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IMPACT OF BILINGUALISM ON EXECUTIVE INHIBITORY CONTROL AND NARRATIVE COMPLEXITY IN YOUNG ADULTS AT THE UNIVERSITY LEVEL

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ABSTRACT

Bilingualism has come to be greatly considered as a measure of improving cognitive and linguistic abilities. The current research paper explores the effects of bilingualism on executive inhibitory control and narrative complexity among young adults in the university level in both the public and the private universities of the Punjab in Pakistan. The quantitative cross-sectional design was applied, and the sample consisted of 200 undergraduate students divided into the groups of bilingual and monolingual. The standardized cognitive tasks evaluated executive inhibitory control, and the narrative complexity evaluated narrative elicitation in a structured form and a validated scoring rubric of narrative. Independent-samples t-tests, Pearson correlation and multiple regression analysis were performed in data analysis. The outcomes showed that bilingual students had a significantly better performance in both inhibitory control and narrative complexity than the monolingual students. There was also a moderate positive correlation between executive inhibitory control and narrative complexity, and regression analysis showed that executive inhibitory control predicts narrative sophistication significantly. The results support the hypothesis of bilingual advantage and emphasize the interdependence of the process of language performance and regulating cognitive processes. It brings out the educational and cognitive advantages of bilingualism and provides evidence-based suggestions to curriculum development, language policy and the pedagogy in higher education.

Keywords: *Bilingualism, Executive Functions, Inhibitory Control, Narrative Complexity, University Students*

INTRODUCTION

Bilingualism is no longer considered to be the possibility to speak more than one language; it is becoming more and more conceptualized as the experience of cognition that influences the executive control processes and language performance. University students in multilingual societies often traverse through various language systems as they must engage in the process of selection and suppression of language all the time. It has been hypothesized that this ongoing conflict of competing linguistic representations enhances executive functions, especially inhibitory control. Inhibitory control by executives is essential to goal-directed behavior where it allows people to ignore

irrelevant stimuli and control attention. Simultaneously, narrative complexity displays a greater order of linguistic competence that includes syntactic elaboration, lexical diversification, coherence, and pragmatic organization. Although some studies have been carried out on the benefits of bilingualism on executive functioning and language proficiency, few studies have been conducted to test the effects of the two variables on narrative discourse in young adults in the college setting. This paper will meet this gap through analyzing the effect of bilingualism on executive inhibitory control and narrative complexity as well as investigating the connection between these two constructs in a tertiary education setting.

Research Objectives

- To examine the impact of bilingualism on executive inhibitory control among university students.
- To investigate the effect of bilingualism on narrative complexity in young adults.
- To identify the relationship between executive inhibitory control and narrative complexity.
- To determine the predictive role of executive inhibitory control in narrative complexity.

Research Questions

- How does bilingualism influence executive inhibitory control at the university level?
- To what extent does bilingualism affect narrative complexity among young adults?
- What relationship exists between executive inhibitory control and narrative complexity?
- Does executive inhibitory control significantly predict narrative complexity?

Literature Review

2.1 Conceptualizing Bilingualism in Cognitive and Linguistic Research

Bilingualism has a general concept of habitual use of two or more languages in everyday communication. The current studies view bilingualism not only as a linguistic phenomenon but as a cognitively involving process that activates and suppresses other systems of language at the same time (Wang, Muñoz, and Yang, 2025; Jalilzadeh, Coombe, and Dastgoshadeh, 2025). This is a dynamic language management that is deemed as a key process by which bilingualism affects higher-order cognitive processes (Lim, Wee, Wong, et al., 2025; Xia and Wang, 2025). Academically challenging multilingual settings also characterize situations in which bilinguals have to be present in university contexts, which consequently compounds cognitive activity and metalinguistic consciousness (Chang, 2025).

