

*Taking stock: A meta-analysis of
the effects of foreign language enjoyment*

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Abstract

Studies examining the positive emotion of foreign language enjoyment (FLE) have recently increased exponentially, as researchers are applying the tenets of positive psychology in applied linguistics. It is therefore an appropriate time to take stock of the current literature and conduct a preliminary meta-analysis. The relationships between FLE and four variables, namely, foreign language anxiety (FLA), willingness to communicate (WTC), academic achievement, and self-perceived achievement were examined. A total of $k = 96$ effect sizes were analyzed with an overall sample size of $N = 28,166$ in random-effects models with correlation coefficients. There was a moderate negative correlation between FLE and FLA. In turn, moderate positive correlations were found between FLE and WTC, FLE and academic achievement, and FLE and self-perceived achievement. These positive associations confirm the value of

FLE in FL learning and further affirm the need for researchers to examine positive psychology constructs in the foreign language classroom.

Keywords: foreign language enjoyment; meta-analysis; foreign language anxiety; willingness to communicate; academic achievement; self-perceived achievement

1. Introduction

Foreign language enjoyment (FLE) has been the cornerstone of the recent positive psychology in foreign language (FL) learning movement (Dewaele & MacIntyre, 2014; MacIntyre et al., 2019; Mercer & MacIntyre, 2014). Introduced by Dewaele and MacIntyre (2014), FLE can be defined as a broad positive emotion experienced by FL learners when their psychological needs are met in the FL classroom (Botes et al., 2020a). FLE represents the first foray into quantifying positive emotions in FL research (Dewaele & MacIntyre, 2014) and has been an increasingly popular variable to examine since it was introduced in 2014. Increased research scrutiny has established the nomological network of FLE, which demonstrates the positive interrelations of FLE. Greater FLE in the FL class has been associated with lower foreign language anxiety (FLA; Dewaele & MacIntyre, 2016), greater willingness to communicate (WTC) in the target language (TL; Khajavy et al., 2018), higher academic achievement in the FL classroom (Jin & Zhang, 2021), and higher self-perceived competence in the TL (Zhang et al., 2020). The research attention on FLE has been such that it has rendered a meta-analytical study of FLE and these four individual difference variables (FLA, WTC, academic achievement, and self-perceived achievement) a viable research endeavor.

With this increased research momentum, now would be a prudent time to take stock and examine the research trends that can be identified for the first variable of the movement, namely, FLE. With this study, we thus endeavored to conduct a meta-analysis of FLE and its associations with FLA, WTC, academic achievement, and self-perceived achievement. These four individual difference variables were chosen as they are all established constructs in the FL learning literature and have all been examined in conjunction with FLE in numerous studies, thus rendering a meta-analysis of the variables practically feasible. Two other issues helped us decide which variables to focus on in our study. First, other variables have also been examined alongside FLE, such as grit (Wei et al., 2019), emotional intelligence (Resnik & Dewaele, 2020), and motivation (Dewaele & Proietti Ergün, 2020). However, these other variables have not been explored to the extent that the four variables included in this study. Second, a meta-analysis can be conducted with as few as two effect sizes (Valentine et al.,

2010), and some other variables met this criterion (e.g., we found five effect sizes for grit and three effect sizes for emotional intelligence), but we decided to focus on the four variables that went beyond this minimum criterion and thus presented the greatest opportunity for adding to the research dialogue. The results of this meta-analysis will provide a practical demonstration of the power of positive emotions in the FL classroom and further strengthen the positive psychology movement in FL learning.

2. Literature review

2.1. Positive psychology and FLE

The positive associations between FLE and other FL individual difference variables can be seen as a practical embodiment of the tenets of positive psychology in an applied setting. Positive psychology has been defined as the “scientific study of what goes right in life” (Peterson, 2006, p. 4), and, as such, positive psychology in the context of FL learning can be redefined as what goes right in the language classroom.

FLE embodies key aspects of two seminal theories in positive psychology research. Firstly, Seligman (2018) identified the building blocks of well-being in his PERMA model (positive emotion, engagement, relationships, meaning, and achievement), which posits that each element contributes – both individually and in conjunction with the other variables – to overall happiness and flourishing. FLE can be seen as an applied embodiment of the positive emotion element in Seligman’s (2018) model. Secondly, Fredrickson (2001, 2013) touted the broadening-and-building capacity of positive emotions, where positive emotions constitute an individual’s psychological resources, which, in turn, broaden the person’s scope of awareness and perception. In the applied setting of the FL classroom, FLE therefore constitutes the psychological resources of the FL learner to endure the unique challenges that FL learning poses and allows students to broaden their learning in the FL classroom by taking in additional information (MacIntyre, 2016).

Both the theories proposed by Seligman (2018) and Fredrickson (2001, 2013) would therefore imply a positive outcome should the tenets of PERMA and broaden-and-build be strengthened. In terms of the applied setting of FL learning, this would imply that the positive emotion of FLE should be associated with positive outcomes in the FL classroom. The nomological network of FLE has thus far supported this notion as FLE is associated with positive outcomes such as academic achievement and perceived proficiency in the TL.

2.2. The nomological network of FLE

FLE has been linked to demographic variables, personal characteristic variables, and applied linguistic variables. As FLE can be considered a relatively “new” variable, its nomological network is still expanding, yet preliminary findings are promising for researchers in the field of positive psychology in applied linguistics.

