REGISTER JOURNAL – Vol 17, No 1 (2024), pp. 73-99
DOI: http://dx.doi.org/10.18326/rgt.v17i1.73-99
p-ISSN: 1979-8903; e-ISSN: 2503-040X

English Language Attrition Levels and Language Maintenance Efforts among Indonesian Non-English Department Students

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DOI: 10.18326/rgt.v17i1.73-99

Submission Track:
Received: 11-01-2024
Final Revision: 09-05-2024
Available Online: 01-06-2024

Abstract
In the EFL context, the primary linguistic environment for learners is a formal classroom in which they receive input, feedback, and opportunities to practice with teachers and other learners. However, as learners graduate from schools, they might no longer have access to such an environment and thus be deprived of the main intake to support acquisition and retention, which makes them susceptible to language attrition. This study aims to explore the levels of attrition experienced by 165 multilingual non-English department students 30 months after graduating from their secondary schools, the possible factors associated with attrition, and the predictive power of some language maintenance efforts (LMEs) on English attrition. The participants took standardized English tests, that is, Test 1 and Test 2 administered within a 24-

month interval and responded to a questionnaire on LMEs. A paired t-test was used to establish a link between attrition level and the identified factors. A multiple linear regression analysis was conducted to determine the predictive power of LMEs for attrition. The results show that learners with different proficiency levels experience different levels of attrition. Factors like attitude and motivation showed different degrees of correlation with attrition. A negative correlation was found in the three dimensions of LMEs: entertainment, literacy activity, and academic activity. Contrary to popular literature on first- and second-language attrition, the dimension of social interaction has a very low predictive power for foreign-language attrition.

Keywords: *English language attrition, language maintenance efforts, affective factors*

INTRODUCTION

Attrition of language skills has been the subject of inquiry since the 1980s. While L1 attrition belongs to the domain of linguistics, L2 attrition belongs to the domain of language teaching and pedagogy as it is related to language learning and acquisition considering the nature of conscious processes of L2 acquisition (Kupske, 2019; Mehotcheva & Kopke, 2019). Language attrition deals with the non-pathological loss of language competence, performance, skill, or selection of linguistic elements in a healthy individual. Considering this definition, language loss due to brain damage and its derivative illnesses, such as dementia or aphasia, is excluded as cases of brain damage would be appropriately dealt with under the domain of biological factors (Dörnyei & Skehan, 2003; Semana, 2008).

To date, numerous studies have been conducted on language attrition, focusing on the L2 domain and variables governing this phenomenon. In studies by Hwang (2021), Larson-Hall (2017), and Steinhauer and Kasparian (2020), attitude, motivation, frequency of use, and brain plasticity are known to be the contributing factors determining attrition levels in healthy individuals. However, research on L2 attrition places second and foreign languages in the same cluster, despite the fundamental differences in ecological factors and the nature of the acquisition due to different environments. In acquisition and attrition, the environment in

which the target language is addressed is as essential as the language and the learners themselves. As highlighted by Dragoy et al. (2019) and Ni and Jin (2020), most L2 speakers seem to be abundantly facilitated by language exposure because they usually live in an environment in which most people outside the classroom speak the language to a certain degree.

The primary sources of language use in EFL classrooms are explicit teaching and learning in the formal environment, mostly in the classroom. The classroom provides learners with input and feedback, most of which is required to condition full or partial language acquisition. When learners graduate from schools, they might experience a change in their language environments. The network of proficient users of the language that can accommodate practice might be limited, depriving them of the resources necessary to practice their language skills. Prolonged disuse of the language due to this situation also threatens a decline in skills since information evaporates gradually in memory through a lack of use. In other words, the frequency of use is a crucial determinant of acquired language and proficiency retention (Leusink, 2017). There is also a proposed notion that attrition was contributed by the interference of overlapping actual uses due to new experiences (Mickan et al., (2020). Therefore, to prevent overlapping conditions, the continuous activation and frequent use of foreign languages are crucial determinants. The endeavor to do so is termed language maintenance efforts (LMEs).

The aim of LMEs is to bolster the practice of an endangered language ability (De Bot et al., 2004; Maharani & Sudarwati, 2021; Vari &Tamburelli, 2021). Within the context of second and foreign language learning and language attrition, the objectives of LMEs are even multifaceted, addressing both community and individual needs. LMEs are particularly crucial as they can potentially support balanced bilingualism, where individuals maintain proficiency in both their L1 and L2 languages. Maintaining a bilingual or multilingual repertoire has been associated with various cognitive benefits, including enhanced executive function, memory, and problem-solving skills. Language maintenance can contribute to

cognitive resilience and is even thought to delay the onset of dementia (Bialystok, et al., 2012). In addition, as language is a core component of cultural identity, LMEs preserve and reinforce this identity among speakers (Gitterman & Tse, 2002), this is particularly relevant for immigrant communities who may be at risk of losing their L1 as they acquire their L2. As language attrition can lead to a sense of loss, which may impact one's identity, LMEs help speakers enhance their stronger sense of self as well. When it is done in families through generations, LMEs ensure that the speakers convey not only the language but also the cultural norms, values, and historical narratives, thus fostering a sense of belonging and continuity. On a broader scale, LMEs contribute to the preservation of linguistic diversity, which is essential for the cultural richness and intellectual heritage of humanity (Jacobson, 2001).

