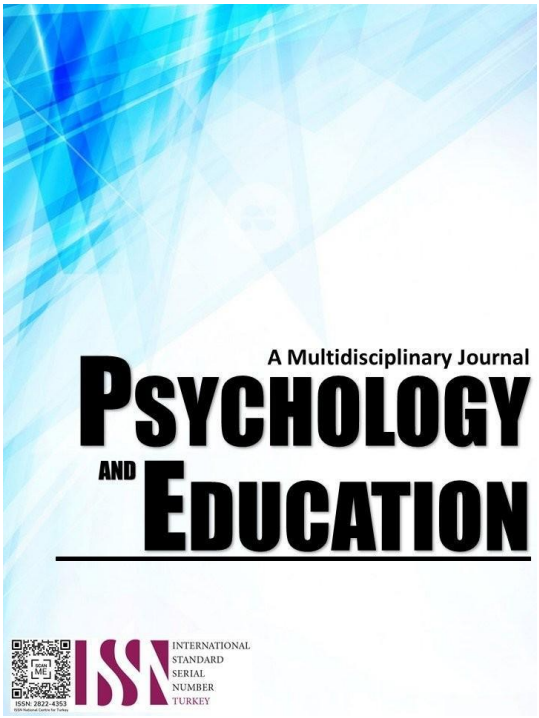
COGNITIVE AND ENVIRONMENTAL FACTORS AFFECTING ATTENTION SPAN IN GRADE 2 PUPILS



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Research Article

Cognitive and Environmental Factors Affecting Attention Span in Grade 2 Pupils

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Abstract

Attention span is a critical component of learning, particularly in early childhood education. This study examined the relationship and influence of cognitive development and environment on the attention span of Grade 2 pupils in Region XI, Philippines. Using a non-experimental, quantitative correlational design, data were gathered from 74 purposively selected Grade 2 pupils during the school year 2024–2025. The study used adapted and validated instruments to assess cognitive development (mean = 4.25, SD = 0.42), environment (mean = 4.27, SD = 0.38), and attention span (mean = 4.47, SD = 0.36). Results revealed significant positive relationships between cognitive development and attention span ($r = .66$, $p < .001$) and between environment and attention span ($r = .67$, $p < .001$). Multiple regression analysis showed both cognitive development ($\beta = .429$, $p < .001$) and environment ($\beta = .430$, $p < .001$) significantly influenced attention span, accounting for 52.6% of the variance ($R^2 = .526$, $F(2, 71) = 39.39$, $p < .001$). These findings emphasize the importance of fostering cognitive skills and creating a conducive learning environment to support children's focus and academic engagement.

Keywords: *attention span, cognitive development, environment, early childhood education, academic engagement*

Introduction

Sustained attention is essential for children's cognitive and academic development. As emphasized by Sullivan (2024), attention span determines how effectively children process and retain information during learning tasks. However, attention spans among young learners have been observed to fluctuate widely (Esterman et al., 2014), and teachers globally report increasing challenges in maintaining student focus (Ducharme, 2023; Mark, 2023).

In the Philippine context, elementary teachers face significant challenges in delivering instruction to children with brief attention spans (Lucas, 2009; Panti, 2020). Despite growing awareness of attention-related challenges, limited empirical studies have examined how cognitive and environmental factors influence attention span among early-grade pupils. This study aimed to bridge this gap by exploring the influence of cognitive development—specifically concentration and working memory—and environmental conditions—namely physical environment and social interaction—on the attention span of Grade 2 pupils.

Research Questions

The study sough to answer the following:

1. What is the level of cognitive development of Grade 2 pupils in terms of:
    1.1. concentration; and
    1.2. working memory?
2. What is the level of environment of Grade 2 pupils in terms of:
    2.1. physical environment; and
    2.2. social interaction?
3. What is the level of attention span of Grade 2 pupils in terms of:
    3.1. task completion; and
    3.2. listening skills?
4. Is there a significant relationship between:
    4.1. cognitive development and attention span; and
    4.2. environment and attention span?
5. What is the significant influence of cognitive development and environment on the attention span of Grade 2 pupils?

Methodology

Research Design

The study employed a quantitative, non-experimental descriptive-correlational design. This approach was appropriate for examining the relationships among cognitive development, environment, and attention span without manipulating variables.

Respondents

A total of 74 Grade 2 pupils from Region XI, Mindanao, Philippines, were selected through purposive sampling. The selection was based on their developmental stage, which is critical for studying attention span, and their varied environmental contexts. The sample

size was determined to be adequate based on ethical access and relevance to the study's objectives.

Instrument

Three instruments were adapted and validated:

Cognitive Assessment System (CAS) – measured concentration and working memory (10 items; Cronbach's $\alpha = 0.75$).

Physical Environment and Social Interaction Scale (Reyes, 2018; Santos, 2019) – measured learning environment (10 items; Cronbach's $\alpha = 0.75$).

Attention Span Questionnaire (ATSQ) – measured task completion and listening skills (10 items; Cronbach's $\alpha = 0.87$).

All items were rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

Procedure

The following steps were undertaken:

Secured approval from school administration.

Obtained informed consent from parents/guardians.

Administered instruments to students with assistance from class advisers. Instructions were translated into local dialects to ensure comprehension.

Retrieved and encoded data for statistical analysis using Excel and Jamovi.

Data Analysis

Descriptive statistics (mean, standard deviation) described variable levels. Pearson's r measured relationships among variables. Multiple linear regression determined the influence of cognitive and environmental factors on attention span.

Ethical Considerations

The study adhered to ethical research standards involving minors. Parental consent was obtained, and participant confidentiality was strictly maintained. Data were securely stored and anonymized.