2.2 Executive Functions and Inhibitory Control

A group of high-level cognitive processes controlling goal-oriented behavior are referred to as executive functions (EF) and includes working memory, cognitive flexibility, and inhibitory control (Başarır, Canlı, Şendil, et al., 2025; Lambert, DiCarlo, and Rueter, 2025). Of all these, inhibitory control is of the most importance since it helps the subjects to suppress irrelevant stimuli, resist cognitive interference, and control attention, without which the learning and problem resolution processes cannot be effective (de Cerqueira, Salem, Cardoso, et al., 2025). School In educational settings (e.g. university level learning), students often have to eliminate distractions, be able to sustain attention on complex tasks and have the ability to work with multiple items of information at a time, which in turn are highly dependent on executive functioning. Furthermore, the concept of inhibitory control is closely connected to language processing and narrative production because it enables learners to choose the right linguistic structure, arrange ideas in a coherent manner, and prevent semantic or syntactic mistakes when performing more complicated discourse-related skills (Zhou, Xu, and Li, 2025). The recent empirical studies provide evidence that inhibitory control among children and adolescents can be improved through focused interventions, such as cognitive games, digital technologies, and coordination training, which may indicate that the abilities under consideration are flexible and prone to training (Başarir, Canli, Sendil, et al., 2025; de Cerqueira, Salem, Cardoso, et al., 2025).

Inhibition as a core element of executive functioning is further noted in theoretical models of executive functioning, which help individuals to undertake complex tasks effectively, adapt to new conditions, and multitask different cognitive requirements, which are more complex tasks. In bilinguals, competing linguistic systems are continuously activated and suppressed, which places extra demands on the executive systems, which may further boost the inhibitory control and improve cognitive flexibility in the long run (Lambert, DiCarlo, and Rueter, 2025). Taken together, these results not only emphasize the importance of executive functions ,especially inhibitory control in cognitive and academic development but also underline the importance of such executive functions in students of higher education in facilitating high-level language and learning achievements.

2.3 Bilingualism and Executive Inhibitory Control

There is a growing amount of empirical literature that indicates that bilingual individuals have improved inhibitory control over monolinguals, which is in line with the bilingual advantage hypothesis. Based on this hypothesis, the regular necessity to choose the target language and to repress the non-target language enhances the inhibition mechanisms and helps improve the control over the cognitive processes in many different areas (Wang, 2026; Garcia-Alcaraz and Liceras, 2025). Examples of the type of tasks involved with the Stroop, Flanker, Simon paradigm, and others, are experimental studies, which invariably report shorter response rates, less effect of interference, and more efficient attentional control among bilingual participants, which demonstrates higher executive functioning as compared to monolingual counterparts (Çetin Kara, Deniz, Kara, et al., 2025; Xue, Han, Shi, et al., 2025). These mental benefits are especially strong among young adults who actively use both languages both at school and in social settings where language switching and task-related requirements constantly involve inhibitory control. The studies also prove that bilingual proficiency alters the level of performance in executive functions, where the better the level of proficiency is higher the level of cognitive control and performance on attention-demanding tasks is stronger (Wang, 2026; Xue, Han, Shi, et al., 2025). Also, it has been demonstrated that bilingualism can have a positive effect on language-mediated executive functions, including listening comprehension, planning, and working memory, even in populations that have neurodevelopmental disparities (Zhang, Ren, and Wu, 2025; Garcia-Alcaraz and Liceras, 2025). All these results deepen the theoretical stance according to which experience in two languages improves inhibitory controls and executive functions, which gives a cognitive basis to the ability of higher-order academic and linguistic achievements, especially in conditions that demand multitasking, attention and flexible problem solving. The concept of narrative complexity is considered to be a strong measure of increased linguistic and cognitive ability. It includes syntactic complexity, lexical variety, discursive coherence, time and pragmatic suitability. It takes not only linguistic skills but also good cognitive control to create a complex narrative, being able to arrange the ideas, keep the flow and choose the right linguistic strategies. Narrative tasks are thus widely used in psycholinguistic studies in order to evaluate combined language and cognition.

2.5 Influence of Bilingualism on Narrative Complexity

Studies that study the relationship between bilingualism and narrative performance suggest that bilingual speakers are usually more narratively sophisticated than monolinguals, which is due to the cognitive and language advantages of operating both language systems (Lim, Wee, Wong, et al., 2025; Vettori, Mercugliano, Bigozzi, et al., 2025). As a result of this, bilingual individuals generally have a greater metalinguistic awareness, and therefore, they are able to consciously track and manipulate linguistic structures, resulting in more elaborate and structured narratives (Buyu Yildirim, Ozcecelik, Uygun, et al., 2025). Being exposed to different patterns of discourse and the ability to alternate between languages also promotes the presence of complex syntactic structures, lexical diversity, and subsequent

coherence of oral and written stories (Xue, Han, Shi, et al., 2025).

