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EXPLORING PREDICTORS OF EXECUTIVE FUNCTION SKILLS OF KINDERGARTEN LEARNERS

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This research assessed the executive function skills of kindergarten learners at the identified schools in Lapu-Lapu City Division for the school year 2021-2022 as a basis for the Executive Function Skills Development Plans. A descriptive-correlational method of research was utilized in determining the level of manifestation of executive function skills of 290 kindergarten who were selected using random sampling. An adapted survey questionnaire was used to collect the data, which were analyzed using frequency counts, percentages, weighted means, and multiple regression. Findings revealed that the majority of learners were 6 years old, with an equal distribution of female and male respondents; most parents had graduated from high school, had 1-2 siblings, and had a combined family monthly income of 10,000 pesos or below. Regarding learners' executive function skills, results showed that doing homework, organizing materials, handling long-term projects, and remembering were at the manifested level, while problem-solving and self-control were at a less manifested level, with the overall level of executive function skills at the manifested level. The results further showed that only the combined monthly income of the profile is significantly related to the learners' executive function skills. It is recommended that the executive function skills development plan be implemented in each research locale.

Keywords: Early Childhood Education, Kindergarten Learners, Executive Function Skills, Descriptive-Correlational Method, Lapu-Lapu City

1. Introduction

Executive function (EF) skills have garnered significant attention in educational research due to their profound impact on child development (Drigas & Karyotaki, 2019). These higher-order neurocognitive processes, encompassing working memory, cognitive flexibility, and inhibitory control, regulate thoughts, behaviors, and emotions that plays a crucial role in a child's academic and personal growth. As a result, EF has become one of the most frequently explored topics in developmental psychology, neuroscience, and education, with researchers seeking to understand its relationship to learning outcomes, cognitive development, and behavioral regulation (Pluck et al., 2023). At an early age, executive function skills serve as foundational abilities that shape a child's capacity to learn, solve problems, and adapt to new situations (Pumyoch & Srikoon, 2024). Several studies have established a strong link between EF and

academic performance, suggesting that children with well-developed EF skills are more likely to excel in school and navigate challenges effectively (De Carvalho Etokabeka et al., 2023; Zelazo et al., 2024). Educators must be equipped with strategies to nurture EF development, as a child's academic success often reflects the quality of instruction and support they receive (Uraipong et al., 2024).

With the implementation of the Enhanced K-12 Curriculum, the Department of Education (DepEd) emphasizes the importance of performance-based education, which requires measuring higher-order cognitive skills while considering individual differences and multiple intelligences. However, research indicates that difficulties with EF skills are associated with learning challenges, behavioral issues, and neurodevelopmental disorders such as Attention-Deficit/Hyperactivity Disorder (ADHD), autism spectrum disorder (ASD), and specific learning disabilities (Christou, 2022; Kofler et al., 2018). These challenges can significantly interfere with a child's education and overall development. Given the critical role of EF in early childhood education, this study aims to assess kindergarten learners' executive function skills, identify their unique strengths and weaknesses, and examine the key factors influencing their development. The findings served as the basis for developing an executive function skills development plan.

On the other hand, this study is anchored in theories and the legal bases that served as its backbone. The educational theories include Cognitive Development Theory by the Swiss Psychologist Jean Piaget, Zone of Proximal Development by Lev Vygotsky, and the Constructivist Theory of Jerome Bruner**.**