De Bot et al. (2004) and Jessner and Oberhofer (2021) argue that LMEs depend on two major factors: language use and corroboration. The first factor deals, to some extent, with the reactivation of the linguistic system or subsystem through the actual use of language in various activities. The second factor deals with language users' awareness of renewing parts of their own language system. This implies the change and stability of the said language in a population where two or more languages are in contact, and language attrition becomes an imminent threat. LMEs are frequently preserved in small user communities, starting from the family, as a framework of language policy and practice (Revis, 2019; Yu & Hsia, 2019). However, the perspective should also recognize an individual's efforts to preserve their language competence and skills against attrition. The gradual loss or deterioration of a language aspect in an individual is the seed of the loss of language as a whole (Włosowicz, 2017) as the condition of the whole community is determined by those of its individuals. Therefore, mobilizing stakeholders for LMEs should begin with individual effort. This argument agrees with the notion that, in a broader view, the battle against language extinction is not exclusively separated from an individual's language maintenance.

Although a few recent studies have attempted to break down the cause of attrition in the EFL context, none of them have sought to determine whether the predictive factors are more likely to be the same as in the L2 context, such as affective factors, time, age, grade, and language contact. For instance, Mickan et al. (2019) investigated how foreign language learners learn and begin to face attrition from the perspective of human domain memory. From this perspective, although there are parallel links between memory retention and attrition, this study isolates other predictive factors and advocates the paradigm of memory phenomenon to explain attrition in EFL. It is also necessary to mention that attrition in the EFL context is contributed by the lack of exposure to the target language, since formal education in the upper secondary is completed (Jesner & Oberhofer, 2021). In such a context, the target language is mainly used in formal learning in the classroom. Unlike the present study, they examined the attrition of graduate students who learned multiple and consecutive foreign languages rather than focusing on one. Valizadeh (2021) and Zinyuk and Waiti (2021) conducted the two most relevant studies. Walizadeh (2021) investigated the relationship between age, language attrition, and language maintenance, which also became the researchers' proposition in this study. Their study involved 153 Turkish graduates majoring in English with an age range of 24 to 51 years old or 33.75 years on average. The study found that the degree of attrition is seemingly huge, even when 20 LME strategies are applied to the samples. Similarly, Zinyuk and Waiti (2021) focused on how far the time of closure of schools determines the degree of attrition of students. It was revealed that the students' grammatical ability was excellent before the nine-month closure, and they began to experience a certain degree of attrition after the closure.

Unlike previous related studies that typically lump second and foreign language attrition together despite their fundamental differences, this study approaches EFL attrition categorically. Also, diverging from general attrition research, it aims to understand attrition levels and the impact of LMEs within a specific demographic setting of English for academic purposes (EAP). The

present study aims to focus on the degree of attrition of graduates from upper secondary schools where the age ranges from 17 to 19 years old, categorized as late adolescence. The accessible subjects are considered the most suitable because they are barely removed from the primary setting of EFL use as they are non-English department students. Additionally, the researchers directed the present study to seek a wider range of possible contributing factors, including affective factors and language contact. Furthermore, the notion that the degree of attrition should be tested within 24 months after learners leave schools was based on the CEFR framework that the level of language users would reliably change after this duration (Hashemi & Daneshfar, 2018). Therefore, considering the different environments of a second language and foreign language and the fact that EFL learners are removed from the primary setting of English use after graduating schools, this study focuses on exploring the degree of attrition from the contributing factors, complemented by the calculation of the predictive power of different LMEs. In other words, this study aims to investigate attrition levels, factors associated with attrition, and LMEs among Indonesian university students.

RESEARCH METHOD

To explore the level of attrition, its associations with several EFL variables, and the predictive power of LMEs among non-English department students after they graduated from high schools, this quantitative ex-post facto research involved participants from six classes of three different departments (Civil Engineering, Management, and Electrical Engineering) learning EAP in one state polytechnic in Indonesia. Accessibility was the main basis in selecting eligible participants.