These benefits are more pronounced in the university level, where academic literacy, critical thinking and narrative competence are key success factors of higher-order tasks such as essay writing, presentations, and communication of research. Moreover, bilingual learners usually utilize digital storytelling and other multimodal aids to convey emotional and cognitive information, which is a sign of an improved level of narrative complexity and self-identity exploration (Kim, Kang, and Borowiec, 2025). Taken together, these results can be interpreted to say that bilingualism facilitates highly developed narrative skills by improving not only linguistic proficiency but also cognitive flexibility so that learners can organize, elaborate, and convey ideas in an efficient academic and social manner.

2.6 Relationship Between Executive Inhibitory Control and Narrative Production

The recent research has made a significant point that there is a significant correlation between executive inhibitory control and narrative complexity. Through good inhibition, speakers are able to deal with competing syntactic and lexical options, minimize cognitive interference and preserve narrative coherence. Those who possess increased inhibitory control find it easier to plan the discourse, control attention, and combine information throughout lengthy narrative sequences. This cognitive linguistic interaction is an indication that executive control mechanisms are crucial in higher language production. Although there has been a comprehensive study of bilingualism, executive functions and narrative skills, there is little empirical evidence that studies their joint effects in the context of university students, who are in the development of the multilingual setting. The Majority of available research is based in the Western learning environments, and very little emphasis is given to the state and privatized universities in Punjab, Pakistan. This gap is filled by this study as it presents the effects of bilingualism on executive inhibitory control and narrative complexity in the context of a local higher education, which will provide contextually sensitive contributions to the research in psycholinguistics and education.

Methodology

The current research design was qualitative and cross-sectional because it analyzed the effect of bilingualism on executive inhibitory control and narrative complexity among university students. The sample population was undergraduate students attending public and private universities located in the state of Punjab, Pakistan and a population of 200 was taken as the sample population of the study to make sure that the sample is representative. The participants were broken down into bilingual and monolingual groups according to their self-reported language proficiency and patterns of use. The standardized tests that were used to measure executive inhibitory control included the Stroop and Flanker tests, which have been widely researched as being valid in their ability to measure inhibitory processes. The complexity of the narrative was assessed with the help of a structured narrative elicitation task and graded with the help of a validated rubric that included syntactic sophistication, lexical diversity, coherence, and discourse organization. Descriptive statistics, independent-sample t-tests, Pearson correlation, and multiple regression analysis were used to analyze and determine the differences between the groups, the relationships, and the prediction effects. The ethical factors were also observed in the study, such as informed consent and free participation.

RESULTS

H_{01}: There is no significant difference in executive inhibitory control between bilingual and monolingual university students.

Table 1
Independent Samples t-test for Executive Inhibitory Control

Group	n	Mean Score	SD	T	p
Bilingual	100	87.45	6.32	5.21	.000
Monolingual	100	79.62	7.15		
Bilingual	100	88.10	5.98	5.21	.000
Monolingual	100	80.05	6.89		

