

## Sensory play engagement, self-regulated strategies, and separation anxiety among early childhood learners

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### Abstract

**Aim:** This study examined the relationship between sensory play engagement, self-regulated strategies, and separation anxiety among early childhood learners. The research aimed to determine how sensory play and self-regulation strategies influence children's emotional adjustment in the classroom, particularly in managing separation anxiety during early schooling.

**Methods:** A predictive-correlational research design was employed to analyze the relationships among sensory play engagement, self-regulated strategies, and separation anxiety among early childhood learners. Data was analyzed using descriptive statistics, Pearson's correlation analysis, and multiple regression techniques to determine the predictive influence of the independent variables on separation anxiety.

**Results:** The findings revealed that early childhood learners demonstrate active engagement in sensory play and advanced levels of environmental self-regulated strategies. However, the learners exhibited a severe level of separation anxiety. Correlation analysis indicated that among the variables examined, the environmental dimension of self-regulated strategies showed a statistically significant relationship with separation anxiety.

**Conclusion:** The results highlight the importance of designing supportive and nurturing classroom environments that promote emotional security and self-regulation among young learners. Establishing consistent routines, sensory-rich learning spaces, and calming areas within early childhood classrooms may help reduce separation anxiety and support children's emotional adjustment to school.

**Keywords:** *early childhood learners, environmental self-regulation, self-regulated strategies, sensory play, separation anxiety*

### INTRODUCTION

Navigating separation anxiety has become a significant concern in Early Childhood Education, particularly as increasing attention is given to children's emotional development and school readiness worldwide. Globally, Thümmler et al. (2022) highlights the importance of emotional regulation in early childhood as a foundational skill that supports young learners' ability to adapt to structured learning environments. Kirkiç et al. (2020) emphasize that difficulties in managing emotions, such as anxiety during separation from caregivers, can hinder children's participation, social interaction and overall learning engagement.

Separation anxiety is widely recognized as a normal developmental experience among young children, especially during their transition into formal schooling (Jreisat, 2023). However, Hashemi et al. (2024) suggests that when not properly addressed, it may negatively affect children's adjustment to classroom routines and relationships. As a result, educators across different contexts have explored various strategies to support children's emotional regulation and ease the transition from home to school environments Maia et al. (2024).

In the Philippine context, where strong family ties and close parental attachment are deeply embedded in the culture, children are more prone to experiencing separation anxiety upon entering school. While such close relationships provide emotional security, Gonzales (2021) identified them as a potential contributing factor to heightened anxiety during separation. This cultural dynamic presents unique challenges for early childhood educators who must balance sensitivity to family attachment while fostering independence among learners.

At the classroom level, teachers employ diverse and often innovative strategies to manage separation anxiety and create a supportive learning environment (Jucoy, 2022). Their role is crucial in helping children develop coping mechanisms and emotional resilience. However, studies such as Pepito and Montalbo (2019) reveal that these strategies are helping manage daily challenges rather than effectively reducing separation anxiety. Moreover, prior research was limited to examine the combined role of sensory play and self-regulation in addressing separation anxiety. This gap highlights the need for more comprehensive approaches. Thus, the present study investigates how these variables work together in predicting separation anxiety, offering a more proactive contribution to Early Childhood Education.

## Review of Related Literature and Studies

### Sensory Play

According to Sadeghi et al. (2022), children learn relationships and use them as a tool to communicate. It fosters competence, capabilities, and emotional release. With its therapeutic role, evidence suggests that play's effectiveness mitigates children's anxiety. Furthermore, Meilina et al. (2021) also discusses how play develops the independent character of children. According to Kazemi et al. (2024), this intervention yields measurable improvements in overall social functioning.

### Self-Regulated Strategies

Self-regulation is defined by Vahidi (2024) through three distinct lenses: the personal, the behavioral, and the environmental. Behavioral self-regulation pertains to a learner's ability to control their actions in response to emotional states. Environmental self-regulation emphasizes how modifications to a learner's surroundings can enhance their ability to self-regulate.

### Separation Anxiety

Gonzales (2021) emphasizes the profound cultural significance of familial cohesion in the Philippines, where the family unit serves as the primary source of emotional security and nurturance. Separation anxiety is a common problem children encounter as they start preschool (DemiRer & Topan 2023). Given that the early years represent a critical developmental window for emotional, cognitive, and social maturation (Friedman, S. & National Association for the Education of Young Children 2020), it is imperative that Early Childhood Education (ECE) programs implement comprehensive sensory-based interventions to bridge the gap between home-based security and school-based autonomy.