The demographic variables of age, gender, and multilingualism have all been associated with FLE. Older FL learners have been found to exhibit higher levels of FLE than their younger counterparts (Dewaele et al., 2018; Dewaele & MacIntyre, 2014), with university students displaying greater FLE than secondary school students (Dewaele & MacIntyre, 2014). There is only a limited number of studies that have examined FLE and age comparisons, and thus a definitive conclusion cannot yet be drawn. The verdict regarding gender and FLE is also unclear. Several studies have found that female FL learners indicated higher levels of FLE than their male counterparts (Dewaele & MacIntyre, 2014; Dewaele et al., 2016), with others reporting no significant differences regarding gender and FLE (Alezeni, 2020; Mierzwa, 2018). Contrasting evidence has also been found in terms of the level of multilingualism and FLE, with some studies reporting a higher degree of multilingualism linked to greater FLE (Dewaele & MacIntyre, 2014; Dewaele, Özdemir et al., 2022), and others reporting no statistically significant association (Dewaele et al., 2018). As FLE has only been in the applied linguistics research sphere for a mere six years, it is not surprising that conclusions about demographic differences cannot yet be made. Considerable future research is therefore needed.

Other antecedents that have been linked to FLE are personality traits, emotional intelligence, and grit. The personality traits of social initiative ($\beta = -0.09, p < .001$) and cultural empathy ($\beta = 0.20, p < .001$) have both been found to predict FLE (Dewaele & MacIntyre, 2019). Large positive correlations have also been found between FLE and curiosity in FL learning (Mahmoodzadeh & Khajavy, 2018). In addition, need for cognition has been found to predict FLE ($\beta = 0.31, p < .001$; Rezazadeh & Zarrinabadi, 2020), and emotional intelligence has been found to be moderately positively correlated with FLE (Li, 2020; Li & Xu, 2019; Resnik & Dewaele, 2020). Lastly, grit in FL learners has also shown moderate to large positive correlations with FLE (Lee, 2020; Wei et al., 2019). The findings from these studies further confirm the underlying positive psychology theories on which FLE was built in that FLE is clearly associated with positive traits in the nomological network. However, as only a few studies have examined these positive characteristics and FLE ($k \leq 3$), it was not viable to include personality, grit, or emotional intelligence in the meta-analysis.

Beyond its antecedents, FLE is most often examined alongside FLA. FLE was first introduced into the applied linguistics lexicon by Dewaele and MacIntyre (2014)

in a study in which they compared and contrasted the negative emotion of FLA with the newly introduced FLE. FLA is an established and popular variable in applied linguistics research with a well-known and often researched nomological network (see Horwitz, 2010; MacIntyre, 2017). As FLE debuted as the positive emotion counterpart to FLA, it comes as no surprise that the majority of research on FLE has thus far examined the association between FLE and FLA. A prevailing trend of moderate negative correlations between FLE and FLA seems to have emerged (see Hung, 2020; Resnik & Dewaele, 2020; Uzun, 2017), but some deviations still occur. Studies have found small positive correlations (Dewaele, Özdemir et al., 2022), small negative correlations (Dewaele & Alfawzan, 2018), and nonsignificant results (Dewaele & Dewaele, 2017). As there is an abundance of research on FLE and FLA, we decided to investigate the relationship between the two variables in this meta-analytical study.

FLA is often researched in conjunction with the FL classroom variables of WTC, academic achievement, and self-perceived achievement, and as such, these variables can be considered to function within the same nomological network. With the increase in research that has focused on the associations between FLE and FLA, it not surprising that FLE research was extended to examine WTC, academic achievement, and self-perceived achievement.

WTC in the FL learning context can be defined as “the probability that a person will choose to communicate, given the opportunity” (MacIntyre & Ayers-Glassey, 2021, p. 187) in the TL. WTC has long since been a popular outcome variable in applied linguistics (see Zhang et al., 2018) and has recently been examined alongside FLE in a handful of studies (see Dewaele, 2019; Dewaele & Dewaele, 2018; Mahmoodzadeh & Khajavy, 2018). These studies have overwhelmingly found large positive correlations between FLE and WTC (Dewaele & Dewaele, 2018; Khajavy et al., 2018), leading Dewaele (2019) to conclude that teachers may boost WTC in the FL classroom by creating a positive environment in which FLE may flourish. This hypothesis will be tested in the meta-analysis in order to examine the extent to which the positive relationship between FLE and WTC is confirmed across the literature.

Similar to WTC, the outcome variables of “real” and self-perceived proficiency in the TL have been at the center of applied linguistics studies for decades (see Sparks et al., 1997; Sparks et al., 2006). Indeed, surmising that the ultimate outcome of language learning should be to gain proficiency in the language, the variables of real and perceived proficiency in the TL can be seen as the ultimate outcome variables in the nomological network. As such, identifying variables that are associated with proficiency in the TL may provide opportunities to improve FL teaching and benefit FL learners in their ultimate goal of learning a language. “Real” proficiency in the TL is often measured through academic achievement in the

FL class, through either grades or scores on tests and exams (see Botes et al., 2020b). The relationship between FLE and academic achievement has been examined in numerous studies over the past six years in order to determine whether positive emotion might be associated with proficiency in the TL, should academic achievement in the FL class be accepted as a proxy for “real” proficiency. These studies have mostly found moderate positive correlations between FLE and academic achievement (see Dewaele, 2019; Jin & Zhang, 2021), but nonsignificant results have also been reported (Dewaele & Proietti Ergün, 2020). Similarly, self-perceived achievement in the TL has also been found to be positively correlated with FLE, however with varying effect sizes ranging from small ($r = .09$, $p < .001$; Botes et al., 2020a), to moderate ($r = .25$, $p < .001$; Dewaele & MacIntyre, 2014), to large ($r = .43$, $p < .05$; Piechurska-Kuciel, 2017). Both academic achievement and self-perceived achievement are undoubtedly positively associated with FLE, but the strength of the association is unclear. Both academic achievement and self-perceived achievement and their associations with FLE were therefore included in the meta-analysis in an attempt to derive an indication of the effect sizes of the relations between the variables.

