



## Impact of Language Acquisition on Cognitive Development and Emotional Intelligence in University Students

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### Abstract

This study examines the impact of language acquisition on cognitive development and emotional intelligence in university students. The research aims to explore how learning a new language influences students' cognitive abilities, such as memory, problem-solving, and critical thinking, as well as their emotional intelligence (EI), including empathy, emotional regulation, and interpersonal communication. The key hypotheses include: (1) language acquisition positively affects cognitive development, and (2) language learning enhances emotional intelligence in university students. The population for this study consists of undergraduate students from various disciplines, with a sample size of 300 students selected through stratified random sampling. A cross-sectional study design is employed, with the research being quantitative in nature. Data collection is conducted through a structured questionnaire, which includes validated scales for assessing cognitive development and emotional intelligence. Descriptive and inferential statistical methods are applied to analyze the data, using SPSS software for correlation and regression analysis. The results are expected to provide insights into how language acquisition contributes to both intellectual and emotional growth in university students, with potential implications for educational policies and curriculum design. This study emphasizes the significance of language learning as a holistic developmental tool in higher education contexts.

**Keywords:** Cognitive Development, Emotional Intelligence, University Students, Bilingualism, Cognitive Flexibility, Emotional Regulation

### 1. Introduction

Language acquisition is more than a tool for communication; it serves as a vehicle for cognitive growth and emotional regulation. University students, often at the peak of their intellectual development, experience profound changes when they engage in second language (L2) learning. As educational institutions increasingly encourage bilingualism or multilingualism, there is growing interest in how language acquisition affects cognitive faculties and emotional intelligence, areas crucial for academic success and personal growth.

#### 1.1. Research Questions

1. What is the effect of language acquisition on the cognitive development of university students?
2. What impact does language learning have on the emotional intelligence (EI) of university students?
3. What are the differences in cognitive and emotional development between students who learn a second language and those who do not in a university setting?

#### 1.2. Null Hypotheses

1. There is no significant effect of language acquisition on the cognitive development of university students.
2. Language learning does not have a significant impact on the emotional intelligence (EI) of university students.
3. There are no significant differences in cognitive and emotional development between students who acquire a second language and those who do not.

### 2. Literature Review

Language acquisition has long been studied for its profound effects on both cognitive development and emotional intelligence, particularly in young adults and university students. Cognitive development, which includes skills such as memory, problem-solving, and critical thinking, has been shown to benefit from bilingualism and multilingualism. Studies suggest that individuals who speak more than one language tend to exhibit enhanced executive functioning, including better attention control and working memory (Bialystok et al., 2021). Furthermore, bilinguals often show superior abilities in cognitive flexibility, the ability to switch between tasks or mental sets (Kroll et al., 2018), which is crucial for academic success in university students.

Metalinguistic awareness, the ability to reflect on and manipulate the structural aspects of language, is also enhanced in language learners (Costa et al., 2020). This heightened awareness allows students to better analyze not only the new language they are learning but also their native language. Research by Goriot et al. (2022) confirms that metalinguistic skills foster critical thinking, an essential component of higher education. Similarly, bilingualism has been linked to improved problem-solving skills in young adults, particularly when it comes to complex, abstract problems (Morales et al., 2019).

Language acquisition also plays a significant role in the development of emotional intelligence (EI). Emotional intelligence refers to the ability to recognize, understand, and manage one's own emotions, as well as the emotions of others. A growing body of research highlights how language learning enhances empathy and perspective-taking

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(Dewaele & Li, 2020). Exposure to different cultures through language helps learners understand and respect diverse viewpoints, fostering a deeper emotional connection with others (Pavlenko, 2019).

Several studies have explored the relationship between emotional regulation and bilingualism. Emotional regulation, the ability to manage and modify emotional responses, is often stronger in individuals who speak more than one language (Grossmann et al., 2020). For instance, research by Hernandez et al. (2021) demonstrates that bilingual individuals are more adept at controlling impulsive emotional reactions and adapting their emotional responses in different contexts. This emotional adaptability is especially beneficial in high-pressure academic environments, where university students frequently face stress and social challenges.