### Synthesis and Research Gap

Collectively, the reviewed literature suggests that a structured and nurturing environment supports children in managing their emotions. However, despite the studies on the causes and manifestations of separation anxiety, many pupils continue to exhibit behaviors such as intense crying and refusal to enter the classroom, posing challenges for teachers. Pepito and Montalbo (2019) show that existing strategies are often limited to managing daily challenges rather than lowering the levels of separation anxiety. Moreover, prior research has not examined the combined role of sensory play and self-regulated strategies in addressing separation anxiety. This gap highlights the need for comprehensive, teacher-led interventions. Thus, the present study investigates how these variables work together in predicting separation anxiety, contributing to Early Childhood Education.

### Theoretical Framework

This study is grounded in three primary theoretical frameworks: Bowlby's attachment theory, Vygotsky's socio-cultural theory, and Bronfenbrenner's ecological system theory.

Bowlby's attachment theory explains that strong emotional bonds with caregivers provide children with a secure base. When separated, particularly during school entry, children may experience separation anxiety, manifested through distress, clinginess, or withdrawal, which can hinder their participation in classroom activities.

The Socio-cultural Theory of Vygotsky emphasizes that children learn and develop through social interaction within meaningful cultural contexts. In early childhood classrooms, sensory play and peer interaction provide opportunities for guided participation, allowing children to express emotions, build relationships, and gradually develop coping skills that ease separation-related distress.

Furthermore, Bronfenbrenner's Ecological Systems Theory highlights how children's development is shaped by interconnected environments. The classroom, as part of the microsystem, plays a critical role in fostering self-regulation, enabling children to manage anxiety and adapt more effectively to the school environment.

### Conceptual Framework

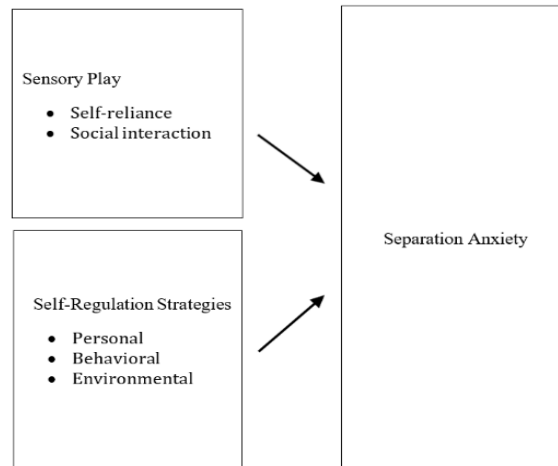


Figure 1. Research Paradigm

The conceptual framework guided the conduct of the study, the development of research instruments, and the implementation of the data collection procedures. Grounded in established developmental theories, the framework identified sensory play and self-regulated strategies as the independent variables, while separation anxiety among early childhood pupils served as dependent variable.

Anchored in Vygotsky's Socio-cultural Theory, sensory play was examined through developmental experiences such as self-reliance and social interaction. These experiences allow children to actively construct meaning through hands-on exploration and peer engagement, which support emotional expression and social adjustment. In the analysis, higher engagement in sensory play is expected to correspond with improved classroom participation and reduced anxiety-related behaviors.

Meanwhile, self-regulated strategies were framed using Bronfenbrenner's Ecological Systems Theory, emphasizing how children regulate their behavior within supportive environments. These strategies were categorized into personal, behavioral, and environmental dimensions. Personal strategies involve managing thought and emotions, behavioral strategies refer to controlling actions during distress, and environmental strategies include utilizing classroom routines and teacher support. In the analysis, stronger self-regulation is expected to enhance children's ability to cope with separation.

Separation anxiety, grounded in Bowlby's Attachment Theory, was measured through children's emotional and behavioral responses when separated from caregivers, including their ability to remain calm, engage in activities, and adjust during school hours. This reflects how disruptions in attachment may manifest within the classroom context.

The framework assumes that increased engagement in sensory play and the development of self-regulation skills support children's emotional adjustment, helping them manage separation-related stress in the classroom.

### Statement of the Problem

Despite the school year nearing its end, many early childhood learners continue to exhibit symptoms of separation anxiety, such as persistent crying, reluctance to enter the classroom, and emotional distress when separated from their parents or caregivers. These behaviors pose challenges for teachers in managing classroom routines and maintaining a supportive learning environment for young learners.

In the Philippines, strong family ties often serve as a foundation of emotional security for children. However, these close attachments may intensify emotional distress when children begin formal schooling and are required to separate from their parents or caregivers. As a result, teachers frequently encounter difficulties in helping learners adjust to the classroom environment.

Although supportive classroom environments can help children regulate their emotions, there remains limited understanding of effective teacher-led strategies that can reduce separation anxiety among early childhood learners. Sensory play and self-regulated strategies are recognized approaches that support children's emotional development and adjustment in school settings. Sensory play encourages exploration and interaction with the environment, while self-regulated strategies help children manage their emotions and behaviors.