Piaget believed that children think and see the world differently from adults and are not passive learners; they actively build their knowledge from their surroundings. The development of executive function (EF) skills in kindergarten learners is crucial as these cognitive abilities—such as working memory, mental flexibility, and inhibitory control—serve as the foundation for lifelong learning and adaptation. Grounded in cognitive development theory, particularly Piaget's framework, young learners progress through stages of mental growth, with EF skills emerging as they engage in problem-solving and self-regulation. Vygotsky's Zone of Proximal Development (ZPD) further emphasizes the role of guided interactions in fostering these skills, as children learn best through scaffolded support from teachers and peers. Constructivist learning theory reinforces this perspective, advocating for active, meaningful experiences that encourage children to construct knowledge rather than passively absorb information. The significance of developing EF skills aligns with the 1987 Philippine Constitution, which mandates quality education as a right of every child and ensures their holistic development. Furthermore, DepEd Order No. 36, s. 2013, on the implementation of the K to 12 Basic Education Program underscores the need for age-appropriate pedagogies that enhance cognitive and socio-emotional competencies. Similarly, DepEd Order No. 35, s. 2016, which establishes the Standards and Competencies for Five-Year-Old Filipino Children, highlights executive function as a key developmental domain necessary for school readiness.

Cognitive Development in children is not only related to acquiring knowledge; children need to build or develop a mental model of their surrounding world (Bjorklund, 2022; Xu, 2019). One can say that executive function skills, as set cognitive skills, are significantly related to cognitive development. It is vital to assess a child's current cognitive development to create appropriate tasks that develop their skills. According to this theory, accommodation and assimilation are requirements for an active learner, so classroom learning must be student-centered and conducted through active discovery. With this, teachers need to not only ensure the use of active teaching involving reconstructing or rediscovering, but also craft individual and collaborative activities (Alomá Bello et al., 2022; Hoidn & Reusser, 2020; Seal, 2022).

Executive skills are developed and refined throughout childhood and adolescence (Dawson & Guare, 2018). Moreover, the magnitude of EF improvement was large across the youngest groups, became more moderate in late childhood, and diminished further during adolescence (Ahmed et al., 2019a).

Research has established that EF skills in kindergarten serve as strong predictors of later academic performance and behavioral outcomes. Morgan et al. (2019) conducted a longitudinal study examining the relationship between kindergarten EF and second-grade academic achievement. Their findings demonstrated that working memory, cognitive flexibility, and inhibitory control were significantly associated with higher achievement in reading, mathematics, and science. Furthermore, inhibitory control was found to negatively predict externalizing and internalizing behavioral problems, underscoring the importance of early EF development across cognitive and social-emotional domains.

Similarly, Lawson et al. (2022) explored various predictors of EF development in preschool-aged children. Their study identified demographic and individual factors, such as sex, socioeconomic status (SES), fine motor skills, and visual perception, as significant contributors to EF proficiency. Notably, their findings suggested that while individual characteristics played a more substantial role, interpersonal factors such as parenting style and stress did not significantly influence EF development. This indicates that biological and cognitive factors may outweigh environmental influences in the early years.

Further evidence on early EF predictors comes from Ahmed et al. (2019) who investigated pre-kindergarten EF measures, including behavioral assessments, parent reports, and psychophysiological indicators, as predictors of post-kindergarten EF development. Their study found that early EF assessments accounted for significant variance in later EF abilities, reinforcing the notion that early cognitive abilities set a trajectory for later executive functioning. These findings support the premise that EF skills develop progressively and that early interventions targeting EF could enhance long-term cognitive and behavioral outcomes.

These theories and related literature formed the basis and served as the jump-off point of this study. Hence, the researchers' goal is to identify the extent of executive function skills in kindergarten learners.

2. Purpose of the Study

This research assessed the executive function skills of kindergarten learners at the identified schools in Lapu-Lapu City Division for the school year 2021-2022 as a basis for the Executive Function Skills Development Plans. Specifically, it sought answers to the questions about the profile of the learners in terms of age and gender; parents' highest educational attainment, number of siblings, and combined family monthly income; the level of the learners' manifestation of executive function skills in terms of doing homework, organizing materials, dealing with long-term projects, remembering, problem solving and self-control; and the relationship between the profile of the learners and their executive function skills.