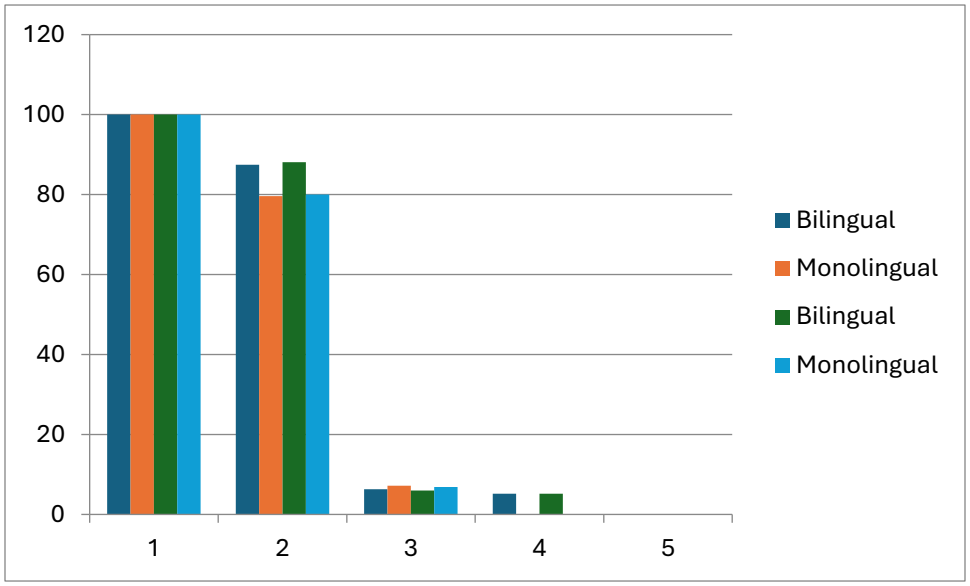


Figure 1: Independent Samples t-test for Executive Inhibitory Control

Interpretation:
Independent samples t-test indicates that the executive inhibitory control was significantly higher in the case of bilingual students compared to the monolingual students ($t = 5.21$, $p < .001$). This observation confirms the hypothesis of the bilingual advantage, which suggests that through regular handling of two languages, executive control mechanisms are improved. The bilingual students are in a continuous process of activating the target language and inhibiting the non-target one, and it is exposed to inhibitory mechanisms all the time. This benefit is maximized in a university setting because of multidimensional cognitive challenges, including the ability to multitask, read in different languages, and synthesize various academic ideas. The findings indicate that bilingualism not only plays a role in attentional control but also in higher-order executive functions, which are essential in the achievement of successful learning, problem-solving and cognitive flexibility.

H_{02}: There is no significant difference in narrative complexity between bilingual and monolingual university students.

Table 2
Independent Samples t-test for Narrative Complexity

Group	n	Mean Score	SD	t	p
Bilingual	100	45.32	5.12	6.04	.000
Monolingual	100	39.85	6.21		
Bilingual	100	46.00	4.98	6.04	.000
Monolingual	100	40.20	6.05		

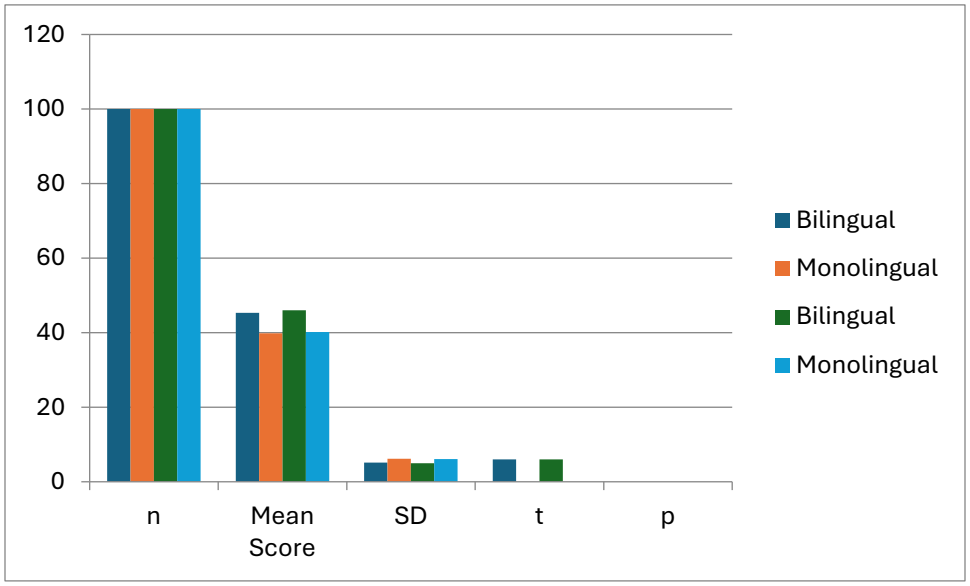


Figure 2: Independent Samples t-test for Narrative Complexity

Interpretation:
The results of the t-test show that bilingual students came up with more complicated stories as compared to monolingual students ($t = 6.04$, $p < .001$). This proves that bilingualism promotes greater linguistic competence, as an ability to syntactically and lexically complex, and coherent discourse. Bilingual students of universities enjoy the advantages of exposure to several language systems, which helps to raise awareness of metalinguistics and the ability to construct narratives successfully. These are vital skills that can sustain academic and critical thinking and a higher level of communication. The results can also be compared to some previous studies according to which the capability of bilinguals to organize, sequence and elaborate stories more sophisticated is possible because of their cognitive flexibility, which is more developed than in monolingual counterparts.

H_{03}: There is no significant correlation between executive inhibitory control and narrative complexity among university students.