However, limited studies have examined how sensory play engagement and self-regulated strategies collectively influence the management of separation anxiety among early childhood learners, particularly within Philippine classroom settings. Therefore, this study seeks to investigate the relationship between sensory play engagement, self-regulated strategies, and separation anxiety among early childhood learners. The findings aim to provide evidence that may guide teachers in designing supportive and responsive classroom environments that promote emotional adjustment and reduce separation anxiety.

## Research Objectives

### General Objective

To investigate the relationship between sensory play engagement, self-regulated strategies, and separation anxiety among early childhood learners.

### Specific Objectives

The study aimed to:

1. Determine the level of engagement in sensory play among early childhood learners in terms of:
  - o self-reliance
  - o social interaction
2. Determine the level of self-regulated strategies applied by early childhood learners in terms of:
  - o personal
  - o behavioral
  - o environmental
3. Determine the level of separation anxiety among early childhood learners.
4. Examine whether a significant relationship exists between early childhood learners' separation anxiety and their sensory play engagement and self-regulated strategies.
5. Identify which variable, singly or in combination, significantly predicts separation anxiety among early childhood learners.

### Research Questions

The study sought to answer the following questions:

1. What is the level of engagement in sensory play among early childhood learners in terms of:
  - o self-reliance
  - o social interaction?
2. What is the level of self-regulated strategies applied by early childhood learners in terms of:
  - o personal
  - o behavioral
  - o environmental?
3. What is the level of separation anxiety among early childhood learners?
4. Is there a significant relationship between early childhood learners' separation anxiety and their sensory play engagement and self-regulated strategies?
5. Which variables, singly or in combination, significantly predict separation anxiety among early childhood learners?

### Research Hypotheses

The following null hypotheses were tested in the study:

**H<sub>01</sub>:** There is no significant relationship between early childhood learners' separation anxiety and their sensory play engagement and self-regulated strategies.

**H<sub>02</sub>:** No single variable, or combination of variables, significantly predicts the level of separation anxiety among early childhood learners.

## Methodology

### Research Design

This study employed a predictive correlational design to examine the relationships among sensory play, self-regulation, and separation anxiety Devi et al. (2022). This design enabled the researcher to determine the extent to which the independent variables predict variations in the dependent variable (Riddle, 2018). It also provided insights into how sensory play and self-regulated strategies are associated with the levels of separation anxiety experienced by early childhood learners.

### Population and Sampling

The participants in the study were 108 early childhood learners from a private school in Cagayan de Oro, selected through proportionate stratified random sampling. The sample consisted of 15 Junior Nursery learners, 38 Senior Nursery learners, and 55 Kindergarten learners. Data were collected using a questionnaire to examine how sensory play and self-regulated strategies relate to separation anxiety across different groups.

Participants included only officially enrolled learners within the target age range (3-5 years old) who had parental or guardian consent. Learners aged 6 and above, those without consent, those absent during data collection, those with incomplete responses, and those requiring special needs beyond the scope of the study were excluded from the final analysis.

### Research Instruments

Data for this study were collected using a 5-point Likert scale questionnaire composed of six sections. The instrument measured sensory play engagement, self-regulated strategies and separation anxiety among early childhood learners.

Sensory play was assessed through two dimensions: self-reliance and social interaction, adapted from Little (2011). Self-regulated strategies were measured across three dimensions: personal, behavioral, and environmental, adapted from Berhenke (2013). Separation anxiety was evaluated using 10 items adapted from the Preschool Anxiety Scale (PAS) by Méndez et al. (2014).

The responses on the 5-point Likert scale were scored and interpreted based on the framework of Likert (1932), as discussed by Tanujaya et al. (2022)

#### A. Scoring procedure for Level of Sensory Play Engagement

| Likert Scale | Range       | Description      | Interpretation      |
|--------------|-------------|------------------|---------------------|
| 5            | 4.51 - 5.0  | Very Often True  | Full Engagement     |
| 4            | 3.51 - 4.50 | Quite Often True | Active Engagement   |
| 3            | 2.51 - 3.50 | Sometimes True   | Moderate Engagement |
| 2            | 1.51 - 2.50 | Seldom True      | Passive Engagement  |
| 1            | 1.0 - 1.50  | Not True at All  | No Engagement       |

#### B. Scoring procedure for Level of Self-Regulated Strategies

| Likert Scale | Range       | Description      | Interpretation           |
|--------------|-------------|------------------|--------------------------|
| 5            | 4.51 - 5.0  | Very Often True  | Mastery Self-Regulation  |
| 4            | 3.51 - 4.50 | Quite Often True | Advanced Self-Regulation |



|   |             |                 |                          |
|---|-------------|-----------------|--------------------------|
| 3 | 2.51 - 3.50 | Sometimes True  | Moderate Self-Regulation |
| 2 | 1.51 - 2.50 | Seldom True     | Basic Self-Regulation    |
| 1 | 1.0 - 1.50  | Not True at All | Minimal Self-Regulation  |