3. Research Methodology

This study employed a quantitative, descriptive-correlational design to explore whether kindergarten learners' profiles could predict their levels of executive function skills. Because the learners were still very young and face-to-face classes were limited due to COVID-19, the study gathered information from their parents, who served as respondents. A survey questionnaire, adapted from Dawson and Guare (2009), was used, and participants were selected through simple random sampling to ensure that every parent had an equal chance of being included. The research was conducted in three public schools within the Division of Lapu-Lapu City: Ibo Elementary School, Punta Engaño Elementary School, and Soong Elementary School, with a total of 290 parent respondents—50 from Ibo, 80 from Punta Engaño, and 160 from Soong. The survey instrument had two parts: the first collected demographic information, while the second consisted of a 37-item Likert-scale checklist to assess the learners' executive function skills. Ethical considerations were carefully observed throughout the study, including securing necessary permissions, obtaining informed consent, maintaining confidentiality, and adhering to the Data Privacy Act.

4. Results and Discussion

This section presents, analyzes, and interprets the data gathered from the adapted and modified survey questionnaire distributed to kindergarten parents of the identified elementary schools. It generally covered the profiles and Executive Function Skills of kindergarten learners. It also tested the relationship between the profile and the level of executive function skills of the kindergarten learners.

4.1 Profile of the Learners

This section discusses the results of the data gathered as to age and gender, parents' highest educational attainment, number of siblings, and the combined family monthly income of the three schools. Table 1 presents the results.

Table 1
Age and Gender of the Learners

Age (in years)	Female		Male		Total	
	f	%	f	%	f	%
7 and above	16	5.52	9	3.10	25	8.62
6	72	24.83	83	28.62	155	53.45
5	57	19.66	53	18.28	110	37.93
Total	**145**	**50.00**	**145**	**50.00**	**290**	**100.00**

As shown in Table 1, most learners were six years old (53.45%). The predominance of six-year-old learners aligns with DepEd Order No. 8, s. 2018, which requires children to be at least 5 years old to enroll in kindergarten. The data also indicated a higher number of males than females among six-year-olds, reflecting national census trends reported by the Philippine Statistics Authority, which show that males slightly outnumber females in the five-to-nine age group. However, research by Cozolino et al. (2021) suggests that a child's sex or gender does not influence executive function development.

Table 2
Number of Siblings of the Learners

Number of Siblings	f	%
More than 4	36	12.41
3 – 4	98	33.79
1 – 2	156	53.79
Total	**290**	**100.00**

As presented in Table 2, the majority (53.79%) of learners have 1–2 siblings, while 33.79 percent have 3–4 siblings. A smaller proportion (12.41%) comes from families with more than four children.

The data suggest that most learners come from small to moderately sized families, which can have implications for their academic development. Studies indicate that family size influences children's cognitive and executive function development, particularly in resource allocation, parental attention, and home learning environments (Valcan et al., 2018). Children from smaller families tend to receive more direct parental support, leading to better academic performance and executive function skills such as organization and problem-solving(Davis et al., 2021). In contrast, learners from larger families may

experience limited individualized attention and financial constraints, which could impact their self-regulation and time management abilities (Wolters & Brady, 2021).

Table 3
Combined Family Monthly Income

Monthly Income (in pesos)	f	%
Above 30,000	7	2.41
25,001-30,000	11	3.79
20,001-25,000	9	3.10
15,001-20,000	27	9.31
10,001-15,000	48	16.55
10,000 and below	188	64.83
Total	**290**	**100.00**

As presented in Table 3, the majority of learners come from low-income households, with 64.83 percent of families earning ₱10,000 or below per month. A significant portion (16.55%) was within the ₱10,001–₱15,000 range, while only a small percentage (2.41%) earned above ₱30,000. These findings emphasized the socioeconomic challenges that may impact learners' academic performance and executive function skills. According to studies, children from low-income families often face limited access to educational resources, nutritious food, and stable home environments, which can affect cognitive development, self-regulation, and problem-solving abilities (Haslam et al., 2019). Financial constraints may also hinder parental involvement in education, leading to difficulties in homework completion, organization, and long-term project planning. Given these circumstances, schools should consider implementing targeted support programs, such as financial aid, resource accessibility initiatives, and structured learning interventions, to help bridge the gap for economically disadvantaged learners.

