrinsic motivation, identified regulation, and integrated regulation fall into autonomous forms of motivation.

A growing strand of research in language learning is committed to exploring the link between motivation and engagement, in alignment with effort in the educational research literature (e.g., Christenson et al., 2012). Autonomous motivation, particularly intrinsic motivation, has been found to correlate with various indices of engagement. For instance, Gardner's (1985, 2010) motivational intensity is a widely used index that captures both behavioral and cognitive aspects of engagement while in some studies the researchers devised instruments for their research purposes (Oga-Baldwin & Nakata, 2017). Regardless of instruments and design, the link between autonomous (i.e., intrinsic) motivation and engagement has been consistently positive. For instance, intrinsic motivation was positively predictive of motivational intensity (Noels, 2001) and engagement was positively predictive of intrinsic motivation (Oga-Baldwin & Nakata, 2017).

The picture concerning controlled motivation appeared to be more complex. Even though according to SDT, controlled motivation would be detrimental to engagement and achievement, such expectation was met only in some studies. For instance, introjected regulation was found to be negatively predictive of motivational intensity (Noels, 2001) whereas a positive link was identified in other studies (Oga-Baldwin & Nakata, 2017). The relationship between external regulation and engagement was inconsistent as well, with both negative (e.g., Oga-Baldwin & Nakata, 2017) and non-significant relationships (e.g., Noels, 2001) found in the literature.

In SDT literature, emotion has often been approached as a dimension of engagement and treated as an outcome variable. Language anxiety, as the notable exception to the traditional neglect of emotions in SLA in general (see Dewaele & Li, 2020, for a critical review), has been the most commonly examined emotion in SDT-informed language learning literature. Patterns regarding motivation

and emotion as an outcome variable are largely reflective of the patterns observed between motivation and engagement measured from cognitive and behavioral dimensions: Findings converge regarding autonomous motivation but diverge regarding controlled motivation. For instance, the relationship between controlled motivation and anxiety was non-significant in some studies (e.g., Noels et al., 2000, 2019) but negative in others (e.g., Oga-Baldwin & Nakata, 2017).

Bearing in mind that contextual differences and weak statistical power in some studies could contribute to inconsistent patterns in the findings (Noels et al., 2019), it is also plausible that there may be some moderator at play, such as positive emotion, that moderates the link between motivation and engagement.

Role of Emotion in the Motivational Process

Emotion and Engagement

According to Reeve (2018), emotions are “short-lived feeling-purposeful-expressive-bodily responses that help us adapt to the opportunities and challenges we face during important life events” (p. 288), a theoretical perspective introduced to SLA by MacIntyre et al. (2020). Specifically, feelings refer to the subjective experience of emotion, which interacts with the cognitive awareness of a significant event and contributes to the motivational potency of emotion (Izard, 2011); Bodily responses refer to the activation of neural and biological systems that prepare the body for a particular situation; Sense of purpose marks the goal-directed characteristic of emotion and elicits different action tendencies (Frijda et al., 1989; Keltner & Gross, 1999); Expressive behavior represents the communicative dimension of emotion and manifests itself in a range of verbal and nonverbal expressions (Gregersen & MacIntyre, 2017; Reeve, 2018). This four-component view of emotion could help unpack the mechanisms through which emotions exert an influence on language learning behavior. Particularly, the goal-directedness of emotions could guide certain responsive behaviors and trigger the impulse to action, with certain emotions connected with specific types of behavior (e.g., Frijda et al., 1989; Reeve, 2018). The action tendency of emotion lays the foundation for emotion to function as the precursor to behavioral engagement.

Fredrickson's broaden-and-build theory (Fredrickson, 2004, 2013) facilitates a more nuanced understanding of the mechanisms and functions that are specific to positive emotions. The short-term effects of positive emotion are "increased breadth and expansion of our attentional scope, thoughts, and problem-solving approaches, and views of self in relation to others" (Conway et al., 2013, p. 21), which in turn, broadens thought-action repertoires. This broadening of cognition and the resultant changes in patterns of decision-making and actions would build up long-term psychological resources and undo the negative effects of negative emotions (Fredrickson, 2001, 2004).

The Moderating Role of Positive Emotion

With both motivation and emotion having potential influences on behavior, it begs the question of to what extent motivation and emotion interact to influence learning engagement. Currently, there has only been some preliminary evidence in the literature and clearly more research is needed to develop the evidence base.

In the few studies that examined the moderating role of positive emotion in educational settings, positive emotion has been found to moderate the relationship between self-regulation and academic achievement, in mathematics learning (e.g., Villavicencio & Bernardo, 2013). The study of most relevance to the current study is one under the SDT framework (Yoo, 2015). Specifically, the study assessed the role of positive emotion as the moderator of the link between autonomous motivation and behavioral engagement in physical education classes on middle school students in South Korea. Findings suggest that positive emotion enhanced this link: For students who reported higher positive emotions, the positive link between autonomous motivation and behavioral engagement was stronger than those who reported lower positive emotions. The incorporation of positive emotion into the motivational process as a moderator would have theoretical implications and reveal various ways in which emotion is entangled with motivation and engagement, a line of inquiry that this study set out to contribute to.