In light of the considerations presented above, we examined the following hypotheses in the meta-analysis of FLE:

- Hypothesis 1: There is an overall moderate negative correlation between foreign language enjoyment and foreign language anxiety.
- Hypothesis 2: There is an overall moderate positive correlation between foreign language enjoyment and willingness to communicate.
- Hypothesis 3: There is an overall moderate positive correlation between foreign language enjoyment and academic achievement.
- Hypothesis 4: There is an overall moderate positive correlation between foreign language enjoyment and self-perceived achievement.

3. Method

3.1. Search strategy

In October 2021,¹ the following four databases were searched: ERIC, Google Scholar, psychINFO, and psychARTICLES. An additional hand-search of four journals where research on emotions in language learning is often published were

¹ It should be noted that the study was originally planned and registered in September 2020. A search of the literature was made and results coded and analyzed. However, due to the low number of effect sizes and studies found in the initial search, the decision was made to wait an additional year for more studies regarding FLE to be published in order to make a

carried out on 1 November 2021.² Articles published in peer-reviewed journals, conference proceedings, and doctoral dissertations were examined for inclusion in the meta-analysis. Only studies published in English were considered. A single key phrase was used in the search, namely, *foreign language enjoyment*, and all studies examining FLE in relation to FLA, WTC, academic achievement, and self-perceived achievement were considered for inclusion. The project was pre-registered at the Centre for Open Science (https://osf.io/fjusz/?view_only=ec5236f4641f4ca1a06c0dea394f4148).

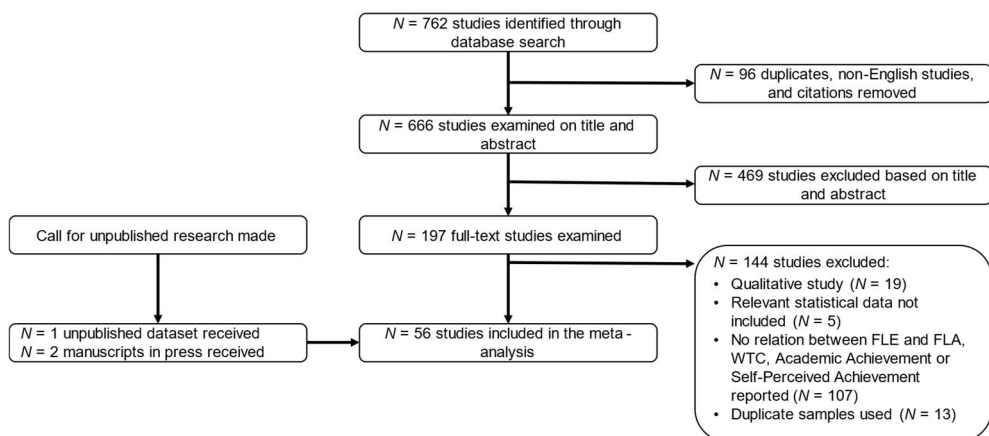


Figure 1 Database search flowchart

The database search yielded 762 results, of which 96 were duplicates or non-English-language results (see Figure 1). The titles and abstracts of 666 studies were examined, and 469 of these were excluded because they were not applicable to the meta-analysis at hand. The full texts of 197 studies were considered, with 53 retained in the meta-analysis. An additional call for unpublished research was made, with authors reaching out to known scholars in the emotions in language learning research field. This resulted in the addition of an unpublished data set and two manuscripts that were in press. A total of 56 studies were therefore included in this meta-analysis. Of the 56 studies, seven (12.5%) could be considered

meta-analysis a worthwhile endeavor. Results from the initial search was published at the Centre for Open Science for the sake of transparency, and can be found at: https://osf.io/fjusz/?view_only=ec5236f4641f4ca1a06c0dea394f4148. The number of studies found in the initial search increased from $N = 354$ to $N = 762$, and the number of studies included in the meta-analysis increased from $N = 30$ to $N = 56$. We therefore believe that a fruitful decision was in delaying the meta-analysis for a year, as the number of effect sizes increased considerably and thus resulted in more robust analyses (Huedo-Medina et al., 2006).

² *Modern Language Journal, Studies in Second Language Learning and Teaching, System, Language Learning.*

“grey literature” because they consisted of three unpublished doctoral dissertations, one conference proceeding, two unpublished manuscripts, and an unpublished data set. The full list of studies included in the meta-analysis can be found in the supplementary material as well as the registered data folder on the OSF (https://osf.io/fjusz/?view_only=ec5236f4641f4ca1a06c0dea394f4148).

3.2. Review strategy

A total of 96 effect sizes were included in the meta-analysis from the 56 studies that were identified in the database search. The following inclusion criteria were applied:

1. Quantitative data requirements: Only studies reporting correlations between FLE and FLA/WTC/academic achievement/self-perceived achievement were included. The authors were contacted when data were missing. Of the 13 authors who were contacted, eight responded with the necessary information. A summary of the number of available effect sizes per variable can be found in Figure 2.
2. Measures: No study was excluded on the basis of the measurement instrument that was used. The scale or questionnaire used for each variable was noted.
3. Study designs: No specific designs were excluded from the study. In the case of experimental studies with a pretest and a posttest, pretest data were used in the meta-analysis. In the case of group-difference studies, separate groups were entered into the database and specifically noted.
4. Moderators: Several possible moderators were coded, including average age, gender, linguistic distance between the first language and the target language, and nationality. However, no study was excluded on the basis of the presence or absence of moderators.