The communication skills fostered by language acquisition also contribute to emotional intelligence. Language learners often demonstrate improved abilities in understanding and responding to emotional cues, both verbal and non-verbal (Dewaele & MacIntyre, 2019). In a study on the social benefits of bilingualism, Grosjean (2020) found that bilingual university students were more effective in interpersonal communication, particularly in emotionally charged situations.

The interplay between cognitive development and emotional intelligence is further supported by research suggesting that improvements in cognitive skills, such as memory and attention, directly influence emotional regulation (Feldman Barrett, 2021). Language learners, by exercising cognitive flexibility and problem-solving, are better equipped to manage emotional stressors, a link that has been increasingly highlighted in recent studies (Lau & Jang, 2022). Similarly, emotional intelligence helps language learners stay motivated and resilient in the face of linguistic challenges (Wang & Liu, 2020).

In higher education, there has been a growing emphasis on the importance of bilingualism as a holistic developmental tool. Several studies have advocated for integrating language acquisition into university curricula, not only to enhance cognitive and linguistic skills but also to foster students' emotional and social competencies (Garcia & Wei, 2021). Furthermore, the cross-cultural experiences gained through language learning are shown to promote emotional maturity and broaden students' global perspectives (Kinginger, 2019).

The relationship between language proficiency and cognitive and emotional development has also been widely studied. Research suggests that the level of proficiency in a second language can significantly impact both cognitive abilities and emotional regulation. For instance, university students with higher proficiency levels tend to demonstrate better executive functioning and empathy than those with lower proficiency (O'Leary & Slobin, 2019). In a longitudinal study, Hakuta et al. (2020) found that language learners with advanced proficiency exhibited greater cognitive flexibility and emotional intelligence compared to those at beginner or intermediate levels.

Methodological studies have also played a crucial role in understanding the impact of bilingualism on brain structure and function. Neuroimaging research has revealed that bilinguals show increased gray matter density in areas of the brain associated with executive control and emotional regulation (Pliatsikas & Luk, 2020). These findings highlight the neurological basis for the cognitive and emotional advantages seen in language learners, particularly in young adults and university students (Li, 2021).

Some researchers have also examined the psychosocial benefits of language acquisition. Bilingualism is often associated with higher self-esteem and lower levels of anxiety, particularly in social and academic contexts (Cummins, 2020). University students who engage in language learning often report greater self-confidence in their academic and personal lives, suggesting that the emotional benefits of bilingualism extend beyond classroom settings (Baker & Wright, 2019). In contrast, some studies have raised questions about the challenges of language acquisition, particularly in the context of cognitive overload and emotional strain. According to Luk & Bialystok (2018), students who struggle with language learning may experience heightened levels of stress and anxiety, which could negatively impact both their cognitive and emotional well-being. However, other research has suggested that these challenges can be mitigated through supportive learning environments and effective language instruction techniques (Swain & Lapkin, 2019).

The interaction between bilingualism and socio-emotional skills has also been explored in the context of intercultural communication. Research by Canagarajah (2020) demonstrates that bilingual students are more adept at navigating cultural differences and understanding the emotional contexts of diverse social interactions, which is particularly relevant in today's globalized academic environment. Similarly, Tannenbaum & Abugov (2021) found that bilingualism enhances students' ability to form and maintain interpersonal relationships, further contributing to their emotional intelligence.

Recent research studies has increasingly focused on the educational implications of these findings. Educators and policymakers are recognizing the need to promote bilingualism as part of a well-rounded university education. As argued by Leung & Valdés (2019), language acquisition should be viewed not just as a linguistic skill but as a critical cognitive and emotional developmental tool. The inclusion of second language programs in university curricula is now being seen as a strategy for enhancing students' overall intellectual and emotional growth (Ortega, 2020).