Multilingual Motivation

Motivation for Simultaneous Language Learning

Even though there has been increasing research on LOTE learning motivation (See Mendoza & Phung, 2019 for a review), the majority of research, including those that concentrated on simultaneous language learning (e.g., Henry, 2010; Liu, 2020; Liu & Oga-Baldwin, 2022; Siridetkoon & Dewaele, 2018), was under the L2 motivational self system framework (Dörnyei, 2009). The amount of SDT-informed research on L3 or LOTE learning is comparatively small, with only a few exceptions being works that compared major L2 motivational theories (Sugita McEown et al., 2014, 2017). The relationship between English and LOTE motivation is worth investigating as they concern somewhat contrasting nature of language learning motivation, with English motivation often underpinned by instrumentalist reasons while LOTE motivation by personal and less utilitarian reasons (Dörnyei & Al-Hoorie, 2017; Ushioda, 2017). The practical implications of such contrast have been divergent. For instance, a negative influence of English motivation (ideal English self) on LOTE motivation was found in Hungarian and Japanese learners of two foreign languages (Csizér & Lukács, 2010; Sugita McEown et al., 2017) whereas in other cases, English did not necessarily weaken interest in LOTE because learners felt LOTE learning would enhance their competitive edge, in light of the global prevalence of English (Siridetkoon & Dewaele, 2018).

The Chinese Context

Language learning is a multifaced process that takes place at the individual level but influenced and shaped by meso- and macro- level factors, a view widely endorsed by SLA researchers in general (Douglas Fir Group, 2016) and SDT researchers in particular (e.g., Dincer et al., 2019; Noels et al., 2019).

In China, the endorsement of English for its instrumental value has been strong at all levels. Across a variety of policy documents, English has been acknowledged as an effective means to the development of the country's economy and international stature (Hu, 2003; Hu & McKay, 2012; Lam, 2002). Such high importance accorded to English is reflected across different institutions both in the public and private sectors. For instance, English is offered as a

compulsory subject in primary, secondary and tertiary institutions, with English proficiency being a gatekeeper in both the entry and exit of education (e.g., Pan, 2015). The booming of the English teaching industry in the private sector also speaks to the widespread enthusiasm for English (Bolton et al., 2020). In a sense, “success in English has become vital for academic and career success and for a better life” in contemporary China (Pan, 2015, p. 2).

A recent development in the status of English is that even though at the individual level, especially among the aspiring middle classes, the “English fever” seems to persist, the interest in English at the policy level appears to be dimming slightly (Bolton et al., 2020; Gao & Zheng, 2019). Specifically, in recent reforms of the National College Entrance Examination in major cities such as Beijing and Shanghai, there was a trend to shift the weight from English to Chinese, which signals a renewed concentration on the official language of the country (Kaiman, 2013). The government has also rekindled its interest to promote languages other than English under the Belt and Road initiative, a globalization campaign to enhance trade cooperation (Gao & Zheng, 2019). Even though its effect would take much time to reach a larger scale, such a top-down policy shift opens up the possibilities for increased levels of multilingual learning.

The Present Study

This study aimed to examine the role of positive emotion as the moderator of the link between motivation and engagement in simultaneous language learning. Specifically, it assessed the relationship between two types of motivation (autonomous and controlled) and behavioral engagement. Moreover, a multilingual comparative perspective was adopted to contribute to a better understanding of the similarities and differences between motivational processes for English and LOTEs learning. The research questions were specified as the following:

RQ1: To what extent does positive emotion moderate the relationship between motivation and engagement in English learning?

1a: To what extent does positive emotion moderate the relationship between autonomous motivation and behavioral engagement in English learning?

1b: To what extent does positive emotion moderate the relationship between controlled motivation and behavioral engagement in English learning?

RQ2: To what extent does positive emotion moderate the relationship between motivation and engagement in French learning?

2a: To what extent does positive emotion moderate the relationship between autonomous motivation and behavioral engagement in French learning?

2b: To what extent does positive emotion moderate the relationship between controlled motivation and behavioral engagement in French learning?

METHOD

Participants and Procedure

The sample in this study was drawn from English major programs at an ordinary university in western China, with the aim to recruit language learners at non-key universities, a population comparatively large yet under-represented in the literature. English major program is one of the most commonly offered programs at the undergraduate level in China, with over 570,000 students enrolled in 994 out of 1148 full-time ordinary institutions higher education (Wang, 2015).

The participants were 108 third- and fourth-year students who were concurrently learning English as L2 and French as L3. The students were required to take the French as L3 course at the beginning of the third year, with three credit hours each week till the end of the fourth year. The students were aged between 19 and 26 ($M = 21.6$, $SD = 1.2$), with 94% being female, the imbalanced sex composition of which is commonly observed in language programs in China.

All participants identified Chinese as their L1 and had a long history of English learning ($M = 12.1$, $SD = 1.9$). None of the participants reported any learning of French before university. Of the participants, 45% had been taking the French course for about a year and 55% for about two years at the time of the survey.

The questionnaire used in the study was first created in English and reviewed by an applied linguist with English as L1. The researcher of this study, with Chinese as L1, then translated the questionnaire to Chinese. A panel of five L1

Chinese students in graduate and PhD program of English Language and Linguistics in China reviewed and refined the questionnaire.

The survey was administered via the Qualtrics platform during class time under the guidance of French classroom teachers. Background information of the study was prepared in advance by the researcher and introduced to the students before the survey. Informed consent was obtained individually at the beginning of each questionnaire. All items in the questionnaire were displayed in random order to individual respondents, to eliminate the potential influence of item sequence.