On the other hand, Merz et al. (2019) in their journal says that poverty is a key inhibitor of developing executive function skills. Sadly, poverty reduces parental resources and is frequently associated with poorer relationships and more chaos. Likewise, Deer et al. (2020) states that socioeconomic status disparities in executive function have been documented across a large age range, from infancy through late childhood. Studies have consistently found that higher socioeconomic status is associated with better executive function performance across various measures of socioeconomic status (such as family income-to-needs ratio or maternal education) and measures of executive function (such as working memory and inhibitory control).

4.2 Level of the Learners' Manifestation of Executive Function Skills

This part presents the level of the learners' manifestation of executive function skills in terms of doing homework, organizing materials, dealing with long-term projects, remembering, problem solving, and self-control in the three schools

Table 4
Level of the Learners' Manifestation of Executive Function Skills in terms of Doing Homework

S/N	Indicators	WM	Verbal Description
1	Understand homework directions	3.46	Highly Manifested
2	Get started on his or her own	3.07	Manifested
3	Be able to keep working despite distractions	2.89	Manifested
4	Ask for help when it's needed	3.12	Manifested
5	Stick with it long enough to complete it	2.92	Manifested
6	Makes careless mistakes; failing to check work	2.68	Manifested
7	Finish the work on time	2.69	Manifested
8	Remember to hand it in	2.77	Manifested
	Aggregate Weighted Mean	**2.95**	**Manifested**

Legend: 3.25-4.00-Highly Manifested; 2.50– 3.24-Manifested;1.75 – 2.49-Less Manifested; 1.00 – 1.74–Not Manifested

As presented in Table 4, the learners' executive skills in doing homework were at the Manifested level, with an aggregate weighted mean of 2.95. The highest-rated indicator, "Understanding homework directions" (WM = 3.46), was in the "Highly Manifested" category, suggesting that learners can effectively comprehend instructions. However, while they also exhibit the ability to get started on their own (WM = 3.07) and ask for help when needed (WM = 3.12), they struggle with making careless mistakes (WM = 2.68) and finishing work on time (WM = 2.69).

These findings align with previous research indicating that executive function skills, particularly working memory and self-regulation, play a crucial role in homework completion and academic success (Blume et al., 2022). Poor self-monitoring may contribute to mistakes and delays, underscoring the need for interventions that support time management and self-regulation. Schools and parents should collaborate to reinforce structured homework routines and provide tools, such as checklists or self-monitoring techniques, to enhance learners' efficiency in completing and submitting assignments.

A high level of "being able to understand homework directions" indicates a high level of metacognition, one of the most critical executive function skills a learner can possess. Using metacognition, students gain an understanding of the situations, processes, and methods that work best for them. The better a student understands how he or she learns, remembers, and processes information, the more information he or she will ultimately retain. This ability is further linked to developing better memory skills, which is a predictor of future academic success (Chernyshenko et al., 2018).

Table 5
Level of the Learners' Manifestation of Executive Function Skills in terms of Organizing Materials

S/N	Indicators	WM	Verbal Description
1	Keep notebooks and papers organized	3.13	Manifested
2	Keep desk tidy	3.27	Highly Manifested
3	Keep belongings neat and in appropriate locations (e.g., gym clothes, coats, hats, mittens)	3.23	Manifested
4	Keep track of books, papers, pencils, etc.	3.22	Manifested
5	Keep backpack organized	3.08	Manifested
	Aggregate Weighted Mean	**3.19**	**Manifested**

As presented in Table 5, with an aggregate weighted mean of 3.19, classified as **"Manifested".** Among the indicators, "Keeping the desk tidy" (WM = 3.27) was the only skill categorized as "Highly Manifested," suggesting that learners were more inclined to maintain order in their immediate workspace. However, while they also showed competence in keeping belongings in appropriate locations (WM = 3.23) and in tracking books and other school materials (WM = 3.22), there was room for improvement in keeping notebooks and papers (WM = 3.13) and backpacks organized (WM = 3.08).