Eligibility in this study was determined based on the availability of data from two standardized tests (Test 1 and Test 2) conducted in 24 months intervals . Such a time interval in data collection was possible because of the university policy regarding students' taking compulsory standardized tests at the beginning and towards the end of their study time. As many as 176 participants from the

three departments took Test 2; however, 11 were excluded from the study because of their absences in Test 1. Likewise, several participants who took Test 1 but failed to attend Test 2 for unconfirmed reasons were excluded, leaving only 165 eligible participants. Prior to Test 1, the participants generally had studied English formally at schools, and prior to Test 2, they had not taken any English classes.

The demographic data of the eligible participants are shown in Table 1, including background information about age, gender, year of starting English lessons, dominant language, and multilingual identity.

Table 1. Demographic Information of the Participants

Category		Participants; N=165
Age of participants (at Test 2)	21	52
	20	105
	19	8
Gender distribution	Female	72
	Male	93
Year of starting English lesson	Kindergarten	49
	Elementary school	106
	Junior high school	8
Length of learning English	6-10 years	58
	11-15 years	99
	15 – 20 years	8
Dominant language	Local language	104
	Indonesian language	58
	Other foreign language	1
Multilingualism identity	Local language, Indonesian, English	69
	Local language, Indonesian	71
	Indonesian, English	25

To achieve the research objectives, this study was conducted in two stages. The first stage involved measuring quantitively the participants' receptive skill competence at two different times: Test 1 and Test 2. Test 1 results were obtained from the mandatory university-wide standardized proficiency test of the first-semester students at the university, 24 months prior to Test 2. The results of Test 1 were used as baseline data. As the test was mandated by the university, thousands of students took Test 1. However, only

students from three non-English departments– that is, Civil Engineering, Management, and Electrical Engineering departments– were involved in this study. To obtain Test 2 data, the same standardized proficiency test was conducted in six classes of the three departments 24 months after Test 1 based on the CEFR framework.

On the same day as Test 2, the participants filled in the questionnaire, where they stated their willingness and consent to participate in the study. All the students from the six classes participated in Test 2, and the test results were collected. However, only the results of the participants taking Test 1 who agreed to participate in the study were included for further data collection and analysis.

The tests administered were standardized tests comprising listening and reading sections. Each section consisted of 100 multiple-choice items. The reading section of the test had three item categories (incomplete sentences, text completion, and reading comprehension in the form of single and double passages). The raw score of each section ranged from 0 to 100, and the scale score ranged from 5 to 495 in increments of 5. The difference in the results of Test 1 and Test 2 marked the attrition of school-learned languages, noted as attrition levels. The results of Test 1 were used as the pre-attrition stage and the baseline data of the initial proficiency at the onset of attrition, also used to determine the clustering groups of the participants' language proficiency. A paired t-test was used to establish a link between attrition level and the identified factors.

The second stage of data collection was conducted using a questionnaire to elicit daily language use as a form of conscious practice of LMEs divided into four main dimensions. In addition, several forms of data, namely sociolinguistic data that profiled the participants' linguistic backgrounds and behaviors, were also included. The questionnaire was distributed after the participants completed the second standardized test; the responses to the questionnaire were analyzed descriptively. A multiple linear

regression analysis was conducted to determine the predictive power of LMEs for attrition.

RESULTS AND DISCUSSION

The results of data analyses are presented in reference to the research objectives, exploring the level of attrition, factors associated with attrition, and LMEs among non-English department students.

Attrition Level

To obtain data on attrition level, which is the difference between Test 2 and Test 1 results, initial proficiency data were taken from the first standardized test (Test 1) conducted six months after the participants left their secondary schools. The scores were tabulated using the ETS system. Table 2 presents the data used in this study. The highest score was 700, while the lowest was 260, with a mean score of 498, a median score of 505, and a mode of 510. The standard deviation is 93.2, indicating that the scores are relatively dispersed.

Using the ETS grouping system, the results of Test 1 placed the participants in three out of six categories: elementary proficiency, elementary proficiency plus, and limited working proficiency, as shown in Table 2. Participants whose scores fell within the range–255-400 were arbitrarily categorized as low achievers, 405-600 as intermediate achievers, and 605-780 as high achievers.

Table 2. Initial Proficiency Levels

Proficiency level	Grouping	Score range	*n* participants
Elementary	Low achiever	(255-400)	25
Elementary plus	Intermediate	(405-600)	119
Limited working	High achiever	(605 – 780)	21

From the histogram in Figure 1, it can also be observed that the distribution is relatively normal.