Measures

Language Learning Motivation

Two types of motivation were measured, namely controlled motivation and autonomous motivation. Adapting the Language Learning Orientations Scale developed by Noels and colleagues (2000), three items from external regulation (e.g., “In order to have a better salary later on”) and three items from introjected regulation (e.g., “Because I would feel bad if I didn’t understand [the target language].”) were combined to represent controlled motivation. Three items from intrinsic motivation scale (e.g., “For the pleasure I experience in knowing more about the [the target language] language and culture.”) were adopted to represent autonomous motivation. It should be noted that different from other studies that also included identified regulation (e.g., Koestner et al., 2008), the current study only included intrinsic motivation to represent autonomous motivation as it is the strongest pole in the autonomy continuum (Oga-Baldwin & Fryer, 2020; Ryan & Deci, 2017). The decision to shorten the survey was driven by the trade-off between measuring both English and French motivational types and reducing the participants’ response burden. These variables were measured using a 6-point Likert-scale (1 = “strongly disagree”, 2 = “disagree”, 3 = “slightly disagree”, 4 = “slightly agree”, 5 = “agree”, 6 = “strongly agree”), following the recommendations from previous research to address the potential reluctance of students to give explicit negative responses in Asian contexts (Dörnyei & Taguchi, 2010, p. 114).

Positive Emotion in Language Learning

Positive emotion in language learning in this study refers to a wide range of positive emotions associated with the target language. Participants were asked to rate the frequency of experiencing a certain emotion for the learning of English and French respectively. Fredrickson’s modified Differential Emotions Scale (2013) was adopted to represent the range of emotions learners may experience in their language learning. A unique feature of this scale is the use of synonymously worded trios to represent individual emotions. For example, “joyful, glad, happy” collectively capture the emotion of “joy”. Ten positive emotions were measured, with the response format of 5-point Likert-scale (1 = “never”, 2 = “rarely”, 3 = “sometimes”, 4 = “often”, 5 = “everyday”). Considering the less well-boundedness of emotional concepts and the potential impact of translation, both the Chinese translation and the original English trios were kept in the questionnaire, to minimize the potential variation caused by translation. According to the feedback from the initial piloting, the bilingual version helped the participants’ understanding.

Behavioral Engagement in Language Learning

Behavioral engagement in language learning in this study refers to the frequency of use of a target language in different activities both inside and outside the classroom. Adapted from previous research (McManus et al., 2014), both inside classroom activities (e.g., “Use [the target language] to discuss with peers”) and outside classroom activities (e.g., “Listen to music in [the target language]”) were included. Additionally, there was one open-ended “other” option to allow for text input by participants and in the received responses. No additional activities were being suggested by the participants, indicating the coverage of the activity list was satisfactory. Fifteen items were used for each target language, with the response format of 5-point Likert scale (1 = “never”, 2 = “rarely”, 3 = “sometimes”, 4 = “often”, 5 = “everyday/class”).

Data Analysis

All analyses were carried out using R (version 4.0.3; R Core Team, 2020). Hierarchical multiple regressions were used to test the models, according to the procedure described in

Hayes (2017) and implemented with the R package “interactions” (version 1.1.0; Long, 2019). Four models were tested in total, two for each target language: Both with behavioral engagement as the outcome variable and positive emotion as the moderator, one with autonomous motivation as the predictor and the other with controlled motivation as the predictor. As all variables in the study were measured with Likert-scales, all variables were standardized before entering into the models. The testing of each model followed two-step block-wise entering, with motivation and emotion entered first and in a second block the interaction term. Changes in R^2 for the model and standardized regression coefficients for each variable in the model were examined.

Statistically significant interaction effects were probed using two approaches to aid interpretation and understanding, namely the test of simple slopes and the Johnson-Neyman technique. The test of simple slopes, alternatively referred to as the “pick-a-point” approach

(Bauer & Curran, 2005), was chosen because it is one of the most widely applied approaches to probing an interaction. The procedure started with choosing values of interest of the moderator, i.e., the mean, one standard deviation above and below the mean of positive emotion, followed by the calculation of the conditional effect of the predictor on the outcome and an inferential test of the significance and confidence interval (Hayes, 2017). The Johnson-Neyman approach was also adopted to address one potential limitation of the pick-a-point approach: The values of interest were sample-specific, i.e., what is low in one sample may be moderate or high in another, potentially leading to different claims (Hayes, 2017). The Johnson-Neyman technique provides a more comprehensive picture by generating regions of significance of the moderator, indicating over what range of the moderator the effect of the predictor is significant (Bauer & Curran, 2005). Plots for both the test of simple slopes and the Johnson-Neyman technique were generated to facilitate interpretation.

Table 1. *Descriptive Statistics, Correlations and Reliability*

	1	2	3	4	5	6	7	8
1 L2aut	.90							
2 L2con	.52***	.82						
3 L2eg	.52***	.27**	.87					
4 L2pe	.76***	.31**	.57***	.92				
5 L3aut	.47***	.24*	.31**	.47***	.87			
6 L3con	.33***	.35***	.25**	.26*	.60***	.69		
7 L3eg	.28**	.10	.37***	.32**	.41***	.32***	.91	
8 L3pe	.35***	.07	.36***	.53***	.60***	.33***	.48***	.93
<i>M</i>	3.86	4.05	2.94	3.08	3.29	3.21	1.54	2.75
<i>SD</i>	1.17	0.98	0.56	0.63	1.13	0.82	0.52	0.73
Skewness	-0.46	-0.50	0.04	-0.08	-0.32	-0.46	1.76	-0.03
Kurtosis	-0.04	0.66	0.50	0.58	-0.38	-0.25	3.00	0.70

Note. Cronbach’s α displayed in bold on the diagonal.

* $p < .05$; ** $p < .01$; *** $p < .001$.

L2aut = English (L2) autonomous motivation; L2con = English(L2) controlled motivation; L2pe = English (L2) positive emotion; L2eg = English (L2) engagement; L3aut = French (L3) autonomous motivation; L3con = French (L3) controlled motivation; L3pe = French (L3) positive emotion; L3eg = French (L3) engagement.