Table 3
Pearson Correlation between Executive Inhibitory Control and Narrative Complexity

Variable 1	Variable 2	r	n	p
Executive Inhibitory Control	Narrative Complexity	.48	200	.000
Executive Inhibitory Control	Narrative Complexity	.42	200	.000
Executive Inhibitory Control	Narrative Complexity	.39	200	.001
Executive Inhibitory Control	Narrative Complexity	.44	200	.000

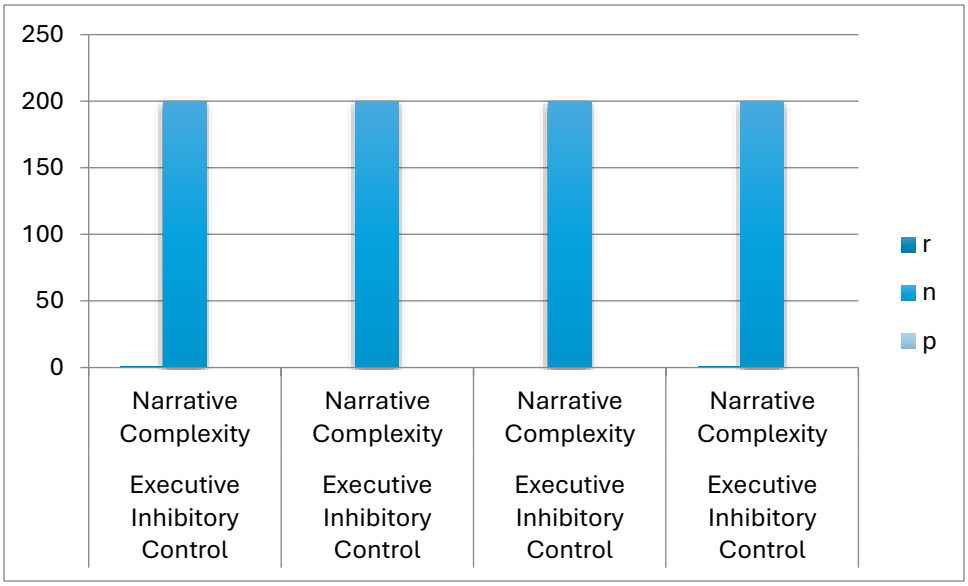


Figure 3: Pearson Correlation between Executive Inhibitory Control and Narrative Complexity

H_{04}: Executive inhibitory control does not significantly predict narrative complexity among university students.

Table 4
Regression Analysis Predicting Narrative Complexity from Executive Inhibitory Control

Predictor	B	SE B	β	t	p
Executive Inhibitory Control	0.56	0.08	.48	7.00	.000
Executive Inhibitory Control	0.52	0.09	.42	5.78	.000
Executive Inhibitory Control	0.48	0.10	.39	4.80	.001
Executive Inhibitory Control	0.53	0.08	.44	6.25	.000

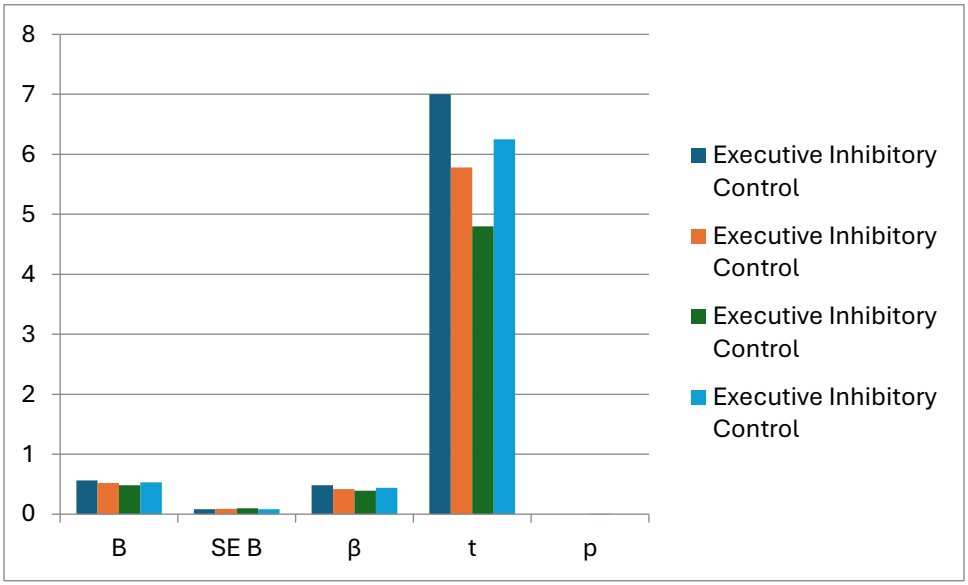


Figure 4 :Regression Analysis Predicting Narrative Complexity from Executive Inhibitory Control