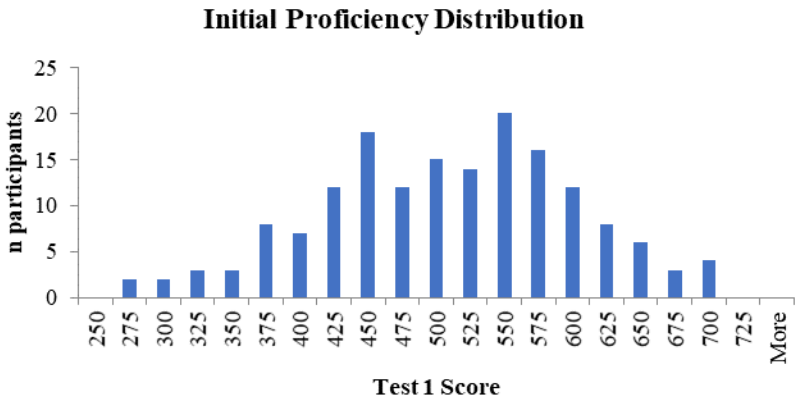

Figure 1. Initial Proficiency Distribution

Twenty-four months after Test 1, during which time the participants received no intensive English instruction in a formal classroom, they were asked to take another standardized test, Test 2. The gap between the scores of Test 1 and Test 2 is the attrition level. If the subtraction result is positive, attrition will occur. Similarly, if the result is negative, there is an increase in the score; hence, attrition is absent. Table 3 shows information on attrition across all the 165 participants by comparing the scores of the same participants in Tests 1 and 2. The mean score of the second test was 14.3, which was lower than that of the first test. From this alone, there was substantial evidence ($t=9.1$, $p<0.01$) that a decrease indicating attrition had taken place, and that it was significant.

Table 3. Attrition across All Participants

Test	N	Mean	Std. Deviation	Mean Differences	t-score	Sig. (2-tailed)
Test 1	165	498.0	93.21	-14	9.1	.001
Test 2	165	483.7	105.7			

However, when the participants were divided into three groups based on initial proficiency, the results showed different attrition levels. The results in Table 4 showed that the mean attrition score in the lower achiever group was 30.6. The p-values, both one-tailed and two-tailed, were less than 0.05, indicating that the level of attrition was significant. Meanwhile, participants whose scores fell

within the range of 405-600 dominated the data pool, with 119 people in total. Arbitrarily, they were categorized as intermediate-level participants. As shown in Table 4, the mean attrition also indicates that a decrease or attrition occurred. The p-values, both one-tailed and two-tailed, were less than 0.05, indicating that the level of attrition was also significant. The last category was for participants whose scores fell within the range of 605-780. Arbitrarily, they were categorized as high achieving, whose mean attrition was negative. This indicates that there was an increase instead of a decrease in the score. Hence, attrition did not occur in the high-achiever category. Although the p-value was <0.05, which means that the change was significant, it cannot be attributed to the attrition level as the score increased.

Table 4. Attrition Across Three Initial Proficiency Levels

Initial Proficiency Levels	Test	N	Mean	Std. Deviation	Mean Differences	t-score	Sig (2-tailed)
Low	Test 1	25	351,2	43,3	30,6	8,2	,000
	Test 2	25	320,6	45,3			
Intermediate	Test 1	119	503,6	56,1	14,0	8,1	,000
	Test 2	119	489,6	65,9			
High	Test 1	21	642,4	32,6	-5,71	-3,23	,004
	Test 2	21	648,1	32,4			

This result differs from that of a previous study by Murtagh and Van Der Slik (2004), who found no indication of different attrition levels across the three groups. Instead, it corresponds to previous studies that mention that grade does not correlate with the level of language attrition (Kopke et al., 2018; Deng, 2016). It is argued that those with higher proficiency have more 'in reserve.' Therefore, they do not lose much of their skill or proficiency. Furthermore, even when age is factored into (Ni, 2009), adults with low proficiency undergo attrition more than children with a high level of proficiency. As shown in Figure 2, proficiency was negatively correlated with attrition. The finding of this study signifies the identification of a negative correlation between language proficiency and attrition implying that individuals with higher proficiency levels retain their language skills better than those with lower proficiency, regardless of age. This outcome suggests that proficiency acts as a buffer against language attrition, a crucial

insight differing from earlier assumptions that proficiency level does not impact attrition rates.