RESULTS

Preliminary Analyses

Preliminary analyses were conducted before proceeding to the main analyses regarding the two research questions. There was no missing data in the dataset as the forced response option was configured via the Qualtrics platform.

Survey response time was inspected to identify potentially invalid responses. All responses lasted at least four minutes, and all were included in the analyses. Correlations, descriptive statistics and reliability coefficients (Cronbach's α) are reported in Table 1. The reliability of the scales was acceptable, ranging from 0.69 to 0.93 (Table 1).

Table 2. Regression Results for English Learning Engagement

	Model 1.1 β (S.E.)	Model 1.2 β (S.E.)	Model 2.1 β (S.E.)	Model 2.2 β (S.E.)
(Intercept)	0.00 (0.08)	0.02 (0.09)	0.00 (0.08)	0.02 (0.08)
L2 Autonomous Motivation	0.21 (0.12)	0.20 (0.12)		
L2 Positive Emotion	0.41** (0.12)	0.41** (0.12)	0.53*** (0.08)	0.52*** (0.09)
L2 Autonomous Motivation: L2 Positive Emotion		-0.03 (0.06)		
L2 Controlled Motivation			0.11 (0.08)	0.10 (0.09)
L2 Controlled Motivation: L2 Positive Emotion				-0.05 (0.06)
RMSE	0.82	0.82	0.83	0.83
R^2	.34	.34	.33	.34
adj R^2	.33	.32	.32	.32
F statistic	26.87 (2, 105)	17.85 (3, 104)	25.95 (2, 105)	17.49 (3, 104)
p value	< .001	< .001	< .001	< .001

Note. *** $p < .001$; ** $p < .01$; * $p < .05$.

RQ1

To test the moderating role of positive emotion in the motivation-engagement link in English learning, two models were tested, each with two steps (Table 2). It should be noted that considering the high correlation between autonomous motivation and positive emotion, VIF (variance inflation factor) was calculated for all models to assess whether multicollinearity was present before proceeding to interpretation. All VIF values ranged from 1.06 to 2.50, well below the guidelines in the literature (e.g.,

Hair et al., 2013). Comparing Model 1.1 and Model 1.2, R^2 change was minimal ($\Delta R^2 = .001$, $F(1,104) = 0.20$, $p = .66$), suggesting that the interaction effect between autonomous motivation and positive emotion did not significantly contribute to explaining the variance of engagement. A similar pattern was observed regarding Model 2.1 and Model 2.2 ($\Delta R^2 = .005$, $F(1,104) = 0.71$, $p = .40$), suggesting no significant contribution to explained variance of engagement from the interaction effect between controlled motivation and positive emotion. Since the interaction term

was non-significant in both models, the results of Model 1.1 and Model 2.1 were appropriate for further interpretation.

As Table 2 shows, the standardized coefficients for autonomous motivation and controlled motivation were nonsignificant while positive emotion was the significant and strong predictor in both models, with a medium-to-large standardized coefficient. The substantial amount of

explained variance (i.e., above 30%) in both models indicates that autonomous motivation and positive emotion jointly predicted engagement well but autonomous motivation did not contribute extra predictive power beyond what was shared with positive emotion. In other words, positive emotion was a strong and more relevant predictor of engagement.

Table 3. Regression Results for French Learning Engagement

	Model 3.1 β (S.E.)	Model 3.2 β (S.E.)	Model 4.1 β (S.E.)	Model 4.2 β (S.E.)
(Intercept)	0.00 (0.08)	-0.12 (0.09)	0.00 (0.08)	-0.09 (0.08)
L3 Autonomous Motivation	0.20 (0.10)	0.17 (0.10)		
L3 Positive Emotion	0.36*** (0.10)	0.45*** (0.10)	0.42*** (0.09)	0.49*** (0.09)
L3 Autonomous Motivation: L3 Positive Emotion		0.21*** (0.06)		
L3 Controlled Motivation			0.18* (0.09)	0.22* (0.08)
L3 Controlled Motivation: L3 Positive Emotion				0.26*** (0.07)
RMSE	0.87	0.83	0.87	0.82
R^2	.26	.33	.26	.35
adj R^2	.24	.31	.24	.33
F statistic	17.97 (2, 105)	17.00 (3, 104)	18.28 (2, 105)	18.83 (3, 104)
p value	<.001	<.001	<.001	<.001

Note. *** $p < .001$; ** $p < .01$; * $p < .05$.

RQ2

To test the moderating role of positive emotion in the motivation-engagement link in French learning, two models were tested, each with two steps (Table 3). Comparing Model 3.1 and Model 3.2, R^2 change was significant ($\Delta R^2 = .07$, $F(1,104) = 11.48$, $p < .001$), suggesting that the interaction effect between autonomous motivation and positive emotion significantly contributed to explaining the variance of engagement. A similar pattern was observed

regarding Model 4.1 and Model 4.2 ($\Delta R^2 = .09$, $F(1,104) = 15.05$, $p < .001$), suggesting significant contribution to explained variance of engagement from the interaction effect between controlled motivation and positive emotion. Since the interaction term was significant in both models, the results of Model 3.2 and Model 4.2 were appropriate for further probing and interpretation.

As is shown in Table 3, the model with autonomous motivation as the predictor explained 33% of the variance

in behavioral engagement while the model with controlled motivation as the predictor explained 35% of the variance in behavioral engagement, indicating a substantial amount of variability in engagement being accounted for by the models. In other words, motivation and positive emotion jointly served as a strong indicator of engagement. What is worth noting is that the interaction term between autonomous motivation and positive emotion contributed an additional 7% of the explained variance in behavioral engagement and the interaction between controlled motivation and positive emotion contributed an additional 9% of the explained variance in behavioral engagement, which points to the substantial moderating role of positive emotion in the motivation-engagement link in French learning.