C. Scoring Procedure for Level of Early Childhood Learners' Separation Anxiety

| Likert Scale | Range       | Description      | Interpretation                   |
|--------------|-------------|------------------|----------------------------------|
| 5            | 4.51 - 5.0  | Very Often True  | Extreme Separation Anxiety       |
| 4            | 3.51 - 4.50 | Quite Often True | Severe Separation Anxiety        |
| 3            | 2.51 - 3.50 | Sometimes True   | Moderate Separation Anxiety      |
| 2            | 1.51 - 2.50 | Seldom True      | Mild Separation Anxiety          |
| 1            | 1.0 - 1.50  | Not True at All  | Very Low / No Separation Anxiety |

**Content Validation**

The instrument underwent content validation by three subject-matter experts, consisting of:

- a Doctorate Teacher (Early Childhood Education),
- a Doctorate Teacher (Early Childhood Education and Special Education), and
- a Doctorate Teacher (English).

Each validator possessed doctorate degree and extensive experience in early childhood instruction and curriculum evaluation.

**Reliability Testing**

This preparation included creating the survey questionnaire and conducting both validity and reliability testing. The instrument demonstrated acceptable reliability with Cronbach's alpha values greater than 0.70. Furthermore, the survey was pilot tested to refine both clarity and appropriateness. Once the steps were completed, the researcher submitted the manuscript to the adviser and to the Institutional Review Ethics Board (IREB) for approval.

**Data Collection Procedure**

The researcher then coordinated with the class advisers to schedule the data collection, which was conducted in the participants' respective classrooms. Once finalized, the data gathering proceeded, with participants completing the survey questionnaire within approximately 15 to 20 minutes under the guidance of their advisers. After all questionnaires were accomplished, the collected data were forwarded to a statistician for analysis and interpretation.

**Treatment of Data**

Questions 1, 2, and 3 employed descriptive statistics such as the mean and standard deviation. These analytical strategies facilitated the systematic summarization and interpretation of the observed levels of sensory play, self-regulation strategies, and separation anxiety among the students. By employing these methods, the researcher was able to derive meaningful patterns from the data, providing a clearer understanding of the relationships between these key variables. They gave a clear picture of central tendency and variability in educational research (Alabi & Bukola, 2023).

Question 4 was addressed using the Pearson r correlation. This method was widely used for determining the strength and direction of correlations between continuous variables. It was appropriate for evaluating the interaction between separation anxiety, sensory play, and self-regulation skills (Lemboye, 2019).

Finally, for Questions 5, multiple regression analysis was utilized. It determined how independent variables, either alone or in combination, affect a dependent variable. In this context, it aided in determining the most important elements influencing separation anxiety (Sun et al. 2023). Together, these statistical approaches enabled the study to explain trends while also investigating crucial linkages and predicting patterns in the early childhood context.

### Ethical Considerations

Ethical participation was secured through formal informed consent obtained from parents or guardians. To maintain a consistent study population and ensure the reliability of the findings, specific exclusion criteria were applied. Although children aged 6 to 8 fall within the broader early childhood range, they were excluded from the study. Additional exclusions included learners who were not officially enrolled in the school, those without parental or guardian consent, and those who were absent during the data collection period. Furthermore, participants with special educational needs requiring interventions beyond the scope of sensory play and self-regulation, as well as those with incomplete responses, were excluded from the final analysis.

To prioritize the well-being and autonomy of the participants, clear withdrawal procedures were established. Participation was strictly voluntary, and parents or guardians had the right to withdraw consent at any stage without penalty. The researcher also monitored participants for signs of discomfort or distress, and any such instance warranted immediate withdrawal to safeguard the learners' emotional well-being. Lastly, participants with incomplete data, despite reasonable follow-up, were excluded from the final dataset to ensure the integrity of the study. These measures upheld ethical standards while protecting the rights and welfare of both the learners and their guardians.

### RESULTS and DISCUSSION

This section presents and discusses the results of the study based on research questions. Findings are interpreted in relation to learning theory and relevant empirical studies to explain observed outcomes.

**Table 1.** Results of Mean and Standard Deviation for the level of engagement in sensory play among Early Childhood learners in terms of Self-Reliance

| Indicators  | Mean | SD   | Interpretation      |
|---|------|------|---------------------|
| 1. I feel alright seeing both dark and bright.                                  | 4.21 | 1.24 | Active Engagement   |
| 2. I keep my arms and hands still during activities.                            | 4.40 | 1.08 | Active Engagement   |
| 3. I notice objects quickly, e.g. things around me, chairs, tables, things etc. | 4.41 | 1.10 | Active Engagement   |
| 4. I keep non-edible items out of my mouth.                                     | 3.74 | 1.62 | Active Engagement   |
| 5. I am attentive to loud noises.   | 3.47 | 1.68 | Moderate Engagement |
| Over-all Mean   | 4.04 | 1.34 | Active Engagement   |

Table 1 presents the mean and standard deviation for the level of engagement in sensory play among early childhood learners in terms of self-reliance. The overall mean of  $M=4.04$  ( $SD=1.34$ ) corresponds Active Engagement, indicating that learners frequently demonstrate independence in managing sensory experience. Among the indicators, maintaining stillness during activities ( $M=4.40$ ) and quickly noticing objects ( $M=4.41$ ) obtained the highest ratings, suggesting that learners are generally attentive and capable of controlling their physical responses in structured tasks. In contrast, attentiveness to loud noises ( $M=3.47$ ) showed a lower mean, reflecting variability in how learners respond to auditory stimuli.