Studies indicate that executive function skills, particularly organizational abilities, are essential for academic success, as they enable students to manage schoolwork efficiently and reduce cognitive load (Gunzenhauser & Nückles, 2021; Meltzer et al., 2021). Learners who struggle with material organization may experience difficulties with task completion and retrieval of necessary resources, leading to academic inefficiencies. To strengthen these skills, educators and parents can implement structured organizational strategies, such as color-coded folders, checklists, and daily organization routines, to help learners develop consistent and effective habits in managing their material.

Table 6
Level of the Learners' Manifestation of Executive Function Skills in terms of Dealing with Long-term Projects

S/N	Indicators	WM	Verbal Description
1	Decide on a topic	2.64	Manifested
2	Break the assignment into smaller parts	2.63	Manifested
3	Develop a timeline	2.71	Manifested
4	Follow a timeline	2.89	Manifested
5	Estimate how long it will take to finish	2.59	Manifested
6	Follow directions carefully	2.94	Manifested
7	Proofread or check project to catch mistakes to make sure the rules were followed	2.58	Manifested
8	Finish the project by the deadline	2.61	Manifested
	Aggregate Weighted Mean	**2.70**	**Manifested**

As shown in Table 6, the data revealed that learners generally demonstrate executive function skills related to managing long-term projects, as indicated by an aggregate weighted mean of 2.70. All indicators were within the "Manifested" category, suggesting that learners demonstrated some ability to manage extended tasks. The highest-rated skill was "Following directions carefully" (WM = 2.94), indicating that learners can follow instructions when completing projects. However, other essential aspects, such as "Proofreading or checking the project to catch mistakes" (WM = 2.58) and "Estimating how long it will take to finish" (WM = 2.59), indicate that learners may struggle with planning and self-evaluation.

According to Ahrens et al. (2019) and Oldfield (2019), executive function skills, including planning and time management, are crucial for academic success, particularly in completing complex, multi-step assignments. Difficulties in these areas may result in procrastination and rushed work. To enhance these skills, educators and parents can provide structured support, such as guiding learners in creating step-by-step project plans, using visual timelines, and incorporating regular check-ins to ensure steady progress toward deadlines.

Similarly, according to Zhao et al. (2019) the long-term project may seem daunting at first, but students are always proud of what they have achieved in the end. When the student hands in their finished project, it is a beaming moment of both relief and gratification. Students learn skills they need to move forward in their education while showing mastery of academic content.

Table 7
Level of the Learners' Manifestation of Executive Function Skills in terms of Remembering

S/N	Indicators	WM	Verbal Description
1	Write down assignments	3.11	Manifested
2	Bring home appropriate materials (e.g., books, workbooks, assignment book, worksheets, notices, permission slips, gym clothes)	3.12	Manifested
3	Bring to school appropriate materials (e.g., books, workbooks, assignment book, worksheets, notices, permission slips, gym clothes)	3.19	Manifested
4	Remembers instructional sequences after normal instruction (e.g., long division, proper headings for papers)	3.10	Manifested
5	Remembers to perform chores or other household responsibilities	2.80	Manifested
6	Loses things within the home, yard, or neighborhood	2.38	Manifested
	Aggregate Weighted Mean	**2.95**	**Manifested**

As shown in Table 7, the data indicated that learners generally **manifested** executive function skills related to remembering, as demonstrated by an aggregate weighted mean of 2.95. All indicators were within the "Manifested" category, with the highest-rated skill being "Bringing appropriate materials to school" (WM = 3.19).