To probe the interaction effect, tests of simple slopes were conducted. For Model 3.2, when positive emotion was one standard deviation below the mean, the slope of the regression was -0.01 and non-significant ($p = .93$); When positive emotion was at the mean level, the slope of the regression was 0.19 , also non-significant ($p = .07$); When positive emotion was one standard deviation above the mean, the slope of the regression was 0.39 ($p = .001$), indicating a significantly positive relationship between autonomous motivation and engagement. The three regression lines are visualized in Figure 1: As the level of positive emotion increased, the relationship between autonomous motivation and behavioral engagement was increasingly positive.

Figure 1. Moderated Relationships between Autonomous Motivation and Engagement at Three Levels of Positive Emotion in French (L3) Learning

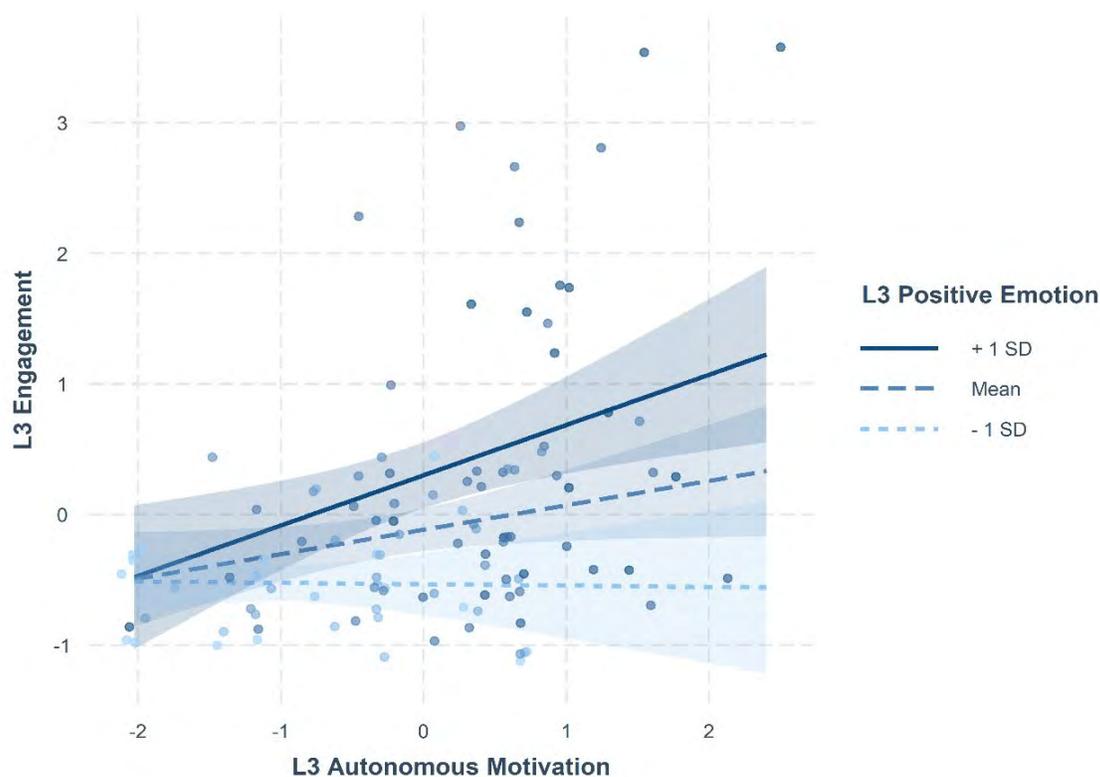
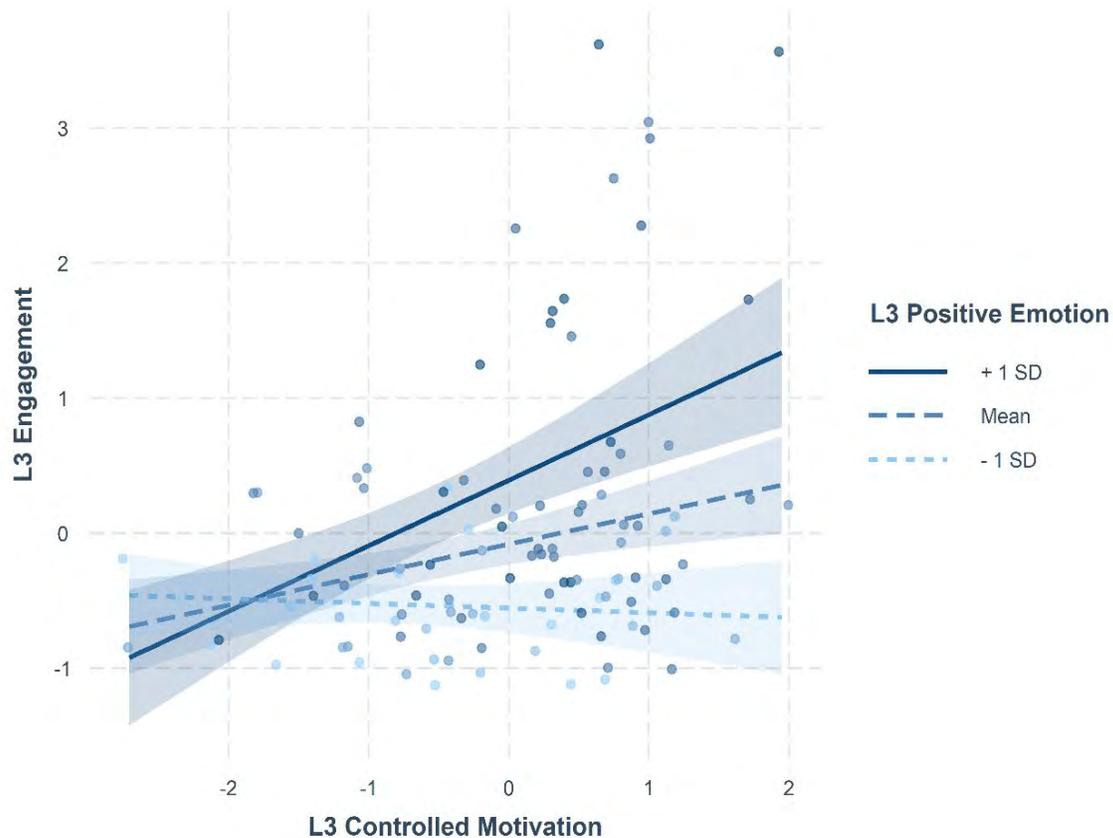