These findings imply that while learners exhibit strong self-reliance in visual and motor-related sensory tasks, additional support may be needed in managing auditory sensitivity. In educational settings, this highlights the importance of providing structured and varied sensory experiences that cater to different sensory needs. Incorporating activities such as guided sensory play and calming strategies can further strengthen independence and adaptive responses among learners. This result supports Odum and Golomb (2021) emphasizing that sensory-based activities enhance children's independence and engagement by allowing them to explore, regulate, and respond to their environment more effectively.

**Table 2.** Results of Mean and Standard Deviation for the level of engagement in sensory play among Early Childhood learners in terms of Social Interaction

| Indicators                                 | Mean | SD   | Interpretation    |
|--|------|------|-------------------|
| 1. I am attentive to loud and soft sound.  | 4.25 | 1.05 | Active Engagement |
| 2. I feel alright when someone touches me. | 4.36 | 1.15 | Active Engagement |



|   |      |      |                     |
|---|------|------|---------------------|
| 3. I engage in eye contact during social play.                              | 4.37 | 1.15 | Active Engagement   |
| 4. I acknowledge new people in the room.                                    | 4.15 | 1.31 | Active Engagement   |
| 5. I enjoy jumping, rocking, or spinning activities.                        | 4.22 | 1.22 | Active Engagement   |
| 6. I find tickling enjoyable with my family, friends and the people I love. | 4.50 | .948 | Full Engagement     |
| 7. I respond quickly to pain.   | 3.06 | 1.69 | Moderate Engagement |
| 8. I enjoy pretend play like superhero fights.                              | 4.35 | 1.31 | Active Engagement   |
| Over-all Mean   | 4.16 | 1.22 | Active Engagement   |

Table 2 presents the mean and standard deviation for the level of engagement in sensory play among early childhood learners in terms of social interaction. The overall mean  $M=4.16$  ( $SD=1.22$ ) indicates Active Engagement, suggesting that learners generally demonstrate positive social participation during sensory-based activities. Higher-rated indicators, such as engaging in eye contact ( $M=4.37$ ) and feeling comfortable with touch ( $M=4.36$ ), reflect learners' readiness to connect and interact with others. Enjoyment of playful physical interactions, such as tickling ( $M=4.50$ ), further suggests strong social responsiveness. However, the lower mean in responding to pain (3.06) indicates variability in sensory responsiveness, which may affect how some learners engage in group activities.

These findings imply that sensory play supports the development of social skills, including communication, interaction, and peer engagement (Kazemi et al. 2024). In the classroom, this highlights the importance of incorporating collaborative and play-based activities that encourage interaction while also being responsive to individual sensory differences. Providing guided peer interactions and structured play opportunities can further enhance learners' social competence and participation.

**Table 3.** Summary of Results of Mean and Standard Deviation for the level of engagement in sensory play among Early Childhood learners

| Sub-variables      | Mean | SD   | Interpretation    |
|--------------------|------|------|-------------------|
| Self-reliance      | 4.04 | .763 | Active Engagement |
| Social Interaction | 4.16 | .623 | Active Engagement |
| Over-all Mean      | 4.10 | 0.69 | Active Engagement |

Table 3 presents the summary the mean and standard deviation for the level of engagement in sensory play among Early Childhood learners. The overall mean score was  $M=4.10$  indicates Active Engagement, suggesting that learners consistently participate in sensory-based activities. Both self-reliance ( $M=4.04$ ) and social interaction ( $M=4.16$ ) were rated at the same level, reflecting a balanced development of independence and peer engagement.

These findings imply that sensory play supports not only individual autonomy but also meaningful social interaction among learners. In classroom settings, this highlights the value of integrating structured sensory activities that encourage both independent exploration and collaborative play. Such practices can enhance learners' confidence, participation, and ability to interact effectively with peers (Laurie, 2022). The study of Fan et al. (2024) affirm that sensory play promotes social skills development and cooperative behaviors, providing opportunities for turn-taking, shared experiences, and relationship building among young learners.