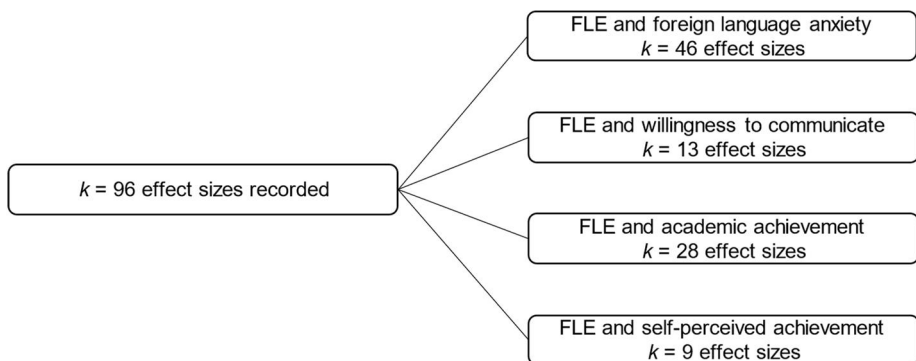


Figure 2 Effect sizes per hypothesized relationship

3.3. Coding strategy

Publication characteristics such as authors, full title, year of publication, and publication medium were recorded. The demographic characteristics of each study (i.e., the sample size, gender distribution, average age, country, home language, and target language) were noted. The specific measure used to capture each variable was also recorded in addition to the means, standard deviations, and internal reliabilities as measured with Cronbach's alpha (see Tables S1-S5 in the Supplementary materials). The average internal consistency reported was at an acceptable Cronbach's $\alpha = .86$. The effect sizes were recorded in the form of Pearson's correlation coefficient (r). An attempt was made to record several moderating factors; however, only three moderators were sufficiently represented in the data to be included in the study (i.e., average age, percentage of female participants in the sample and linguistic distance). As the majority of the participants were either first or foreign language learners and users of English, linguistic distance was coded via the quantitative linguistic distance measure provided by Chiswick and Miller (2005). Linguistic distance was measured on a scale from zero to one, with one representing the widest possible linguistic distance (Chiswick & Miller, 2005).

3.4. Data-analysis strategy

The hypothesized relationships between FLE and FLA/WTC/academic achievement/self-perceived achievement were examined by converting the correlation coefficients (r) into Fisher's z-scores. The conversion allows for the stabilization of the variance of the results, with a summary of the Fisher z scale retransformed into a summary correlation coefficient between each of the hypothesized relationships with FLE (Hedges & Olkin, 1985). For each of the four hypothesized relationships with FLE, a random effects model with maximum likelihood estimation was used, with heterogeneity assumed across studies.

The degree of heterogeneity in the meta-analysis was quantified via the I^2 index, which "can be interpreted as the percentage of total variability in a set of effect sizes due to true heterogeneity" (Huedo-Medina et al., 2006, p. 194). A rule-of-thumb interpretation of the I^2 index indicates that around 25% is a low amount of heterogeneity across studies, with 50% and 75% in turn interpreted as medium and high amounts of heterogeneity, respectively (Higgins & Thompson, 2002). Beyond the I^2 index, heterogeneity was also examined through τ^2 , which estimates between-studies variance. The τ^2 and I^2 are "directly comparable," with an increase in one index resulting in an increase in the other (Huedo-Medina et al. 2006, p. 194). The I^2 index further provides a useful indication as

to whether or not moderating factors are likely to be present in the relationships between variables. The effects of the three moderator variables (i.e., average age, percentage of female participants, and linguistic distance) on the effect sizes were examined via a random-effects meta-regression with a restricted maximum likelihood estimator. Publication bias was investigated by applying the trim and fill method, where effect sizes are recalculated to adjust for supposed publication biases (Duval & Tweedie, 2000). All analyses were conducted in R with the metafor package (Viechtbauer, 2010), with the figures generated by the Jamovi interface in R (Love et al., 2018).

4. Results

4.1. Descriptive results

A total of 56 studies with $k = 96$ effect sizes were analyzed. Publication dates ranged from 2014 to 2022 ($M = 2019.7$). A total of $N = 28,166$ ($M = 512.11$, $SD = 555.86$) participants were included across the 56 studies, with 16,360 female participants and 10,960 male participants. The average age of participants was 19.45 years ($SD = 4.46$). A large majority of the participants were school pupils, learning languages in an FL class ($N = 11,978$). The remaining participants were learning an FL through university courses ($N = 9100$) or independent language schools ($N = 991$). A large majority of participants (81.7% of the total participants) were learning English ($N = 23,013$), followed by Turkish ($N = 592$), Arabic ($N = 188$) and French ($N = 130$).

4.2. Hypothesis 1: FLE and FLA

The hypothesized relationship between FLE and FLA was examined via $k = 46$ effect sizes (see Figure 3). FLE and FLA shared an overall moderate negative correlation of $r = -.31$ ($k = 46$; $N = 20,946$), with a 95% confidence interval of $r = -.36$ to $r = -.26$. The results were statistically significant ($Z = -12.26$, $p < .001$). Results further indicated a significant amount of heterogeneity across studies, $Q(45) = 482.29$, $p < .001$, $I^2 = 91.54\%$, with a moderate amount of variance across true effect sizes ($\tau^2 = .024$).