Figure 2. Moderated Relationships between Controlled Motivation and Engagement at Three Levels of Positive Emotion in French (L3) Learning



For Model 4.2, when positive emotion was one standard deviation below the mean, the slope of the regression was -0.03 and non-significant ($p = .74$); When positive emotion was at the mean level, the slope of the regression was 0.23 ($p = .01$), indicating a significantly positive relationship between controlled motivation and engagement; When positive emotion was one standard deviation above the mean, the slope of the regression was 0.48 ($p = .001$), indicating a significant and more positive relationship between controlled motivation and engagement.

The corresponding regression lines are visualized in Figure 2: As the level of positive emotion increased, the relationship between controlled motivation and behavioral engagement was increasingly positive.

To obtain a comprehensive understanding of the moderating effect of positive emotion, the Johnson-Neyman technique was adopted to obtain the region of significance for the moderator. The bold black line on the X-axis in Figure 3 and Figure 4 indicates the range of observed values

of positive emotion ($[-2.36, 2.74]$), representing the boundaries for appropriate interpretation.

For Model 3.2, when positive emotion was less than -3.51 or greater than 0.13 , the predictive effect of autonomous motivation on behavioral engagement was significant ($p < .05$, with the false discovery rate adjusted $t = 2.28$); When positive emotion was between -3.51 and 0.13 , the predictive effect of autonomous motivation on behavioral engagement was non-significant.

As visualized in Figure 3, for learners with positive emotion slightly above the mean level and further above, the positive link between autonomous motivation and engagement became significant and increasingly stronger.

For Model 4.2, when positive emotion was less than -1.66 , the predictive effect of controlled motivation on behavioral engagement was significant and negative ($p < .05$, with the false discovery rate adjusted $t = 2.22$); When positive emotion was between -1.66 and -0.30 , the

predictive effect of autonomous motivation on behavioral engagement was non-significant; When positive emotion was greater than -0.30, the predictive effect of controlled

motivation on behavioral engagement was significant and positive.

Figure 3. Moderated Relationships between Autonomous Motivation and Engagement at All Levels of Positive Emotion in French (L3) Learning