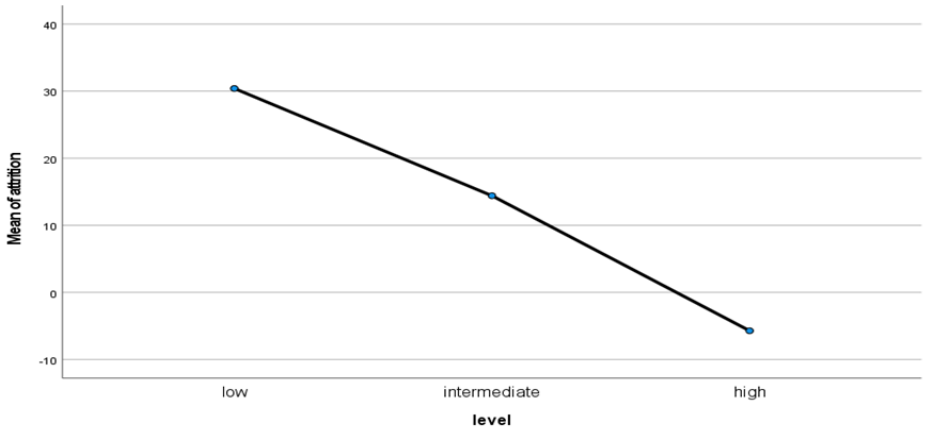

Figure 2. Mean of Attrition across Low, Intermediate, and High Achieving Groups

The demographic information of the participants, presented in Table 1, suggests a uniform age distribution. Although age is an extralinguistic factor in determining the retention of language learned (Park, 2018; Schmid, 2014; Ventureyra, 2004), with this distribution, no data on different levels of attrition across different age groups could be derived. However, regarding previous research stating that it is difficult for changes to occur after childhood (Flores, 2014), this study revealed that language attrition as a form of change is possible in adults.

It is necessary to note that all the participants were Indonesian and completed mandatory grades. English has been a compulsory subject since junior high school in the Indonesian education context. However, it can also be taught as an enrichment program in kindergartens and elementary schools. The data show that 49 participants started learning English in kindergarten, 96 in elementary school, and only eight started learning English in junior high school. However, there was a discrepancy between the starting year and the total length of learning English. This was probably because some participants received English lessons from Grade 1 in elementary school, while others started learning English from

Grades 4 to 6. Some participants started learning English in kindergarten but stopped later in the fourth, fifth, or sixth grade. Surveying the length of language learning time is necessary to eliminate the threat that attrition is caused simply by an unstable and unstructured set of knowledge due to the short period of learning, as learners tend to disintegrate more easily in these situations. This is in line with the critical threshold hypothesis that more than two years of daily language use is required to attain language skills. It is also necessary to eliminate the possibility that any attrition shown by the participants was due to incomplete acquisition due to insufficient exposure during the developmental stages. With the amount of time spent learning English as a foreign language, and even before elementary school, sufficient exposure was assumed.

Factors Associated with Attrition

Previous studies both in L1 and L2 attrition have identified several factors contributing to the decrease or attrition of a language. They are language contact and affective factors such as attitude and motivation.

Language Contact

Indonesia is a multicultural country with a multilingual society that makes the linguistic ecosystem complex. Language preferences are deeply intertwined with cultural and regional identities, impacting language usage and attrition. All participants in this study reflected on the sociolinguistic picture of the nation as having more than one language. However, despite the amount of time spent learning English, only 94 of the 165 participants identified themselves as English-speaking. The rest identified only local and Indonesian languages as their languages, excluding school-learned English. Of the total participants, 104 had local languages as their primary and dominant language (mostly Javanese, which accounted for 101 participants; Bugis, which accounted for one participant; and Madurese, which accounted for two participants), 58 Indonesians, and one other foreign language.

The significance of obtaining data on language backgrounds lies in inferring the correlation between multilingualism and the effect of language distance on attrition. Previous studies have shown divergent and inconclusive results regarding the effects of linguistic distance on language retention. Some argue that typologically distinct languages have little or no effect on retention. Meanwhile, others argue that typologically closer languages that have many similarities are more susceptible to attrition because the closer they are, the more structure they share, and the more interference they possess (Leusink, 2017). Previous studies on L1 and L2 attrition have been conducted on languages with roots that are closer to their language. Among others are French, Spanish, and German (Bardovi-harlig & Stringer, 2010; Ecke, 2013; Kopke et al., 2018), all of which are rooted in Germanic languages. The current study was conducted with EFL learners who were mainly Javanese and Indonesian speakers. Both languages have the same root: the Austronesian-language family, which shares little to no cognate with the Germanic-language family, the root of English.

By identifying language combinations, this study also sought to reveal how participants' bilingualism/multilingualism correlates with their attrition level. When learners identify themselves as parts of a linguistic community, they speak the language and take ownership of it, both as an individual and as a social being. A t-test analysis was conducted to determine whether identification with English as part of the participants' linguistic repertoire correlated with the level of attrition. The results showed that the level of attrition of the 94 speakers who identified English as a part of their linguistic repertoire was lower than that of those who did not, as shown in Table 5. The mean attrition of the 69 participants who identified a combination of the local language, Indonesian, and English as their linguistic repertoire was 3.62. The mean score of the 25 participants who identified a combination of Indonesian and English as their language was -1.6. The highest mean attrition score was 29.7, which included 71 participants who had excluded English from their linguistic repertoire.