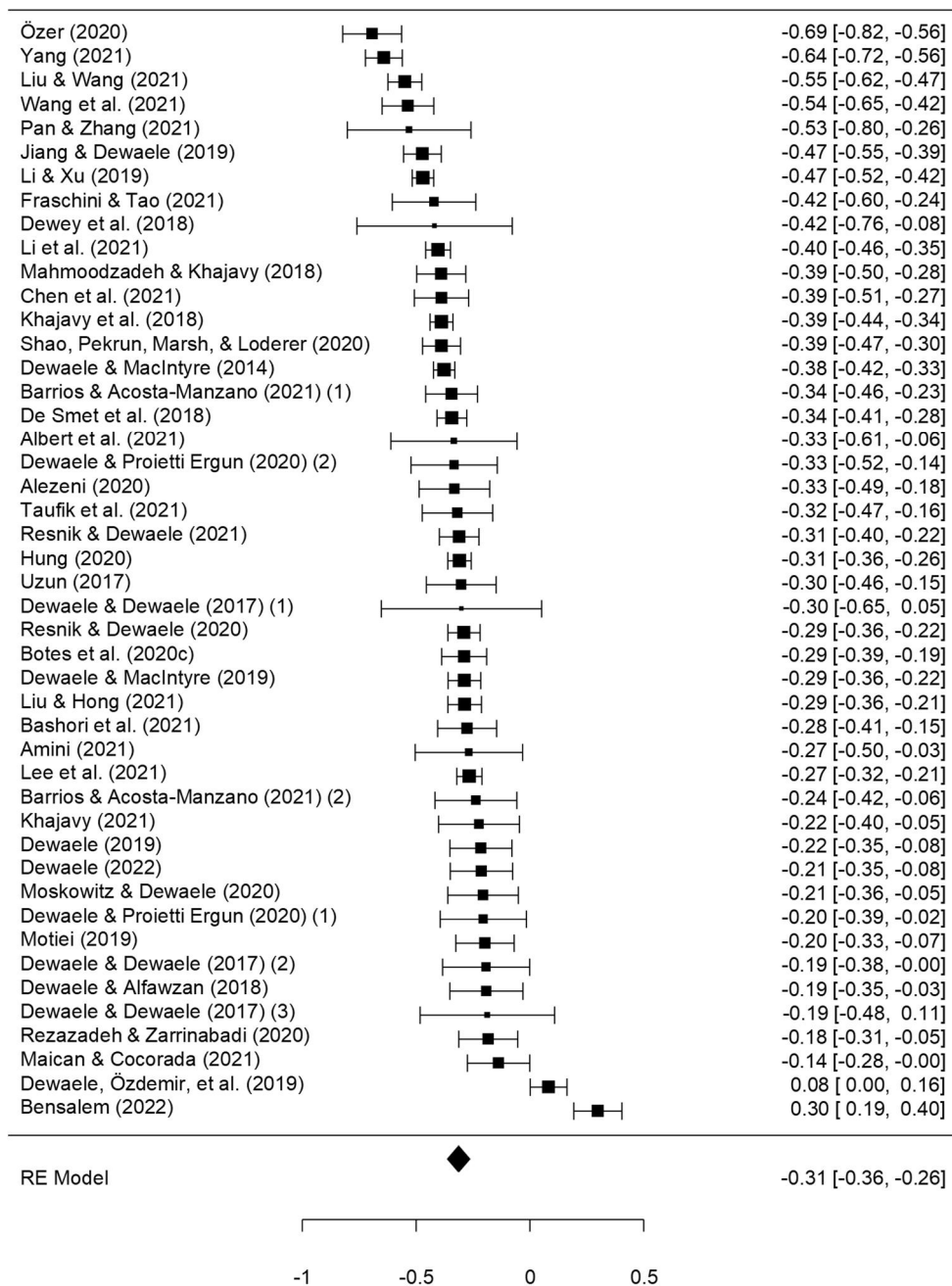


Figure 3 Forest plot of FLE and FLA

FLE and FLA therefore had a moderate negative relationship, in support of Hypothesis 1. Individuals with higher levels of enjoyment in FL learning are thus more likely to have lower levels of anxiety during the FL learning process.

4.3. Hypothesis 2: FLE and WTC

FLE and WTC had a large positive correlation of $r = .48$ ($k = 13$, $N = 5,466$) with a 95% confidence interval of $r = .38$ to $r = .58$ (see Figure 4). The results were statistically significant ($Z = 9.30$, $p < .001$). The results further indicated a large amount of heterogeneity, $Q(12) = 252.12$, $p < .001$, $I^2 = 92.11\%$, with an equally large variance across studies ($\tau^2 = .03$).

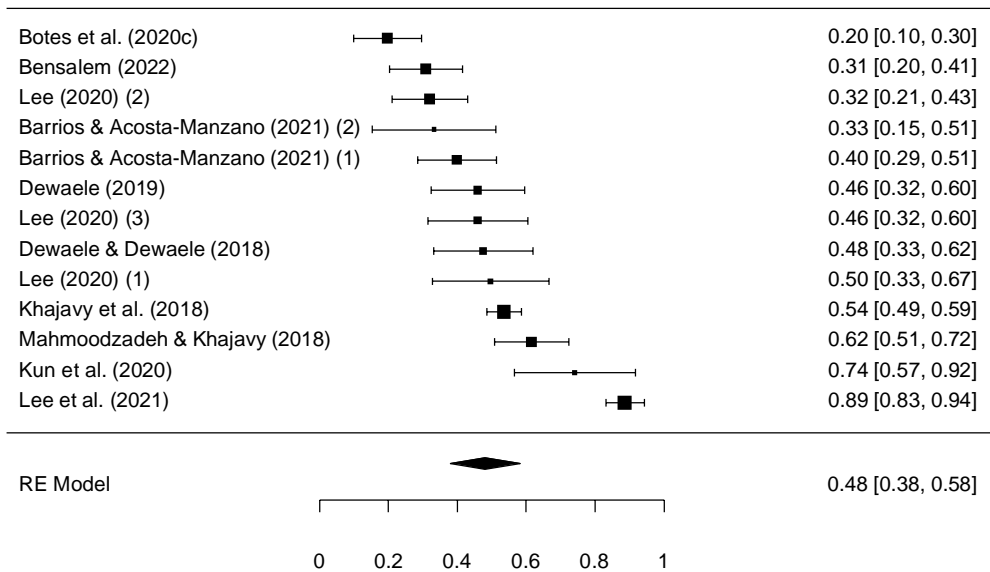


Figure 4 Forest plot of FLE and WTC

A moderate to large positive correlation was therefore found between FLE and WTC, in support of Hypothesis 2. FL learners experiencing enjoyment in language learning are therefore more likely to be willing to communicate in the target language.