**Table 4.** Results of Mean and Standard Deviation for the level of self-regulated strategies among Early Childhood learners in terms of Personal

| Indicators   | Mean | SD   | Interpretation |
|--|------|------|----------------|
| 1. I keep trying when I face challenges during activities. | 4.40 | 1.03 | Advanced       |
| 2. I love sharing details about what I've been doing.      | 4.55 | .865 | Mastery        |
| 3. I practice deep breathing to help myself stay calm.     | 4.47 | .948 | Advanced       |
| 4. I drink water when I need to manage big feelings.       | 4.62 | .767 | Mastery        |
| Over-all Mean  | 4.51 | 0.90 | Mastery        |

Table 4 presents the mean and standard deviation for the level of self-regulated strategies among early childhood learners in terms of personal. The overall mean was  $M=4.51$  ( $SD=.90$ ), indicates Mastery, suggesting that learners consistently apply personal strategies to manage emotions and behavior. Higher-rated indicators, such as drinking water to manage emotions ( $M=4.62$ ) and expressing personal experiences ( $M=4.55$ ), reflect strong self-awareness and the ability to regulate emotional responses. The use of calming techniques, including deep breathing ( $M=4.47$ ), further demonstrates learners' capacity for self-soothing during challenging situations.

These findings imply that learners possess well-developed personal regulation skills, which are essential for maintaining focus, managing stress, and adapting to classroom demands (Brigman & Campbell, 2003). In educational settings, this highlights the importance of reinforcing structured emotional regulation strategies, such as mindfulness, and guided reflection, to further support learners' emotional stability and independence.

**Table 5.** Results of Mean and Standard Deviation for the level of self-regulated strategies among Early Childhood learners in terms of Behavioral

| Indicators   | Mean | SD   | Interpretation |
|--|------|------|----------------|
| 1. I approach new activities with enthusiasm.                                | 4.50 | .977 | Mastery        |
| 2. I show energy and curiosity.  | 4.33 | 1.08 | Advanced       |
| 3. I engage deeply in arts, crafts, and other activities.                    | 4.53 | .887 | Mastery        |
| 4. I am careful with new activities like arts, crafts, and other activities. | 4.44 | 1.00 | Mastery        |
| 5. I pay attention for as long as I need to.                                 | 4.54 | .833 | Mastery        |
| 6. I move around to help myself stay engaged.                                | 4.30 | 1.10 | Advanced       |
| 7. I like moving while I play or learn.                                      | 4.34 | 1.14 | Advanced       |
| Over-all Mean  | 4.43 | 1.00 | Advanced       |

Table 5 presents the mean and standard deviation for the level of self-regulation among early childhood learners in terms of the behavioral domain. The overall mean of  $M=4.43$  ( $SD=1.0$ ) indicates an Advanced level, suggesting that learners frequently demonstrate behaviors that support sustained engagement in classroom activities. High ratings in paying attention ( $M=4.54$ ) and engaging deeply in tasks ( $M=4.53$ ) reflect strong focus and task persistence. Similarly, enthusiasm for new activities ( $M=4.50$ ) indicates a positive approach to learning. Meanwhile, indicators related to movement, such as moving around to stay engaged ( $M=4.30$ ), suggest that some learners rely on physical activity to regulate attention and participation.

These findings imply that behavioral self-regulation among learners is supported by both focused engagement and purposeful movement. In classroom settings, this highlights the importance of incorporating flexible and movement-based activities that allow learners to regulate their attention while remaining actively involved. Strategies such as structured breaks, hands-on tasks, and interactive learning can further enhance engagement and behavioral control. Veazey (2022) identifies daily practices can help stay regulated, including talking with friends and exercising.

**Table 6.** Results of Mean and Standard Deviation for the level of self-regulated strategies among Early Childhood learners in terms of Environmental

| Indicators   | Mean | SD   | Interpretation |
|--|------|------|----------------|
| 1. I show my emotions when I face challenges like sad, angry, happy, excited, etc. | 4.34 | 1.14 | Advanced       |
| 2. I can follow two-step instructions.   | 4.68 | .835 | Mastery        |
| 3. I follow instructions with many steps easily.                                   | 4.53 | .834 | Mastery        |
| 4. I use different rules to finish a task.   | 4.25 | 1.26 | Mastery        |
| 5. I like to spend time and do things with others.                                 | 4.62 | .742 | Mastery        |
| 6. I stay busy and involved all day.   | 4.44 | .937 | Advanced       |
| 7. I use the sensory corner to help my self feel calm.                             | 3.88 | 1.44 | Advanced       |
| Over-all Mean  | 4.42 | 1.00 | Advanced       |

Table 6 presents the level of self-regulated strategies among early childhood learners in terms of environmental. The overall mean score ( $M=4.42$ ,  $SD=1.0$ ) indicates that these behaviors are frequently manifested reflecting an advanced level of environmental self-regulation among the learners. These findings suggest that children develop the ability to manage emotions, follow directions, engage socially, and use calming strategies. When children are guided to regulate their attention and emotions within responsive environments, they demonstrate improved engagement and reduced anxiety levels (Amali et al. 2023). This underscores the critical role of intentional classroom design and teacher facilitation in fostering self-regulated learning during early childhood.