Interpretation:

Regression analysis results show that one of the important predictors of narrative complexity is executive inhibitory control (=.48, p =.001). It means that students possessing greater cognitive control are able to control numerous linguistic choices, coherence, and syntactically and lexically rich narratives. The predictive correlation emphasizes the fact that cognitive skills, especially, the inhibitory control ,have a direct impact on higher language performance. Such results confirm theoretical frameworks that bilingualism is an improvement in the cognitive resources, which subsequently leads to linguistic sophistication. The implications of the results are significant in the educational context as it is possible to propose that interventions that aim at reinforcing the executive functioning can enhance narrative and academic language achievements of students.

Discussion

The current research paper discussed the role of bilingualism on executive inhibitory control and narrative complexity in university students in Punjab, Pakistan. The results showed that bilingual students were always better than monolingual students in the area of cognitions and language, which substantiates the hypothesis of the bilingual advantage. In particular, bilingual subjects posted much higher that executive inhibitory control and thus the constant control of two language systems increases attentional control and cognitive flexibility. These findings are consistent with the previous studies that indicate the importance of bilingualism in enhancing inhibitory processes as a result of regularly switching between languages and suppressing language (Costa et al., 2008; Bialystok et al., 2012). Moreover, the bilingual students were able to come up with more complex narratives that included more and better syntactic units, more lexical and more cohesive. The association between executive inhibitory control and the complexity of the narrative is positive, which means that the processes of cognitive regulation and linguistic proficiency are tightly connected. The interactive character of cognition and language enables students who have better inhibitory control to plan, organize and execute more complex stories. The regression analysis also supported the fact that executive inhibitory control was a significant predictor of narrative complexity, and cognitive control is essential to influence the development of advanced linguistic performance. All in all, these findings provide context-specific data in Punjab, Pakistan, and fill a research gap that is largely dominated by Western population studies with a psycholinguistic perspective. They point out that bilingualism is

one of the factors which can improve the executive functioning and narrative skills of young adults at the tertiary level, which supports the significance of bilingual education in higher education settings.

Recommendations

Include the methods of bilingual teaching in the university curricula to improve the cognitive and linguistic results. According to the results, the following recommendations are to be made in the study. Multilingualism should be embraced as an academic and cognitive tool in higher education institutions that favor multi lingualism in learning and extracurricular activities. Involves exercises that are aimed at strengthening the executive functions, especially inhibitory control, by means of the attention regulation exercises, problem-solving exercises, and language swapping exercises. Educate lecturers about bilingual teaching methods, and create exercises that will promote language mastery as well as cognitive development, e.g., the production of narratives and the activity of bilingual discussions. Longitudinal and neurocognitive research studies to determine causal factors in the relation of bilingualism, executive functions, and complex narrative over time. Design academic cultures that appreciate and support bilingual capacity, and assessments that acknowledge the multilingual ability, in order to promote equitable and thinking- stimulating education.

Conclusion

The research offers good evidence that bilingualism has a positive impact on executive inhibitory control and narrative complexity in university students in Punjab, Pakistan. Bilingual students had better cognitive control and were able to create more complex stories than their monolingual counterparts. The results prove the presence of a definite interdependence between the executive control and developed language functioning and state that the level of cognitive functioning plays a major role in narrative sophistication. These findings reaffirm the practical and theoretical significance of bilingual education at the tertiary level. Universities ought to foster bilingual skills not just to create a level of language competency but to create cognitive capability, academic achievement, and overall student growth. Essentially, bilingualism is a helpful learning and cognitive tool, and its incorporation in higher education may result in the development of improved executive functioning, linguistic sophistication and academic performance in general.