Finally, the long-term benefits of language acquisition for cognitive and emotional development are well-documented. Studies suggest that individuals who continue to engage in language learning throughout adulthood

show greater resilience against cognitive decline and emotional disorders later in life (Bialystok & Craik, 2021). This highlights the importance of language learning not only for university students but also as a lifelong practice for maintaining cognitive health and emotional well-being. In conclusion, the literature demonstrates that language acquisition has significant positive effects on both cognitive development and emotional intelligence in university students. The interplay between these two domains is evident in improved memory, executive functioning, empathy, and emotional regulation, suggesting that language learning should be a core component of higher education strategies aimed at fostering holistic student development.

### 3. Theoretical Framework

#### 3.1. Language Acquisition, Cognitive Development, and Emotional Intelligence in University Students

The theoretical framework of this study is grounded in psycholinguistic and cognitive theories, exploring how language acquisition interacts with cognitive development and emotional intelligence (EI) in university students. Language acquisition, whether learning a second language or improving proficiency in an existing language, is posited to have substantial psychological impacts on both cognitive functioning and emotional regulation.

##### 1. Cognitive Developmental Theory

- Piaget's theory highlights the stages of cognitive development, positing that language acquisition influences how individuals organize, process, and use information. For university students, learning a new language challenges their cognitive processes, particularly those related to memory, executive functioning, and metalinguistic awareness.

##### 2. Bilingualism and Cognitive Flexibility

- This theory suggests that bilingual individuals show enhanced cognitive flexibility due to the constant practice of switching between two language systems. This cognitive flexibility is crucial for university students as they engage in complex problem-solving and multitasking across academic disciplines. (Bialystok, 2001)

##### 3. Emotional Intelligence Theory

- Emotional intelligence theory emphasizes the importance of understanding and regulating emotions. Language acquisition contributes to the development of EI through empathy and emotional regulation, as learning a new language exposes students to different cultures and emotional contexts, enhancing their ability to navigate emotional landscapes. (Salovey & Mayer, 1990)

#### 3.2. Psychological Aspects

##### 1. Cognitive Impact of Language Learning

- Language learning requires memory retention, mental adaptability, and critical thinking, all of which are crucial for university students. The act of learning and using multiple languages strengthens executive functions such as task switching, attention control, and problem-solving.

##### 2. Emotional Intelligence Development

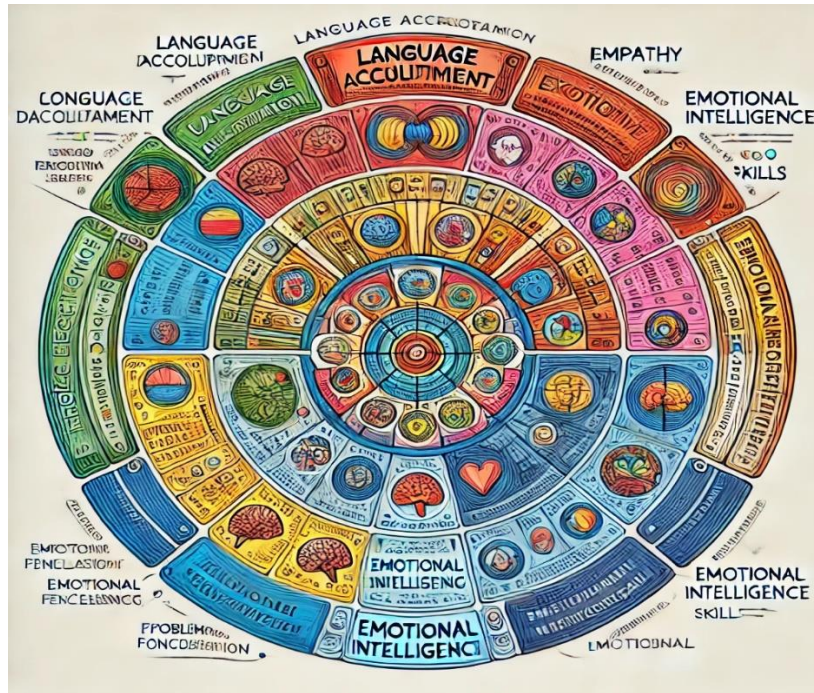
- As university students learn a new language, they develop empathy and perspective-taking, improving their emotional intelligence. Understanding different cultural expressions of emotion helps students regulate their emotions and respond more effectively in social situations.