The results suggest that learners are relatively effective at remembering the necessary items for school activities. However, a lower rating for "Loses things within the home, yard, or neighborhood" highlighted some challenges in maintaining personal organization outside of school. According to Murphy (2019), working memory and organizational skills are critical for academic performance, particularly in tasks requiring the retention of multi-step instructions. The findings suggest a need for targeted interventions, such as using checklists, structured routines, and reinforcement strategies, to improve learners' memory and organizational abilities both in and out of the classroom. Moreover, Angelopoulou and Drigas (2021) said that working memory plays a vital role in learning. Children with ADHD or any other learning disabilities experience working memory deficits.

Table 8
Level of the Learners' Manifestation of Executive Function Skills in terms of Problem Solving

S/N	Indicators	WM	Verbal Description
1	Recognize that he or she has a problem (e.g.,doesn't understand the directions)	2.53	Manifested
2	think flexibly about the problem (e.g.,not get stuck on one approach or solution)	2.27	Less Manifested
3	Try to solve the problem first on his or her own before going for help	2.24	Less Manifested
4	Access appropriate resources to help him or her solve the problem	2.30	Less Manifested
5	Evaluate his or her own performance to know whether the problem was solved successfully	2.18	Less Manifested
	Aggregate Weighted Mean	**2.30**	**Less Manifested**

As shown in Table 8, the data revealed that learners demonstrate limited executive function skills in problem-solving, with an aggregate weighted mean of 2.30, categorized as "**Less Manifested**." While learners can recognize when they have a problem (WM = 2.53, "Manifested"), they struggle with other aspects, such as thinking flexibly (WM = 2.27), solving problems independently (WM = 2.24), and evaluating their performance (WM = 2.18), all of which were "Less Manifested."

The study by Esen–aygun (2018) and iDawati et al. (2020) pointed out the importance of cognitive flexibility and self-regulation in effective problem-solving. The findings suggest that learners may benefit from explicit instruction in problem-solving strategies, such as guided practice, self-reflection techniques, and scaffolding approaches, to enhance their ability to approach challenges independently and critically (Ge & Chua, 2019).

One significant implication of these findings is the need for educational interventions that explicitly develop problem-solving skills. Vygotsky's (1978) socio-cultural theory highlights the importance of scaffolding, where educators provide structured support to help learners gradually develop their ability to think critically and independently.

Table 9
Level of the Learners' Manifestation of Executive Function Skills in terms of Self-control

S/N	Indicators	WM	Verbal Description
1	Becomes easily upset	2.59	Manifested
2	Throws temper tantrums	1.92	Less Manifested
3	Act impulsively, either verbally or physically (e.g., provoking siblings)	1.91	Less Manifested
4	Interrupt others	1.82	Less Manifested
5	Difficult waiting turn	1.84	Less Manifested
	Aggregate Weighted Mean	**2.02**	**Less Manifested**

As shown in Table 9, the data indicate that learners generally exhibit lower levels of self-control, with an aggregate weighted mean of 2.02, which is categorized as "**Less Manifested**." While learners demonstrated some ability to regulate their emotions, as seen in "Becomes easily upset" (WM = 2.59, "Manifested"), they struggled with other key aspects of self-control, such as impulsive behavior (WM = 1.91), interrupting others (WM = 1.82), and difficulty waiting for their turn (WM = 1.84), all of which were "Less Manifested."

Research by Gagne and Nwadinobi (2018) emphasized that self-control is a crucial executive function that influences academic and social success, as it enables learners to regulate their emotions, delay gratification, and interact appropriately with peers.