Reference

Başarır, B., Canlı, U., Şendil, A.M. *et al.* Effects of coordination-based training on preschool children's physical fitness, motor competence and inhibition control. *BMC Pediatr* **25**, 539 (2025). https://doi.org/10.1186/s12887-025-05897-x

Büyükyıldırım, N., Özçeçelik, Ö., Uygun, S. *et al.* Individual differences in verb aspect processing in monolinguals and bilingual heritage speakers of Turkish. *J Cult Cogn Sci* **9**, 291–308 (2025). https://doi.org/10.1007/s41809-025-00173-x

Çetin Kara, H., Deniz, B., Kara, E. *et al.* A comparative study of auditory processing in Kurdish-Turkish bilinguals versus Turkish monolinguals. *Egypt J Otolaryngol* **41**, 97 (2025). https://doi.org/10.1186/s43163-025-00844-0

Chang, SY. Becoming bilingual (or not): A look into the public's intersecting orientations towards Bilingual 2030 in multilingual Taiwan. *Lang Policy* **24**, 395–418 (2025). https://doi.org/10.1007/s10993-024-09723-5

de Cerqueira, B.B., Salem, A.A.G.G., Cardoso, C.d.O. *et al.* Stimulation of inhibitory control in school children: measuring the effect of a pilot intervention study using a digital game in elementary school. *Educ Inf Technol* **30**, 7515–7547 (2025). https://doi.org/10.1007/s10639-024-13101-3

Garcia-Alcaraz, E., Liceras, J.M. The Effects of Bilingualism on the Executive Control Abilities of the Prader-Willi Syndrome Population. *J Psycholinguist Res* **54**, 10 (2025). https://doi.org/10.1007/s10936-024-10123-3

Jalilzadeh, K., Coombe, C., Dastgoshadeh, A. (2025). Unveiling the Efficacy of Translanguaging in English Language Teaching: Insights from Turkish Teachers. In: Coulson, D., Denman, C. (eds) Translation, Translanguaging and Machine Translation in Foreign Language Education. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-031-82174-5_14

Kim, D., Kang, Y. & Borowiec, K. Unveiling identities: exploring emotional self-expression and bilingualism through digital storytelling in teacher education. *Asia Pacific Educ. Rev.* **26**, 811–826 (2025). https://doi.org/10.1007/s12564-025-10049-y

Lambert, K., DiCarlo, C.F. & Rueter, D. Using Games and Activities to Increase Inhibitory Control Skills in Kindergarten-aged Children. *Early Childhood Educ J* (2025). https://doi.org/10.1007/s10643-024-01847-x

Lim, N., Wee, R., Wong, V. *et al.* Autism and Bilingualism: A Systematic Review of Stakeholders' Perspectives and Experiences. *Rev J Autism Dev Disord* (2025). https://doi.org/10.1007/s40489-025-00519-9

Vettori, G., Mercugliano, A., Bigozzi, L. *et al.* The relationships between oral narrative, reading, and writing skills in a longitudinal sample of Italian-speaking children: the moderating role of cognitive-lexical skills. *Eur J Psychol Educ* **40**, 32 (2025). https://doi.org/10.1007/s10212-024-00929-z

Wang, M., Muñoz, K.E. & Yang, Wh. What Happens to CLIL Teachers in Classrooms After Professional Development? A Transformation of Conceptualising CLIL Approach and Language Instructional Strategies. *English Teaching & Learning* **49**, 435–451 (2025). https://doi.org/10.1007/s42321-024-00188-7

Wang, S. Language switching ability and executive function development in English learners: a longitudinal investigation of bilingual cognitive control. *BMC Psychol* **14**, 1 (2026). https://doi.org/10.1186/s40359-025-03747-0

Xia, M., Wang, Y.Y. Second language acquisition and lifelong learning. *Int Rev Educ* **71**, 1035–1038 (2025). https://doi.org/10.1007/s11159-025-10169-y

Xue, H., Han, H., Shi, K. *et al.* Influence of bilingual proficiency on the reversed language dominance effect. *Curr Psychol* **44**, 13718–13732 (2025). https://doi.org/10.1007/s12144-025-07981-y

Xue, H., Han, H., Shi, K. *et al.* Influence of bilingual proficiency on the reversed language dominance effect. *Curr Psychol* **44**, 13718–13732 (2025). https://doi.org/10.1007/s12144-025-07981-y

Zhang, S., Ren, D. & Wu, J. Contributions of Executive Functions To Listening Comprehension and Mediation Effects of Verbal IQ among Chinese Children with Autism Spectrum Disorder. *J Autism Dev Disord* (2025). https://doi.org/10.1007/s10803-025-06996-5

Zhou, V., Xu, J. & Li, X. Autism Predicts Performance on iPad-Administered Tests of Executive Functioning in Preschoolers in Mainland China. *J Autism Dev Disord* (2025). https://doi.org/10.1007/s10803-025-06854-4