4.4. Hypothesis 3: FLE and academic achievement

The meta-analysis of the 28 effect sizes that represented the relation between FLE and academic achievement resulted in a moderate positive correlation of $r = .30$ ($k = 28$, $N = 8,899$) with a 95% confidence interval of $r = .24$ to $r = .37$ (see Figure 5). Results were statistically significant ($Z = 9.02$, $p < .001$). A large amount of heterogeneity was present in the data, $Q(27) = 206.66$, $p < .001$, $I^2 = 87.5\%$, with a large amount of variance across studies ($\tau^2 = .023$).

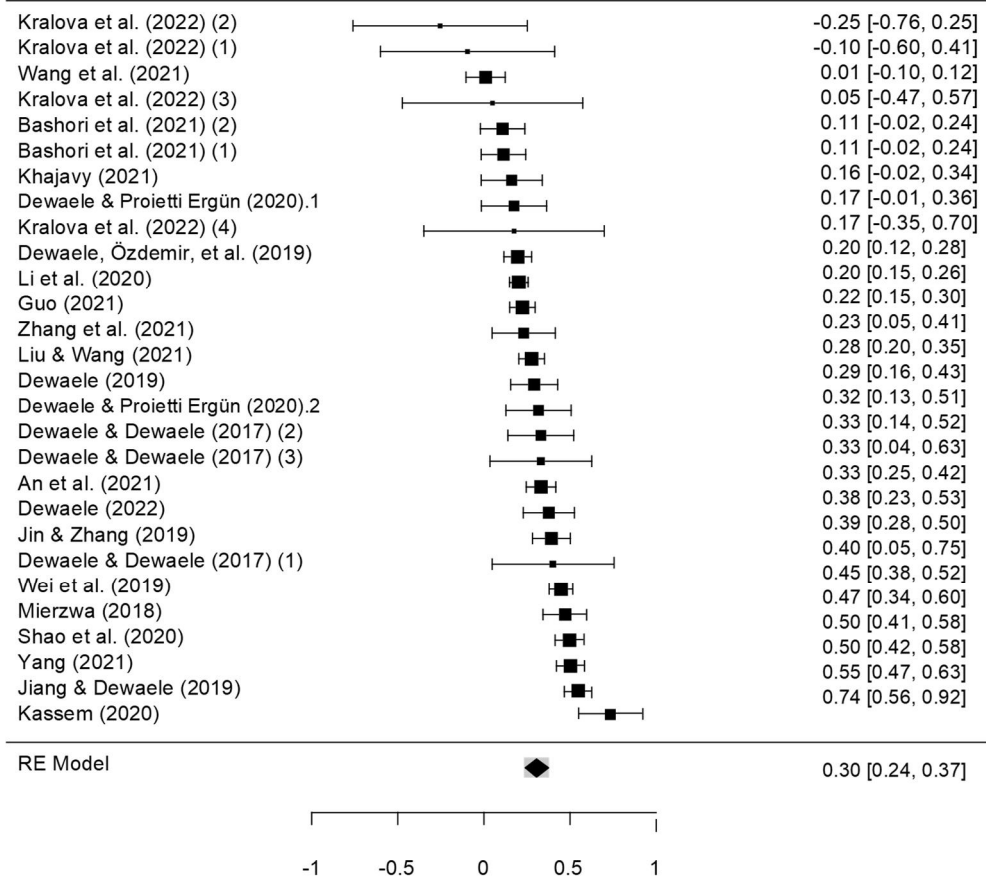


Figure 5 Forest plot of FLE and academic achievement

Hypothesis 3 was therefore supported in that FLE and academic achievement showed a moderate positive correlation. FL learners who experience higher levels of enjoyment in the FL class are therefore more likely to have higher levels of academic achievement.

4.5. Hypothesis 4: FLE and self-perceived achievement

A moderate positive correlation $r = .27$ ($k = 9$, $N = 4,556$) was found between FLE and self-perceived achievement (see Figure 6). The results were statistically significant ($Z = 5.67$, $p < .001$) with a 95% confidence interval of $r = .18$ to $r = .37$. A moderate amount of heterogeneity was present in the data, $Q(8) = 52.76$, $p < .001$, $I^2 = 83.25\%$, with a moderate amount of variance across studies ($\tau^2 = .012$).

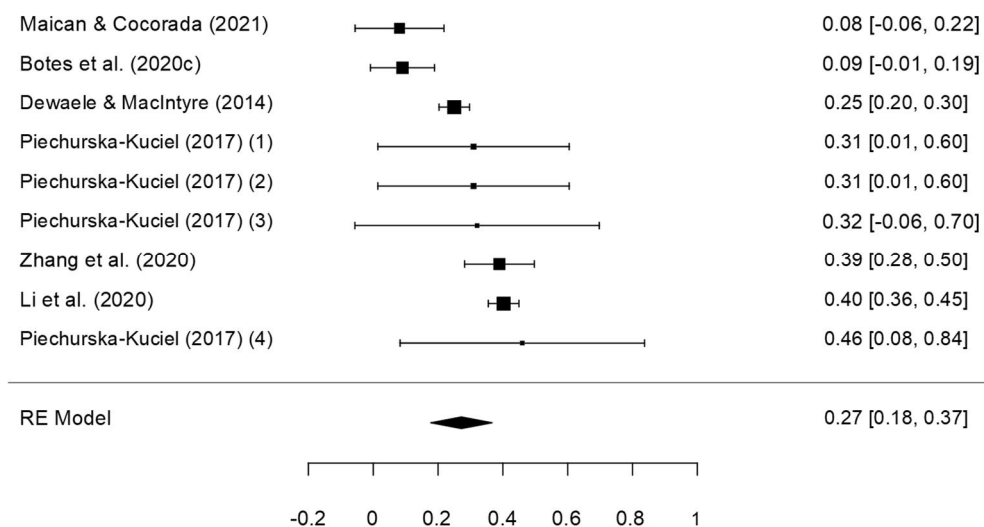


Figure 6 Forest plot of FLE and self-perceived achievement

Hypothesis 4 was therefore supported such that language learners with higher enjoyment in FL learning were more likely to have a higher self-perception of their achievement.