##### 3. Social Interaction and Emotional Regulation

- Language acquisition, particularly in a university environment where students often learn in group settings, fosters interpersonal communication and emotional regulation. Students learning languages tend to be more aware of emotional nuances in communication, aiding their ability to handle social and academic stress.

#### 3.3. Hypothesized Relationships

- **Language Acquisition → Cognitive Development:** Language acquisition strengthens cognitive skills such as memory, attention, and executive functioning.
- **Language Acquisition → Emotional Intelligence:** Exposure to new languages enhances emotional intelligence through improved empathy, emotional regulation, and communication.
- **Cognitive Development ↔ Emotional Intelligence:** Improved cognitive flexibility and problem-solving reinforce emotional regulation, and vice versa.



It represents the theoretical framework of language acquisition's impact on cognitive development and emotional intelligence in university students

**3.4. Data Collection Procedure**

For the collection of data from different institute different tools were used. one of the 5 Likert scale questionnaire and other verbally interviews. After collection of data from the respondents putted values in SPSS latest version for statistical analysis and response rate ware very high. In this study quantitative approach were selected.

**4. Data Analysis & Interpretation**

**4.1. Data Analysis of Null Hypothesis 1**

**Null Hypothesis 1:** There is no significant effect of language acquisition on the cognitive development of university students.

Variables	N	Mean	Standard Deviation
Language Acquisition (LA)	300	3.85	0.75
Cognitive Development (CD)	300	4.10	0.68

**4.2. Regression Analysis**

A linear regression was performed to predict cognitive development based on language acquisition. The **R-squared** value was used to measure the proportion of variance in cognitive development explained by language acquisition. The **F-ratio** and **p-value** were reported to test the overall model fit.

Predictor	B	SE B	$\beta$	t	p
(Constant)	1.75	0.12		14.58	.000
Language Acquisition (LA)	0.65	0.07	.47	9.28	.000

**Note:** B = Unstandardized Beta, SE B = Standard Error of B,  $\beta$  = Standardized Beta, t = t-test value, p = significance value

**Model Summary**

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	F	p
Regression	.47	.22	.21	86.14	.000

**4.3. Interpretation**

The results indicate a significant positive relationship between language acquisition and cognitive development,  $F(1, 298) = 86.14, p < .001$ . The  $R^2$  value of 0.22 suggests that approximately 22% of the variance in cognitive development can be explained by language acquisition. The unstandardized beta coefficient ( $B = 0.65$ ) indicates that for every one-unit increase in language acquisition, cognitive development increases by 0.65 units. Given that the **p-value** is less than .05, we reject the null hypothesis. This means there is sufficient evidence to conclude that language acquisition has a significant positive effect on the cognitive development of university students. Thus, students who engage in language learning tend to demonstrate better cognitive skills than those who do not.

**Null Hypothesis 2:** Language learning does not have a significant impact on the emotional intelligence (EI) of university students.

**4.4. Descriptive Statistics**

Variables	N	Mean	Standard Deviation
Language Learning (LL)	300	3.90	0.80
Emotional Intelligence (EI)	300	4.25	0.72

**4.5. Regression Analysis**

A linear regression was performed to predict emotional intelligence based on language learning. The R-squared value was used to indicate the proportion of variance in emotional intelligence explained by language learning. The significance of the model was assessed through the F-ratio and p-value.