Table 5. Attrition Level across Participants with Multilingualism/Bilingualism

	N	Mean	Std.Dev	Std.Error	Min	Max
Local+Indonesian+English	69	3.62	16.1	1.94	-30	75
Indonesian+ English	25	-1.60	8.87	1.77	-25	10
Local+Indonesian	71	29.7	15.2	1.81	0	75
Total	165	14.0	20.7	1.57	-30	75

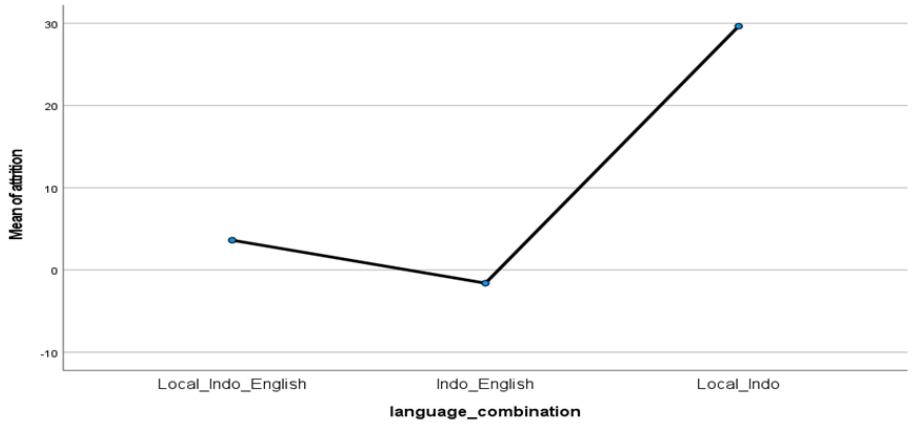

Figure 3. Attrition among Different Language Combination Identifications

Figure 3 clearly shows the correlation between the mean attrition and participants' language combinations. The number of languages spoken directly correlates with attrition level. From Figure 3, it can be inferred that bilingual participants who included English as part of their language combination underwent the least attrition. It was even lower than that for those who included English but spoke more than two languages. This result confirms Wilang and Duy (2021), who argued that it might be due to the fact that the more languages spoken, the more resources needed to maintain them. It is also necessary to state that these three or more languages impose a more comprehensive and heavier load on speakers, which affects language stability. Ultimately, multilingual individuals are more susceptible to attrition.

Affective Factors

Affective factors, including attitude and motivation, are essential variables for language acquisition. Considering the assumption that second or foreign language acquisition resembles attrition in reverse (Kopke et al., 2018; Schmid, 2014), it is also important to test whether these affective factors also apply to attrition. When speakers are motivated and have a positive attitude toward a language, they feel more inclined to use or maintain it. This makes the acquisition process easier. With this logic, it is assumed that people with a negative attitude toward a certain language will feel less inclined to maintain it. This makes proficiency more susceptible to attrition.

In this study, motivation data were collected in both the integrative and instrumental dimensions adapted from Zareian and Jodaei (2015), with 36 itemized points. Participants were asked to respond to each point using a 5-point Likert scale. The histogram in Figure 4 displays information regarding the score distribution. The range of motivation scores was 70–110, with the highest frequency being 75-80 that accounted for 45 participants. Out of the range, this score was not too high.

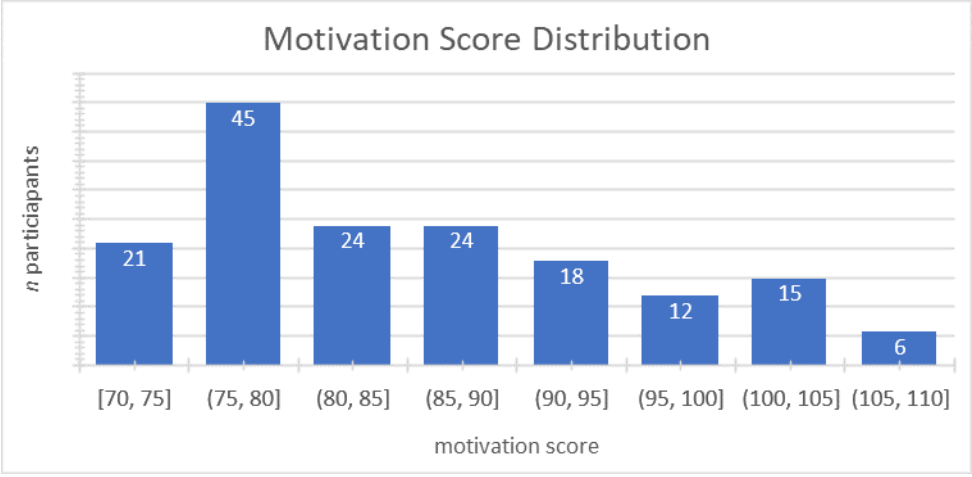

Figure 4. Motivation Score Distribution

Table 6 shows that there was a negative correlation between the level of attrition and motivation scores. Those with a higher

motivation to maintain their language exhibited less attrition, and vice versa.