4.6. Moderator analyses

The meta-analysis of all four of the hypothesized relationships with FLE indicated high levels of heterogeneity ($I^2 > 80\%$). In an attempt to uncover the possible causes of such heterogeneity, moderator analyses were carried out with the potential moderators of average age, percentage of female participants in the sample, and linguistic distance (see Table 1). The numeric value given to the linguistic distance between the target language and the first language of the FL learner was provided by Chiswick and Miller (2005).

Unfortunately, only one statistically significant moderator effect was found. Average age was shown to moderate the relationship between FLE and self-perceived achievement (Slope = -0.026 , $Z = -3.74$, $p < .001$). Thus, the correlation between FLE and self-perceived achievement was also stronger in the case of younger FL learners than older language learners. However, the small number of studies included in this random-effects meta-regression ($k = 8$) may have resulted in a Type I error (Guolo & Varin, 2017). Therefore, the moderator analyses are presented here as a point of interest, but definitive conclusions cannot be drawn.

Table 1 Moderator analyses

	<i>k</i>	<i>n</i>	Slope	<i>Z</i>	<i>p</i> -value
1. FLE and FLA					
Average age	40	20 172	.005	1.51	.13
Percentage of female participants	42	22 080	.002	1.21	.23
Linguistic distance	29	15 317	-.202	-.76	.44
2. FLE and WTC					
Average age	11	4989	-.009	-1.60	.11
Percentage of female participants	13	5466	-.001	-.21	.83
Linguistic distance	8	2897	-.13	-.40	.69
3. FLE and academic achievement					
Average age	18	7362	-.009	-.81	.41
Percentage of female participants	17	7882	-.002	-.49	.63
Linguistic distance	21	7757	.779	1.73	.08
4. FLE and self-perceived achievement					
Average age	8	4221	-.026	-3.74	< .001
Percentage of female participants	9	4810	.003	.78	.44
Linguistic distance	4	2401	-.179	-.82	.41

4.7. Publication bias analysis

The results of the trim and fill random effects model for each of the hypothesized relationships with FLE can be found in Table 2. The trim and fill analysis seemed to indicate a minimal impact of publication bias affecting the meta-analysis of the relationships between FLE and FLA ($r = -.31$ vs. $r = -.37$), FLE and academic achievement ($r = .30$ vs. $r = .33$), and FLE and self-perceived achievement ($r = .27$ vs. $r = .27$). However, some publication bias appeared to be present in the analysis of FLE and WTC such that the trim and fill estimate ($r = .56$) was slightly larger than the summary estimate ($r = .48$).

Table 2 Publication bias analyses

	<i>k</i>	Summary estimate [95% CI]	Trim and fill estimate [95% CI]
FLE and FLA	46	-.31 [-.36; -.26]	-.37 [-.41; -.31]
FLE and WTC	13	.48 [.38; .58]	.56 [.47; .66]
FLE and academic achievement	28	.30 [.24; .37]	.33 [.26; .39]
FLE and self-perceived achievement	9	.27 [.18; .37]	.27 [.17; .36]

4.8. Summary of results

The meta-analysis found support for all four hypotheses presented in this study (see Table 3 for an overview).

Table 3 Summary of meta-analytic results

	<i>k</i>	<i>N</i>	<i>r</i> [95% CI]	<i>I</i> ²	τ^2
FLE and FLA	46	20 946	-.31 [-.36; -.26]	91.54	.024
FLE and WTC	13	4556	.48 [.38; .58]	92.11	.031
FLE and academic achievement	28	8899	.30 [.24; .37]	87.50	.023
FLE and self-perceived achievement	9	4810	.27 [.18; .37]	83.25	.012

5. Discussion

This meta-analysis of FLE and four associated individual difference variables demonstrated the position of FLE as a positive psychology variable with broad potential in the FL classroom. Enjoyment in the FL classroom was associated with lower anxiety, greater willingness to communicate in the TL, higher academic achievement, and higher self-perception of achievement for FL learners.

The results confirmed a moderate negative correlation between FLE and FLA ($r = -.31$, $k = 46$, $N = 20,946$). A higher level of FLE was therefore associated with a lower level of anxiety. As the debilitating effects of anxiety have been demonstrated in the literature (see MacIntyre, 2017), this moderately negative summary estimate may have practical implications for the FL classroom. However, correlations were used in the meta-analysis, and as such, no directionality can be assumed. Indeed, we have argued in previous publications that the relationship between FLE and FLA is most likely circular, as the lessening of anxiety can lead to greater enjoyment in the FL classroom, which in turn reduces anxiety (Botes et al., 2020a). Should this circularity argument hold, then the moderately negative summary estimate between FLE and FLA does have practical implications for FL teachers. There are several known strategies for decreasing FLA in the FL classroom, such as applying self-driven learning (Dupuy, 1997), using multimedia technologies (Oxford, 2017), practicing positive thinking (Kondo & Ying-Ling, 2004), and de-emphasizing grammar and pronunciation (Young, 1991). FL teachers who employ these strategies for lowering FLA may therefore reasonably expect a subsequent increase in FLE, which may, in turn, yield an additional decrease in FLA. Further research is needed to confirm the circular relationship between FLA and FLE, yet on a speculative level, it does seem that either an increase in FLE or a decrease in FLA may result in a positive spiral in the FL classroom.