Table 10
Summary on the Level of the Learners' Manifestation of Executive Function Skills

Components	WM	Verbal Description
Doing Homework	2.95	Manifested
Organizing Materials	3.19	Manifested
Dealing with Long-term Projects	2.70	Manifested
Remembering	2.95	Manifested
Problem Solving	2.30	Less Manifested
Self-control	2.02	Less Manifested
Grand Mean	**2.69**	Manifested

As presented in Table 10, the overall level of executive function skills of the learners was Manifested with a grand mean of 2.69. The highest-rated component is "Organizing Materials" (WM = 3.19), indicating that learners effectively manage their belongings and maintain organization in their tasks. Similarly, "Doing Homework" (WM = 2.95) and "Remembering" (WM = 2.95) were also "Manifested," suggesting that learners can follow instructions, recall necessary information, and complete assignments with moderate consistency. "Dealing with Long-term Projects" (WM = 2.70) was also within the "Manifested" category, though it may indicate some difficulties in time management and breaking tasks into smaller, manageable parts. However, "Problem Solving" (WM = 2.30) and "Self-control" (WM = 2.02)

were "Less Manifested," highlighting challenges in critical thinking, flexible thinking, and emotional regulation.

These findings align with Strosnider and Sharpe (2019) who noted that executive function skills develop progressively and require explicit instruction and practice, particularly in problem-solving and self-regulation. In addition, success on many life tasks depends critically on children's mastery of self-control (Duckworth et al., 2019). Early self-control has a profound and lasting effect on one's life in adulthood. Furthermore, a study has confirmed that self-control at an early age has positive effects on preschool and middle-academic, social, and emotional ability, as well as on the development of conscience (Sherry, 2019).

4.2 Regression Analysis Results for Predicting Executive Function Skills of the Learners

Table 11 presents the regression analysis results for predicting learners' executive function skills from the three identified schools. The result examines whether the respondents' profile significantly predicts the level of manifestation of executive function skills among kindergarten learners.

Table 11
Regression Analysis Results for Predicting Executive Function Skills of the Learners

	R square	df	*F*	Standard coefficients (*β*)	*t* -Stat	*p*-value
Regression	0.054	3	2.689*			0.015
Residual		283				
Total		289				
Constant					7.787	0.000
Age				0.019	0.322	0.747
Gender				0.087	1.497	0.136
Mother's Educational Attainment				0.029	0.441	0.660
Father's Educational Attainment				-0.013	-0.209	0.834
Number of Siblings				-0.033	-0.552	0.581
Income				0.204	3.361*	0.001

*significant at $p < 0.05$

As presented in Table 11, the regression analysis indicated that the predictor variables explain only 5.4 percent ($R^2 = 0.054$) of the variance in learners' executive function skills, suggesting that other unaccounted factors significantly contribute to their development. Among the predictor variables, income ($\beta = 0.204$, $p = 0.001$) was the only statistically significant factor, indicating that learners from higher-income families tend to have better executive function skills. Other variables, such as age, gender, parents' educational attainment, and number of siblings, did not have a significant effect on executive function skills.

A study by Murphy (2019) indicated that higher-income families often provide more structured learning environments, access to educational resources, and stable home conditions, all of which contribute to better executive function skills. Conversely, children from lower-income backgrounds may experience more stressors and fewer cognitive enrichment opportunities, which can hinder the development of executive functions (Fishbein et al., 2019).

5. Conclusion

Based on the study's findings, the majority of kindergarten learners were 6 years old, with equal numbers of males and females. Most parents had completed high school, learners typically had one to two siblings, and family monthly income was generally ₱10,000 or below. In terms of executive function skills, learners showed "manifested" levels in tasks such as completing homework, organizing materials, managing long-term projects, and remembering information. At the same time, problem-solving and self-control were "less manifested." Among the learners' profiles, only family monthly income was significantly associated with executive function skills, suggesting the influence of socioeconomic factors on cognitive development.

Hence, the targeted interventions are necessary to strengthen problem-solving and self-control skills. Structured cognitive training, scaffolding strategies, and socio-emotional learning approaches are recommended, particularly for learners from lower-income families. Furthermore, it is advised that an executive function skills development plan be implemented in the research schools and, if appropriate, expanded to the broader school division to support the overall development of these essential skills.

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