**Table 7.** Summary of Results of Mean and Standard Deviation for the level of self-regulated strategies among Early Childhood learners

| Sub-variables | Mean | SD   | Interpretation |
|---------------|------|------|----------------|
| Personal      | 4.51 | 0.90 | Mastery        |
| Behavioral    | 4.43 | 1.00 | Advanced       |
| Environmental | 4.42 | 1.00 | Advanced       |
| Over-all Mean | 4.45 | 0.97 | Advanced       |

Table 7 presents the summary of the mean and standard deviation for the level of self-regulated strategies among early childhood learners. The overall mean was  $M=4.45$  ( $SD=0.97$ ) indicates an advanced level of self-regulation, suggesting that these behaviors are consistently demonstrated by the learners. The findings highlight that self-regulation is well developed across multiple domains. The personal domain, which obtained the highest mean, suggests that learners exhibit strong internal regulation skills such as emotional awareness and self-motivation. Meanwhile, behavioral and environmental reflect learners' ability to manage actions, follow routines, interact positively with peers, and adapt to classroom expectations. This balanced the development across domains indicates that learners are not only capable of regulating themselves internally but are also responsive to external structures and social contexts.

These results emphasize the importance of providing holistic learning environments that nurture all dimensions of self-regulation (Veazey, 2022). Teachers play a critical role in reinforcing these skills by designing activities that promote social interaction, emotional expression and decision-making. The intentional instructional strategies help learners cultivate self-regulation as a foundational skill in early childhood education.

**Table 8.** Results of Mean and Standard Deviation for the level of Early Childhood learners' separation anxiety

| Indicators   | Mean | SD   | Interpretation |
|--|------|------|----------------|
| 1. I worry that something bad will happen to me.               | 3.57 | 1.57 | Moderate       |
| 2. I cry when mom or dad drops me off at school.               | 2.89 | 1.73 | Severe         |
| 3. I feel bad when my parents are not with me.                 | 3.41 | 1.57 | Severe         |
| 4. I stay wherever my parents are in the house.                | 4.00 | 1.36 | Moderate       |
| 5. I feel sad when my parents go out without me.               | 3.26 | 1.64 | Severe         |
| 6. I feel sad when I sleep alone.                              | 2.95 | 1.75 | Severe         |
| 7. My belly or stomach hurts when my parents leave me.         | 2.45 | 1.60 | Disorder       |
| 8. I tell my parents not to go when they plan to go on a trip. | 3.09 | 1.68 | Severe         |
| 9. I call my parents when they are not with me.                | 3.39 | 1.53 | Severe         |
| 10. My head hurts when my parents leave me.                    | 2.52 | 1.59 | Severe         |
| Over-all Mean  | 3.15 | 1.60 | Severe         |

Table 8 presents the level of separation anxiety among early childhood learners. The overall mean score ( $M=3.15$ ,  $SD=1.60$ ) indicates severe level of separation anxiety, suggesting that learners frequently experience emotional distress when separated from their parents or primary caregivers. The result reflects that separation-related distress manifests in multiple ways, including emotional expressions, behavioral responses, and physical symptoms. These manifestations indicate that while separation anxiety is developmentally expected in early childhood, some learners may be experiencing it at levels that could interfere with their classroom adjustment, participation and well-being (Jreisat, 2023). These findings highlight the need for establishing consistent routines, creating a secure and welcoming classroom environment, and incorporating strategies such as gradual separation, comfort objects, and designated calming areas.

**Table 9.** Results of Pearson R Correlation for the significant relationship between Early Childhood's Separation Anxiety, Sensory Play, and self-regulated strategies

| Variables                  | N   | R    | P-value | Interpretation  | Decision               |
|----------------------------|-----|------|---------|-----------------|------------------------|
| Self-Reliance              | 108 | .153 | .113    | Not Significant | Reject null hypotheses |
| Social Interaction         | 108 | .070 | .471    | Not Significant |                        |
| Engagement in sensory play | 108 | .135 | .162    | Not Significant |                        |
| Personal                   | 108 | .081 | .405    | Not Significant |                        |
| Behavioral                 | 108 | .085 | .380    | Not Significant |                        |
| Environmental              | 108 | .238 | .013    | Significant     |                        |



|                           |     |      |      |                 |  |
|---------------------------|-----|------|------|-----------------|--|
| Self-Regulated Strategies | 108 | .146 | .129 | Not Significant |  |
|---------------------------|-----|------|------|-----------------|--|

Table 9 presents the Pearson r correlation analysis examining the relationship between early childhood learners' separation anxiety, sensory play, and self-regulated strategies. The findings reveal that among the variables tested, only environmental self-regulated strategies ( $r=.238, p<.05$ ) indicate a statistically significant correlation with learners' separation anxiety ( $p<.05$ ). Consequently, the null hypothesis is rejected.