In turn, the meta-analysis of FLE and WTC yielded a large positive correlation ($r = .48$, $k = 13$, $N = 4,556$). High levels of enjoyment in the FL classroom were therefore strongly associated with a greater willingness to communicate in the TL. As WTC has been linked to proficiency in the FL and as some theories (e.g., the pushed output hypothesis) maintain that the only effective means of acquiring a language is through active communication (Robson, 2015; Sato, 2020; Swain, 1995; Zhang et al., 2018), this large correlation between FLE and

WTC has practical implications, particularly for FL teachers. Again, it should be noted that no directionality can be assumed as correlations were used in this meta-analysis, although WTC is generally utilized as an outcome variable in individual difference models in applied linguistics (see Karimi & Abaszadeh, 2017; Yashima et al., 2004). Therefore, teachers who aim to have students who are more prepared to speak in the TL may utilize classroom strategies that have been found to increase enjoyment, such as encouraging students to prepare for FL class and taking time to relax when learning a FL (Kondo & Ying-Ling, 2004).

FLE and academic achievement were found to have a moderate positive correlation ($r = .30$, $k = 28$, $N = 8,899$). In turn, FLE and self-perceived achievement had a similar moderate positive correlation ($r = .27$, $k = 9$, $N = 4,810$). Thus, higher FLE is associated with higher academic achievement in the FL classroom as well as a higher self-perception of that achievement. No moderators were found to affect the relationship between FLE and academic achievement, although average age was found to moderate the relationship between FLE and self-perceived achievement. Younger language learners manifested a stronger association between FLE and self-perceived achievement than their older FL learning counterparts. FL teachers of children or adolescents can therefore take particular care to create an enjoyable FL class as the enjoyment of young FL learners is especially likely to be associated with good grades or exam scores.

The results of all four variables (FLA, WTC, academic achievement, and self-perceived achievement) and their relationships with FLE spoke of the positive associations enjoyment may have in the FL classroom.

6. Limitations

The majority of studies included in the meta-analysis examined FLE within the context of learning English as a foreign language (EFL). Given the popularity of emotions as a topic of research in the EFL studies, this is somewhat unsurprising. However, the overwhelming number of EFL studies may have possibly skewed the results of the meta-analysis towards the context of EFL learning. Additionally, the number of EFL studies included may also have been impacted by the fact that we included only studies that were published in English. This may have resulted in unreported studies and effect sizes, but the lack of publication bias we found does somewhat mitigate this concern. Lastly, the use of Fisher's z-scores and correlations implies that no conclusions can be drawn with respect to directionality. Although some relationships can be argued to be circular (e.g., FLE and FLA), this study cannot provide evidence as to such directionality. Lastly, the small number of effect sizes included in the moderator analyses can be seen as a limitation as such analyses may be considered under-powered (Valentine et

al., 2010). As such, the possibilities of Type I and Type II errors in the results of the moderator analyses cannot be ruled out.

7. Future research suggestions

FLE has only been examined as defined by Dewaele and MacIntyre (2014) for the past eight years. Therefore, it should come as no surprise that our first research suggestions would be to further expand the research on FLE. As discussed in the literature review, current findings with regard to antecedents are at times contradictory, with some studies reporting significant differences in FLE with regard to gender, age, and multilingualism (Dewaele & MacIntyre, 2014; Dewaele et al., 2016) and yet others reporting no differences (Alezeni, 2020; Dewaele et al., 2018). Considerable research is therefore needed to establish research trends regarding the antecedents of FLE. The nomological network of FLE should also be further extended. Only a handful of studies have examined personality, cognition, or classroom variables in relation to FLE (see Dewaele & MacIntyre, 2019; Wei et al., 2019). In addition, the expansion of the nomological network – and specifically the antecedents of FLE – may provide additional insights into the variability of FLE. The majority of summary estimates calculated in this study displayed high levels of heterogeneity ($I^2 > .80$), indicating that the relationships with FLE examined in this study were likely exacerbated or impeded by other factors. It is only through additional research into FLE that these factors can be identified.

Secondly, research is needed to provide clarity regarding the directionality of the hypothesized relationships between variables. As previously noted, the relationship between FLE and FLA can be theoretically argued to be circular or spiral, but empirical results are needed. The directionality of the relationship between FLE and WTC, academic achievement, and self-perceived achievement also ought to be investigated. It is often assumed that WTC, academic achievement, and self-perceived proficiency are outcome variables (see Botes et al., 2020a, 2020b; Yashima et al., 2004), but the possibility of a feedback loop or an even entirely opposite causal direction cannot be disregarded.

Lastly, FLE has become the personification of positive psychology in emotions in foreign language learning research (see MacIntyre, 2016). With the positive psychology movement currently blooming in the field of applied linguistics (Dewaele, Chen, et al., 2019; MacIntyre et al., 2019), researchers ought to consider expanding positive emotion research to include variables other than FLE. After all, one swallow does not make a summer, and other positive emotions such as hope, optimism, and pride may hold considerable promise in FL learning research, as they do in the fields of general educational psychology (Tetzner & Becker, 2018; Ciarrochi et al., 2007), and specifically mathematics learning (Lackaye & Margalit, 2008; Yates, 2002).

8. Conclusion

In this study, we set out to examine the current state of the literature regarding FLE and to conduct a meta-analysis of FLE and four individual difference variables (FLA, WTC, academic achievement, and self-perceived achievement). The meta-analysis confirmed the positive associations of FLE in the FL classroom, as FLE was linked to lower FLA, a greater WTC, higher academic achievement, and higher self-perceived achievement. These positive associations confirmed the basic tenet of positive psychology, in that positive emotions such as FLE have a broadening power that can provide FL learners with the resources they need to meet the unique challenges of FL learning.

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