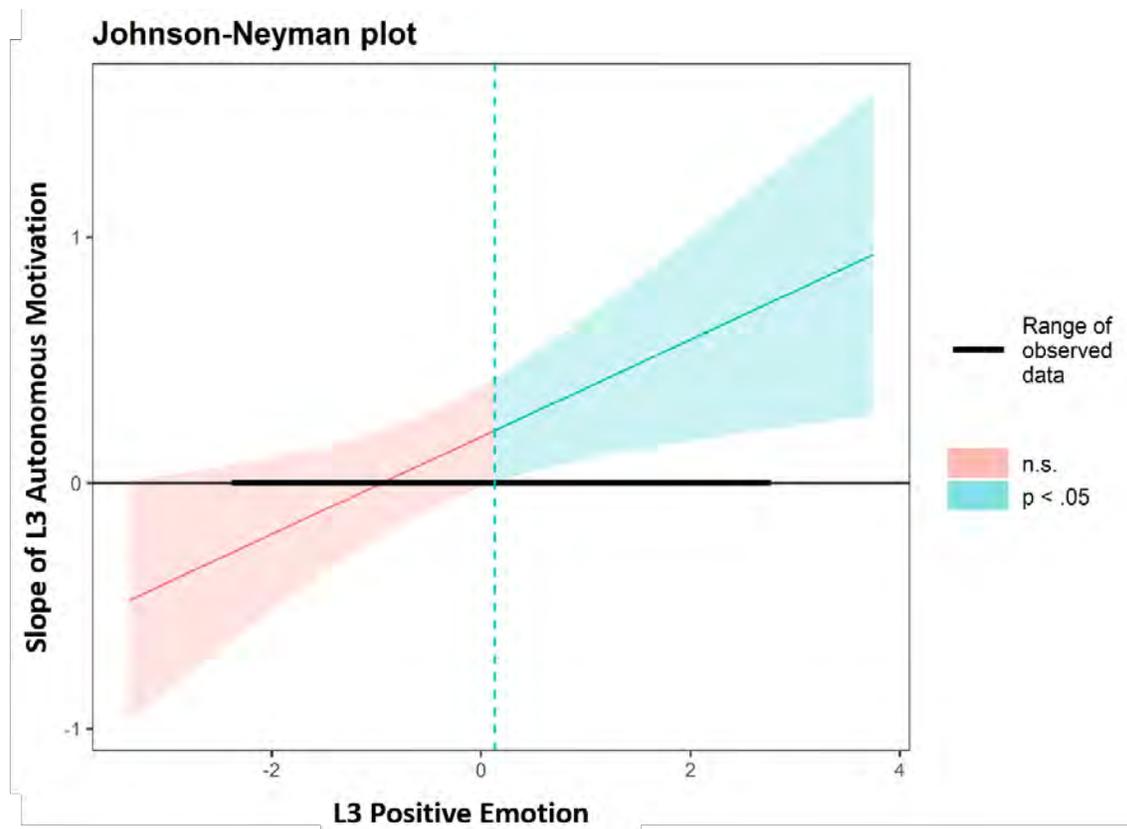
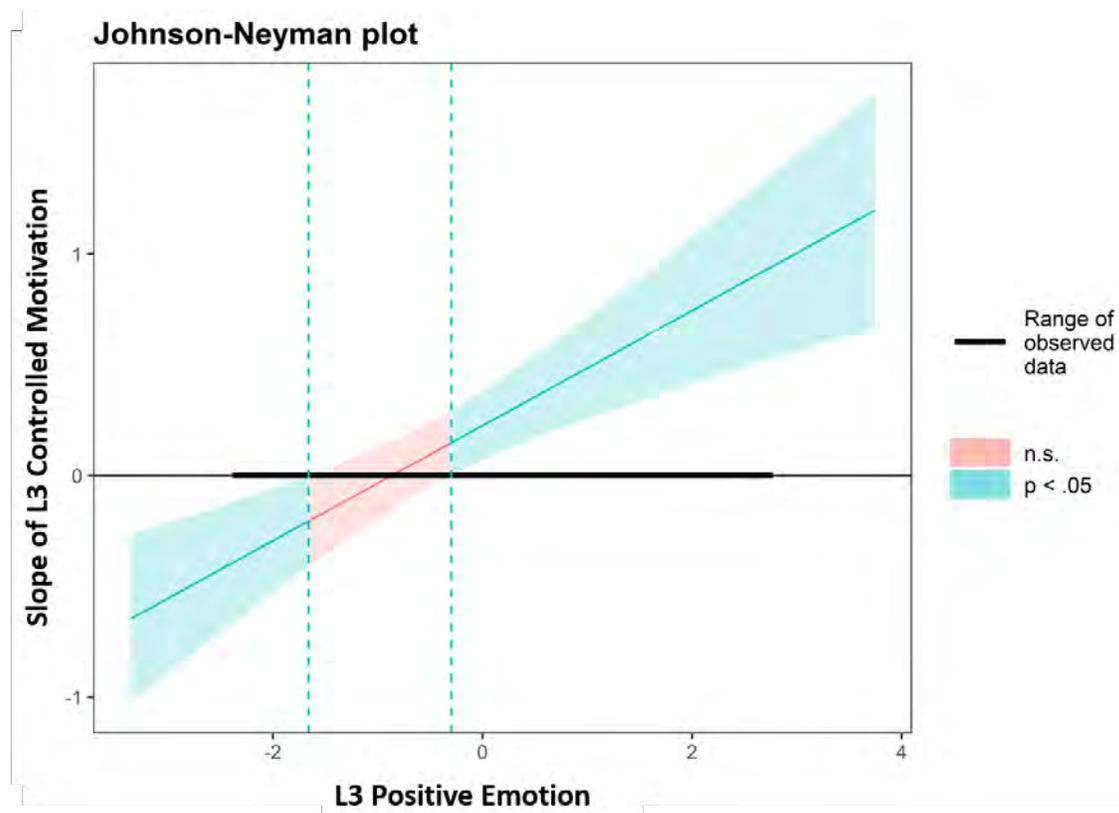


Figure 4 visualizes this slightly more complex pattern. For a small minority of learners who had extremely low positive emotion (i.e., ranging from -2.36 to -1.66), the relationship between controlled motivation and behavioral engagement was significantly negative, albeit the strength of such link was relatively weak. For learners with positive emotion slightly below the average and further above, the link between controlled motivation and behavioral engagement became significantly positive and increasingly stronger, which resembles the pattern observed in the autonomous motivation-engagement link.

As shown above, the simple slopes analyses, albeit commonly seen in the literature, only tells part of the story.

The Johnson-Neyman approach, in comparison, provides a fuller picture regarding the dependence of the motivation-engagement link across all levels of positive emotion. It is worth noting that only when positive emotion was of moderate or high quantity (i.e., around average or above) was the relationship between motivation (autonomous or controlled) and engagement significantly positive. Another additional insight from the Johnson-Neyman analyses is the presence of negative relationships between controlled motivation and engagement when positive emotion was extremely low. Taken together, these findings suggest that only when positive emotion reaches a certain level (average and above) can the motivation-engagement link be optimized.

Figure 4. Moderated Relationships between Controlled Motivation and Engagement at All Levels of Positive Emotion in French (L3) Learning



DISCUSSION

In light of the paucity of theorization and research of emotion in the motivational process in SLA in general (Dewaele & Li, 2020) and SDT-informed language learning literature in particular, this study accords positive emotion a more central role in the motivational process by modelling it as the moderator of the motivation-engagement link. Moreover, this study took a multilingual comparative perspective by focusing on language learners who were studying English and a LOTE (French) simultaneously. Findings point to the significance of positive emotion to LOTEs learning (i.e., as a positive moderator of the motivation-engagement link) and English learning (i.e., as a strong predictor of engagement). As the first study, to the best of the researcher's knowledge, to examine the potential role of emotion as a moderator in the field of SDT and language learning, this study offers some initial support to emotion as the moderator of the motivation-engagement link, an alternative theorization to the more commonly adopted approach to emotion as a subdimension of

engagement. The study also found the role of positive emotion and motivation to be differential in English and LOTEs learning, contributing additional insights on how English and LOTEs motivation may differ.