This significant relationship suggests that the classroom environment plays a critical role in managing separation anxiety. Specifically, it implies that by designing a safe and nurturing school environment, educators can influence the levels of anxiety experienced by learners. Furthermore, establishing consistent routines and providing emotional support can significantly reduce separation anxiety in young children (Jreisat, 2023). This aligns with Bronfenbrenner's Ecological System Theory, which posits that child development is deeply influenced by various environmental systems. This underscores the educators' role in cultivating an environment that actively supports a child's emotional well-being. Creating sensory-rich environments provide children with necessary tools to self-regulate effectively.

**Table 10.** Results of Multiple Regression for the variables that singly or in combination best predict the Early Childhood learners' separation anxiety

| Variables   | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. | Interpretation  |
|---|-----------------------------|------------|---------------------------|-------|------|-----------------|
|   | B                           | Std. Error | Beta                      |       |      |                 |
| (Constant)  | 1.89                        | .806       |                           | 2.34  | .021 | Significant     |
| Self-Reliance   | .133                        | .149       | .100                      | .890  | .376 | Not Significant |
| Social Interaction  | -.078                       | .182       | -.048                     | -.426 | .671 | Not Significant |
| Behavioral  | -.227                       | .438       | -.145                     | -.518 | .606 | Not Significant |
| Environmental   | .813                        | .386       | .503                      | 2.10  | .038 | Significant     |
| Self-Regulation Strategies                                | -.341                       | .712       | -.197                     | -.479 | .633 | Not Significant |
| R=.301 R <sup>2</sup> =.091 F(5, 103) = 2.05 P-value=.077 |                             |            |                           |       |      |                 |

Table 10 presents the results of the multiple regression analysis, identifying which variables, singly or in combination, best predict separation anxiety among early childhood learners. The analysis yielded a model of  $F(5, 103) = 2.05, p=.077$ , with an  $R^2 = .091$ . The study revealed the importance of the caregivers and teachers in designing an environment where they follow routines and have calming spaces where learners can navigate and explore, as these help lower their level of separation anxiety. Structured routines provide predictability, which is particularly beneficial for children as it fosters a sense of security. This aligns with the study by Jreisat (2023), which suggests that consistent routines and emotional support can significantly mitigate separation anxiety in young children.

**Conclusions**

Based on the analysis and interpretation of the data, the following conclusions were drawn.

1. Early childhood learners demonstrate an active level of engagement in sensory play, particularly in terms of self-reliance and social interaction. These findings indicate that sensory play activities support children's independence, exploration, and collaborative interaction within the classroom environment.
2. The results indicate that early childhood learners demonstrate a mastery level of personal self-regulated strategies and an advanced level of behavioral and environmental self-regulation. This suggests that learners are capable of managing their emotions and behaviors during classroom activities when provided with supportive routines and structured learning environments.
3. The findings further reveal that early childhood learners exhibit a severe level of separation anxiety, characterized by emotional discomfort when separated from their parents or caregivers. While separation anxiety is considered a natural developmental phase (Jreisat, 2023), the presence of persistent distress highlights the need for supportive classroom interventions.
4. The correlation and regression analyses indicate that the environmental dimension of self-regulated strategies significantly influences separation anxiety among early childhood learners. This finding underscores the

importance of structured classroom environments, predictable routines, and supportive teacher guidance in helping children regulate their emotions and adapt to school settings.

- Overall, the study demonstrates that the classroom environment plays a critical role in reducing separation anxiety among early childhood learners. In line with Bronfenbrenner's Ecological Systems Theory, children's emotional development is shaped by the environments in which they interact (Panahandehpour et al. 2023). Therefore, nurturing and well-structured early childhood classrooms may significantly support learners' emotional well-being and adjustment to school.

## Recommendations

Based on the conclusions of the study, the following recommendations are offered.

- Educational policymakers may develop guidelines and support programs that encourage early childhood institutions to design classroom environments that include sensory play areas, calming spaces, and structured routines that promote emotional regulation among learners.
- School administrators may support teachers through professional development programs that focus on sensory-based learning strategies, emotional regulation techniques, and classroom management approaches that help reduce separation anxiety among young learners.
- Early childhood teachers may integrate sensory play activities and self-regulation strategies into classroom routines, such as establishing sensory corners, calm-down areas, and guided emotional regulation activities that help learners manage distress during separation from caregivers.
- Parents and caregivers may collaborate with teachers in reinforcing emotional support strategies at home and in school to help children gradually adapt to separation during the early stages of formal schooling.
- Future researchers may explore additional factors influencing separation anxiety, such as parenting practices, classroom climate, or peer relationships, and may conduct longitudinal or experimental studies to further examine the effectiveness of sensory-based interventions in early childhood education.

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