Table 6. Correlations Between Attrition and Motivation

			Attrition	Motivation
Spearman's rho	Atrition	Correlation Coefficient	1	-,21
		Sig. (2-tailed)	-	,007
		N	165	165
	Motivation	Correlation Coefficient	-,21	1
		Sig. (2-tailed)	,007	-
		N	165	165

Bivariate correlation analysis showed a statistically significant negative relationship between attrition level and motivation (r=-0,21, p<0.01). This negative correlation between the two variables indicates that if motivation is high, attrition is low and vice versa.

Meanwhile, other information elicited from the survey was participants' attitudes toward English. The questionnaire used in this study was adapted from that of Gardner (2004). Information derived from participants' attitudes toward English in the present study is shown in Figure 5. The score varied, with the highest being 37; however, the most popular score was within the range of 23-25 for as many as 36 participants.

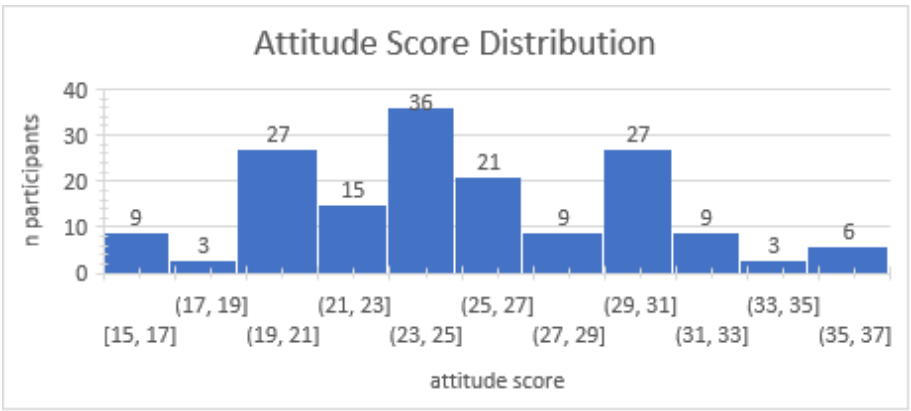

Figure 5. Attitude Score Distribution

The bivariate correlation analysis in Table 7 shows a statistically significant negative relationship between attrition level

and attitude (r=-0,23, p<0.01). This negative correlation between the two variables indicates that, if attitude is higher, the level of attrition is lower, and vice versa. This finding differs from that of Lubinska (2018), who found no clear correlation between attrition and attitudes. However, this finding was in line with Cherciov (2019), who found a strong negative correlation between attrition and attitude, albeit in the L1 context. Scholars have attributed the difficulty in finding conclusive results in studies on the connection between attrition and attitude to the dynamic nature of these affective factors (Schmid & Mehotcheva, 2012) as which could evolve over time. Someone with a negative view of a language might display a more positive attitude toward it later. Likewise, a positive attitude is not a guarantee against attrition, although it is a contributing factor to motivation to maintain language.

Table 7. Correlation Between Attrition and Attitude

			Attrition	Motivation
Spearman's rho	Atrition	Correlation Coefficient	1	-,23
		Sig. (2-tailed)	-	,003
		N	165	165
	Attitude	Correlation Coefficient	-,23	1
		Sig. (2-tailed)	,003	-
		N	165	165

The result of this analysis contributes to the psychology of language by providing empirical evidence on how psychological factors of everyday language use interact to influence attrition process, offering valuable insights about the dynamics involved in language attrition. It aligns with the assumption that language acquisition and attrition are inversely related processes, suggesting that the same affective factors influencing acquisition likely impact attrition. This is substantiated by the collected motivation data and the observed negative correlation between motivation and attitude scores and language attrition levels.

Language Maintenance Efforts (LMEs)

Previous studies have concluded that LMEs in the form of language use impact acquisition, retention, and attrition in both the

L1 and L2. Since language use involves many activities in participants' daily lives, this study aimed to determine which kind of language predicts language attrition more, particularly in English as a foreign language. In doing so, multiple regression was used to analyze the ability of the four control measures in the form of language maintenance effort dimensions, namely entertainment, literacy, social interaction, and academic activity, to predict language attrition. Information about the dimensions and their description can be seen in Table 8.