Results and Discussion

Levels of Cognitive Development, Environment, and Attention Span

Table 1. *Cognitive Development of Grade 2 Pupils*

Indicator	*Mean*	*SD*	*Description*
Concentration	4.27	0.41	Very High
Working Memory	4.24	0.44	Very High
Overall	4.25	0.42	Very High

Table 1 shows that the Grade 2 pupils demonstrated a very high level of cognitive development, with a mean score of 4.25 (SD = 0.42). Both indicators—concentration (M = 4.27) and working memory (M = 4.24)—were rated as very high, indicating that pupils can effectively sustain attention and process information during learning tasks.

These findings suggest that the pupils possess strong foundational cognitive skills essential for academic success. The low standard deviations indicate consistent performance across learners, reflecting a generally well-developed ability to focus and retain information. This high level of cognitive functioning likely supports improved learning outcomes and contributes to better classroom behavior, including attention span and task completion.

Table 2. *Environment of Grade 2 Pupils*

Indicator	*Mean*	*SD*	*Description*
Physical Environment	4.16	0.39	High
Social Interaction	4.38	0.37	Very High
Overall	4.27	0.38	Very High

Table 2 presents data on the learning environment of Grade 2 pupils, highlighting two key indicators: physical environment and social interaction. The physical environment received a mean score of 4.16 (SD = 0.39), categorized as high, while social interaction scored 4.38 (SD = 0.37), rated as very high. The overall mean is 4.27 (SD = 0.38), which falls under the very high category.

These results indicate that Grade 2 pupils are generally exposed to a supportive and engaging learning environment, especially in terms of positive peer and teacher interactions. While the physical setting is rated high—suggesting it is conducive to learning—it is the

strength of social relationships that stands out. A nurturing social atmosphere likely enhances pupils' motivation, participation, and overall classroom behavior, all of which are important contributors to attention span and academic performance.

Table 3. *Attention Span of Grade 2 Pupils*

Indicator	*Mean*	*SD*	*Description*
Task Completion	4.42	0.33	Very High
Listening Skills	4.52	0.32	Very High
Overall	4.47	0.36	Very High

Legend: *4.20–5.00 = Very High; 3.40–4.19 = High; 2.60–3.39 = Moderate; 1.80–2.59 = Low; 1.00–1.79 = Very Low*

Table 3 illustrates the attention span of Grade 2 pupils, measured through task completion and listening skills. Both indicators received very high ratings, with task completion scoring a mean of 4.42 (SD = 0.33) and listening skills slightly higher at 4.52 (SD = 0.32). The overall mean attention span is 4.47 (SD = 0.36), indicating a strong ability among pupils to stay focused and attentive during class activities.

These findings suggest that Grade 2 pupils are highly capable of following instructions, completing tasks, and actively listening—key behaviors that support effective learning. The consistently high scores across both indicators reflect strong engagement in the classroom, likely influenced by their well-developed cognitive abilities and a positive learning environment.

Correlation Analysis

Table 4. *Relationship Between Cognitive Development, Environment, and Attention Span*

Predictor	*r*	*p-value*	*Interpretation*
Cognitive Development & Attention Span	.66	< .001	Significant
Environment & Attention Span	.67	< .001	Significant

Table 4 presents the correlation between cognitive development, environment, and attention span among Grade 2 pupils. The results show a significant positive relationship between cognitive development and attention span ($r = .66$, $p < .001$), as well as between environment and attention span ($r = .67$, $p < .001$).

These findings suggest that both cognitive abilities and the quality of the learning environment are strongly associated with pupils' attention span. As cognitive development and environmental support increase, so does the ability of pupils to maintain attention and focus on tasks. This highlights the importance of nurturing both mental skills and a positive classroom atmosphere to enhance learning outcomes.

Regression Analysis

Table 5. *Influence of Cognitive Development and Environment on Attention Span*

Predictor	*β*	*t*	*p-value*	*Interpretation*
Cognitive Development	.429	3.52	< .001	Significant
Environment	.430	3.60	< .001	Significant

Model Fit: $R = .73$, $R^2 = .526$, $F(2, 71) = 39.39$, $p < .001$ 52.6% of the variance in attention span was explained by the model.

Table 5 presents the regression analysis showing the influence of cognitive development and environment on the attention span of Grade 2 pupils. Both predictors were found to have a significant positive influence, with cognitive development having a standardized beta (β) of .429 ($t = 3.52$, $p < .001$) and environment slightly higher at .430 ($t = 3.60$, $p < .001$).

These results indicate that both factors contribute almost equally and significantly to the attention span of pupils. This suggests that enhancing cognitive skills and providing a supportive learning environment can effectively improve children's ability to focus, complete tasks, and stay engaged during learning activities.

Findings indicate that both cognitive development and environment are significant contributors to the attention span of Grade 2 pupils. Very high scores in concentration and working memory suggest strong cognitive functioning, aligning with previous findings by Gathercole and Alloway (2004) and Oberauer (2019).

The physical and social environment also played a key role. High levels of social interaction corroborate Vygotsky's (1978) sociocultural theory, which posits that interaction with more knowledgeable others (MKOs) enhances cognitive growth and attention.

The strong correlation and predictive power of cognitive and environmental factors underscore the importance of classroom design, structured learning tasks, and social engagement for sustaining pupil attention.

Conclusions

This study concludes that both cognitive development—particularly concentration and working memory—and environmental factors, such as physical classroom setup and social interaction, significantly impact the attention span of Grade 2 pupils. Schools should adopt comprehensive strategies that enhance memory, concentration, and positive social dynamics. Teachers should be trained in applying attention-building exercises, designing learner-friendly classrooms, and fostering inclusive, socially rich interactions. These measures

will help improve student attention, leading to better learning outcomes.

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