Emotion as the Moderator of the Motivation-Engagement Link

One of the objectives of this study was to assess the extent to which the patterns (i.e., positive emotion as the moderator between autonomous motivation and behavioral engagement) in the broader SDT literature (i.e., Yoo, 2015) would replicate in language learning. The evidence suggests that the same pattern replicated, but only for LOTEs learning. This finding lends support to the greater relevance of positive emotion to LOTEs learning than to English learning (Liu & Oga-Baldwin, 2022). The study expands on previous research by testing the same model on controlled motivation and engagement, which generated a more nuanced picture: For learners with extremely low positive

emotion in LOTEs learning, the link between controlled motivation was negative. For the rest of the cases, only when positive emotion was close to and above average was the motivation-engagement link significantly positive. This interaction effect could contribute to an understanding of the varying relationships identified between controlled motivation and engagement (e.g., Noels, 2001; Oga-Baldwin & Nakata, 2017). The evidence suggests that positive emotion serves as a situational factor that optimizes the link between motivation and engagement. It is plausible that positive emotion plays an information-regulatory role in the motivational processes (Isen & Reeve, 2005), with more positive evaluations of the learning tasks and more efficient use of cognitive resources for engaging in language-related activities (Fredrickson, 2001), thereby optimizing the motivation-engagement link. Bearing in mind that more research is needed before any conclusive claim could be made, this moderating role is definitely of practical significance, especially considering that it may mitigate the detrimental effect of controlled motivation on learning engagement.

Differences between English and LOTEs Motivation

What is also worth discussing is the language-specific role of positive emotion and motivation found in this study. The findings substantiate the theoretical arguments regarding the difference between English and LOTEs motivation (e.g., Dörnyei & Al-Hoorie, 2017; Ushioda, 2017) by revealing the language-specific characteristics of the motivational processes.

For English learning, no interaction effect was found, and positive emotion was the significant and strong predictor in both models. In other words, controlling for autonomous and controlled motivation, positive emotion contributed additionally and significantly to engagement. This indicates that positive emotion contained additional information relevant to engagement than motivation, a finding that merits further exploration. Even though it is difficult to pinpoint the exact mechanism in the current study, it is plausible that the strong instrumentalist language ideology at the macro level, the prevailing ‘English fever’ at the meso and micro level, and the identity of these learners as English majors, leaves these learners with little choice but to engage in learning. Positive emotion, in contrast, operates in a more individual-internal manner and therefore is more closely

predictive of engagement than motivation. Similarly, the heterogeneity of the motivational processes, particularly regarding controlled motivation, could be interpreted as a result of the more individualistic nature of LOTEs motivation, both in the sense that these learners were still in the early stages of language learning and hence the motivation could be more variable, and that the signals regarding LOTEs in the macro-environment (e.g., the recent policy shift towards Chinese and LOTEs, and the unrelenting English fever) were rather mixed, thereby opening up more possibilities for individual differences. On one hand, learners who saw no personal value of learning a LOTE may struggle with controlled regulation (i.e., compulsory course), as manifested in the negative link between controlled motivation and engagement when positive emotion was very low. On the other hand, learners who concurred with the top-down promotion of non-English languages from the government may see LOTEs as a meaningful and valuable subject to engage in, similar to what was found in previous studies where LOTEs were perceived as a competitive edge over English-only learning (Siridetkoon & Dewaele, 2018).

Limitations, Research Directions and Practical Implications

Before discussing the potential implications of the findings, it is important to acknowledge the limitations of this study. This study was based on cross-sectional data which prevented the identification of causal mechanisms. The reciprocity and dynamism of the relationships between emotion, engagement and motivation (MacIntyre & Mercer, 2014; MacIntyre et al., 2020) are integral to a holistic understanding of the motivational processes but cannot be fully captured without a longitudinal design that spans several time points. Moreover, given the paucity of research attention on emotion as moderator, it is important to replicate in larger samples and different contexts to examine the robustness and generalizability of the interaction between motivation and emotion identified in this sample, as a critical component of the collaborative effort to move the field forward.

Despite its limitations, it is hoped that this study could serve as an inspiration for more research to foreground the role of emotion in the motivational processes, especially from a multilingual perspective. The findings demonstrated

the potential of an alternative view of the role of emotion in the motivational processes that places emotion in a more central position than currently has been in the SDT framework. This study supplied new evidence of the critical significance of positive emotion to language learning: Positive emotion could be the key to strengthening the pathway from motivation to behavioral engagement, a prerequisite for a variety of desirable learning outcomes. This insight is of practical implication to classroom teaching as “teachers play a crucial role in [learners’] positive emotions and only a marginal role in [learners’] negative

emotions” (Dewaele, 2020, p. 5), a pattern consistently identified in the literature (e.g., Dewaele et al., 2018; see Dewaele, 2020 for an overview). More teacher training, such as on emotional regulatory strategies, should be provided to help teachers boost the positive emotions of classroom learners (Dewaele, 2020; Mercer & Gregersen, 2020; Oxford, 2017). Moreover, more research should be conducted with a multilingual comparative perspective to enrich the understanding of how the differential foundations of English and LOTEs motivation are implicated in the learning processes.

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Ethics Approval

This study was approved by the Faculty of Education Standing Panel on Research Ethics at the University of Cambridge.

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Online Supplement

The appendix is shared on the Open Science Framework (OSF link: <https://doi.org/10.17605/OSF.IO/JHE96>) and the IRIS repository.