Table 8. Language Maintenance Effort Dimensions

Dimension	Description	No. of items
Entertainment	Participants' activities using English in the entertainment domain that includes the consumption and/or production of movies, digital games, novel, magazine, songs/music, and other online media.	14
Literacy	Participants' activities using English that includes the consumption and/or production of journal, novels, literary pieces, and online blogging.	6
Interpersonal interaction	Participants' activities using English related to their social activities with families, friends, classmates, teachers, and other social media interaction.	16
Academic	Participants' activities using English related to academic domain inside or outside classroom setting, both in online and offline modes.	4

The available data analysis displays the following information as presented in Table 9.

Table 9. Regression Statistics of LMEs

Regression Statistics	
Multiple R	0.80
R Square	0.64
Adjusted R Square	0.63
Standard Error	12.23
Observations	165

Table 9 presents that Multiple R indicates a strong linear relationship between LMEs and attrition, whereas the R square is 0.64, suggesting that 64% of the variance in attrition can be

explained by the LMEs committed by the participants. Table 10 presents the overall significance of the model, which determines the likelihood of language attrition. The results show $F\ (4,160) = 71.5$, $p < 0.05$, $R^2 = 0.64$ suggesting that the model is statistically significant.

Table 10. Significance Analysis

	df	*SS*	*MS*	*F*	*Significance F*
Regression	4	42776.62	10694.16	71.54	0.001228
Residual	160	23918.22	149.49		
Total	164	66694.85			

The coefficients in Table 11 represent the extent to which the dependent variable is expected to increase when the independent variable increases by one, holding all the other independent variables constant. If the beta value of the entertainment dimension is increased by one unit, language attrition will increase by – 0.23 or will decrease by 0.23. If the beta value of literacy increases by one unit, attrition decreases by 1.04. Among the four dimensions, academic activity using English had the most significant predictive power at -4.13, and social interaction was noted as having a positive coefficient, albeit the smallest one. Interestingly, every variable significantly impacted language attrition, except for social interaction, as the *p*-value was higher than 0.05.

Table 11. LMEs' Activities Analysis

	Coefficients	Standar Error	t Stat	p-value
Intercept	119,60	7,42	16,12	0,00
Entertainment	-0,23	0,13	-1,79	0,08
Literacy Social	-1,04	0,23	-4,44	0,00
Interaction	0,14	0,17	0,81	0,42
Academic	-4,13	0,33	-12,32	0,00

This analysis shows that academic activities that require the participants to use English make the greatest contribution to speakers' language attrition. This result might be due to the fact that during the data collection process, the participants were active university students with high academic activities daily, and the primary language intake had so far been in an academic context. Regarding the literacy dimension, the more participants conducted

their literacy activities in English, the lower their attrition rates. Izumi (2009) also confirms this finding, stating that not only does literacy prevent attrition, it improves the lexical knowledge of L2 in child returnees. Simultaneously, social interactions using English had the least predictive power and contributed to combating language attrition. This was most probably due to the fact congruent with the status of English as a foreign language, little to a limited number of people interacted daily using English as a means of communication.

CONCLUSION

The empirical findings of this study categorize participants into three distinct groups based on achievement levels: lower, intermediate, and higher achievers. Analysis of test scores revealed that the extent of language attrition varied across these groups, with the most significant decline being observed among the lower achievers and minimal to no attrition detected among the higher achievers. Despite all participants being of similar age, thereby ruling out definitive conclusions about the impact of age on attrition levels, the study nonetheless provides evidence suggesting that changes within the linguistic systems of post-adolescent or adult brains are possible. These observations also show the complex interplay between individual achievement levels and the tendency for language attrition, independent of age-related factors.

Contrasting viewpoints exist within the academic domain regarding the influence of affective variables, such as attitude and motivation, on language attrition. Affective variables are recognized for their temporal variability, making their impact challenging to measure consistently over time. However, like several prior studies, this study shows a moderating effect of motivation and attitude on both language learning and attrition processes. The implementation of a questionnaire designed to assess participants' LMEs—covering academic, entertainment, literacy, and social interaction dimensions—revealed that activities associated with academic engagement are most predictive of language retention in the context of EFL, while social interaction appears least influential.

This finding diverges from earlier research, which highlighted social interaction as a critical component in language acquisition and maintenance. Reflecting on these outcomes, it is suggested that future studies expand the scope of language proficiency assessment to include productive skills and incorporate participants from a broader range of academic disciplines to deepen the understanding of English language attrition within EFL contexts.

ACKNOWLEDGEMENTS

We are sincerely grateful to all the participants whose test data were eligible for our research aims.

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