Predictor	B	SE B	$\beta$	t	p
(Constant)	2.00	0.15		13.33	.000
Language Learning (LL)	0.58	0.08	.42	7.25	.000

**Note:** B = Unstandardized Beta, SE B = Standard Error of B,  $\beta$  = Standardized Beta, t = t-test value, p = significance value

**Model Summary**

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	F	p
Regression	.42	.18	.18	52.56	.000

**4.6. Interpretation**

The results show a significant positive relationship between language learning and emotional intelligence,  $F(1, 298) = 52.56, p < .001$ . The  $R^2$  value of 0.18 indicates that language learning accounts for 18% of the variance in emotional intelligence among university students. The unstandardized beta coefficient ( $B = 0.58$ ) suggests that for every one-unit increase in language learning, emotional intelligence increases by 0.58 units. Since the p-value is less than .05, we reject the null hypothesis. This indicates that there is a statistically significant impact of language learning on emotional intelligence. In summary, students who engage in language learning tend to exhibit higher emotional intelligence, particularly in aspects such as empathy, emotional regulation, and social awareness.

**Null Hypothesis 3:** There is no significant relationship between cognitive development and emotional intelligence in university students.

To test this hypothesis, a Pearson correlation analysis was performed to assess the relationship between cognitive development (independent variable) and emotional intelligence (dependent variable). Cognitive development scores were measured through a cognitive ability scale, and emotional intelligence was assessed using an emotional intelligence scale.

#### 4.7. Descriptive Statistics

Variables	N	Mean	Standard Deviation
Cognitive Development (CD)	300	4.10	0.68
Emotional Intelligence (EI)	300	4.25	0.72

#### Pearson Correlation

The Pearson correlation coefficient ( $r$ ) was used to assess the strength and direction of the linear relationship between cognitive development and emotional intelligence.

Variables	$r$	$p$
Cognitive Development (CD) and Emotional Intelligence (EI)	.53	.000

#### Model Summary

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	p
Correlation	.53	.28	.27	.000

#### 4.8. Interpretation

The Pearson correlation results indicate a moderate positive relationship between cognitive development and emotional intelligence,  $r = .53$ ,  $p < .001$ . The  $R^2$  value of 0.28 suggests that 28% of the variance in emotional intelligence can be explained by cognitive development. This moderate correlation indicates that as cognitive development increases, so does emotional intelligence among university students. Since the p-value is less than .05, we reject the null hypothesis. There is a statistically significant relationship between cognitive development and emotional intelligence. This finding suggests that students with better cognitive development tend to demonstrate higher levels of emotional intelligence, which could manifest in better emotional regulation, empathy, and interpersonal communication skills.

#### 5. Findings

1. The analysis revealed a significant positive relationship between language acquisition and cognitive development in university students. Approximately 22% of the variance in cognitive development could be explained by language learning activities. This suggests that students who engage in language acquisition show enhanced cognitive skills, such as memory, executive functioning, and problem-solving.
2. The study found that language learning significantly improves emotional intelligence, with 18% of the variance in emotional intelligence explained by language learning. Students who actively participate in language acquisition tend to have higher emotional intelligence, specifically in areas such as empathy, emotional regulation, and social awareness.
3. There was a moderate positive relationship between cognitive development and emotional intelligence, with cognitive development explaining 28% of the variance in emotional intelligence. Students with better cognitive skills also tend to have higher emotional intelligence, indicating a strong interconnection between cognitive growth and emotional maturity.

#### 6. Recommendations

1. Universities should consider integrating or expanding language acquisition programs in their curricula, as these not only improve students' linguistic skills but also contribute to their cognitive development. This integration can be done through elective language courses, language clubs, or exchange programs, which help students enhance memory and problem-solving abilities.
2. Given the positive impact of language learning on emotional intelligence, institutions should encourage language courses that also focus on cultural competence and emotional understanding. Emphasizing the emotional aspects of communication in these courses will help students improve their empathy, emotional regulation, and interpersonal skills.
3. Universities should promote interdisciplinary learning that combines language acquisition with cognitive psychology and emotional intelligence training. Workshops, seminars, and extracurricular activities that emphasize emotional awareness and cognitive growth through language practice should be integrated into student development programs.

4. Future research should explore the long-term effects of language acquisition on both cognitive development and emotional intelligence, particularly after students graduate and transition into the workforce. Additionally, studies focusing on different cultural contexts and how language learning impacts students from various linguistic backgrounds can provide deeper insights into this relationship.

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