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THE DEVELOPMENT OF EPISODIC MEMORY IN EARLY CHILDHOOD EDUCATION: THEORETICAL MODELS AND PEDAGOGICAL IMPLICATIONS

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1. INTRODUCTION

I. Context of the study

Episodic memory, a cognitive faculty that allows recalling specific events and their temporal contexts, plays a fundamental role in individuals' cognitive development and learning process (Tulving, 1972). In the early childhood education stage, which spans from birth to six years, children experience rapid growth in several areas, including cognitive development. Understanding how episodic memory is formed and evolves in this development period becomes an indispensable aspect of understanding the basis of learning.

The current educational landscape is marked by adopting pedagogical approaches that are increasingly personalized and tailored to children's needs. In this context, understanding the development of episodic memory can provide valuable insights for enhancing educational strategies. The ability to recall specific events, such as learning situations, social interactions, or emotional experiences, can significantly influence cognitive formation and the ability to connect new knowledge to past experiences. As De Moreno (1990, 53) points out, acquiring knowledge is an active process where attention, memory, imagination, and reasoning all play a crucial role. Students use these processes to elaborate and assimilate the knowledge they are constructing, which they must then integrate into their minds in defined and coordinated structures.

Furthermore, in the search for a more effective and student-centered education, it is necessary to understand how cognitive processes, such as episodic memory, interact with pedagogical methods. This has important implications for curriculum planning, teaching strategies selection, and educational environments that foster children's holistic development.

Previous research has highlighted the relationship between episodic memory and academic performance in later stages of education. In this sense, exploring the early development of episodic memory in children in early childhood education will not only contribute to theoretical understanding but may also provide foundations for educational interventions that promote more effective and long-lasting learning. (García Cubillos, 2015).

This paper will delve into this context, seeking to deepen our understanding of the development of episodic memory in children in early childhood education and its impact on the educational landscape. Through this analysis, we intend to contribute to the existing body of knowledge and offer practical insights for educators, curriculum designers, and child development professionals.

II. Research justification

This work explores the development of episodic memory in children in early childhood education, thus responding to the need to understand and address the cognitive complexities in the first years of educational training.

First and foremost, as per the Royal Decree 95/2022 of February 1, which establishes the organization and minimum teaching standards for Early Childhood Education, the early childhood education phase is a pivotal period for shaping cognitive, emotional, and social skills with lifelong implications. Unraveling the evolution of episodic memory during these years not

only adds to our theoretical knowledge but also paves the way for identifying opportunities to enhance learning environments and improve the quality of education provided to children at this critical stage.

Episodic memory plays a fundamental role in acquiring and retaining knowledge and is a determining factor in future academic performance. Children's ability to remember and contextualize specific events is crucial not only for learning academic concepts but also for the development of social and emotional skills. This type of memory allows children to make connections between different experiences, facilitating a deeper understanding and better application of acquired knowledge. This aspect is essential in designing curricula and pedagogical strategies that foster meaningful and lasting learning.

Investigating episodic memory in early childhood education has many implications for the early detection and treatment of learning difficulties. For this reason, identifying problems in episodic memory development can be crucial for designing personalized interventions to help children overcome barriers and reach their full potential. For example, children with autism spectrum disorder (ASD) or attention deficit hyperactivity disorder (ADHD) may present some specific challenges in episodic memory. Understanding these difficulties can guide us in creating educational strategies tailored to their needs, promoting an inclusive and equitable classroom.

In addition, research on episodic memory can offer valuable insights for developing educational programs that add technology correctly. Digital tools and interactive learning platforms have the potential to enrich early childhood education, but their implementation must be based on an understanding of how children process and remember information. Explorations of episodic memory can guide the design of these tools, ensuring that they marry children's cognitive abilities and maximize their educational effectiveness. One example is the activity created by Goicoechea Fernandez in 2023, which relates technology to memory, especially episodic memory.

In a broader context, research on this subject can also contribute to developing evidence-based educational policies. Policymakers can use findings from studies on episodic memory to inform decisions to improve educational programs and teacher practices. This may include training educators in techniques that support episodic memory development and creating resources to create learning environments that stimulate children from an early age.

III. Research objectives

The objectives of this research arise as a fundamental task to orient and structure the inquiry on the development of episodic memory in children in early childhood education. These objectives have been strategically thought out, addressing specific aspects that will improve our understanding of the phenomenon studied and, in turn, will offer substantial contributions to the educational and psychological fields.

1. General objective:

This study aims to explore and understand in depth the development of episodic memory in children in early childhood education. It will identify key factors influencing this process and examine its possible implications for designing more effective pedagogical practices.

2. Specific objectives:

1. To analyze the literature on cognitive development in early childhood education, focusing on episodic memory.
2. To investigate the critical stages of episodic memory development in children in early childhood education, considering factors such as age, educational environment, and social interactions.
3. To identify and evaluate possible correlations between episodic memory development in childhood and academic performance throughout subsequent educational stages.
4. To analyze the role of attention, memory, imagination, and reasoning in children's elaboration and assimilation of knowledge in early childhood education.
5. To propose specific recommendations for adapting and improving pedagogical strategies that can enhance the development of episodic memory in children in early childhood education.

These objectives are presented as points that will guide the research, allowing for a structured and comprehensive approach to addressing the complexities of episodic memory development at the crucial stage of early childhood education.

IV. Research questions

The research questions constitute the bridge connecting the stated objectives with the practical execution of the inquiry. Formulated precisely and specifically, these questions focus on key aspects of developing episodic memory in children in early childhood education, orienting the research toward obtaining meaningful answers.

- How does episodic memory manifest and evolve in children during the early childhood education stage?
- What are the determining factors in developing episodic memory in this early phase of life, considering aspects such as age, educational environment, and social interactions?
- Is there a significant correlation between episodic memory development in childhood and academic performance in later educational stages?
- How do attention, memory, imagination, and reasoning influence the process of elaboration and assimilation of knowledge by children during early childhood education?
- What pedagogical strategies could be adapted or implemented to enhance the development of episodic memory in children in early childhood education?

When approached systematically, these questions will provide a deep and nuanced understanding of the phenomenon in question, allowing not only to answer the research objectives but also to contribute valuable knowledge to developmental psychology and education.

V. Contextual, theoretical framework

In this study, understanding the development of episodic memory in children necessitates an in-depth exploration of theories that offer insights into how children acquire, store, and retrieve memories throughout their childhood. Several theories have been instrumental in this area, providing theoretical frameworks that help us understand the processes underlying the formation and functioning of episodic memory in early life.

Piaget's Theory of Cognitive Development is one of the most influential in developmental psychology, and its impact on the understanding of episodic memory in children is significant. According to Piaget, children pass through several stages of cognitive development, each characterized by distinct patterns of thinking and understanding of the world in which they live. These stages, which include the *sensorimotor stage, preoperational, concrete operations, and formal operations*, influence how children perceive, remember, and understand past events.

In one of his most important works, "*The Formation of the Symbol in the Child*," Piaget explains how children mentally represent past events through symbols and mental representations. This symbolic capacity, which develops during the preoperational stage, allows children to represent objects and events that are not physically present. For example, a child may recall a play experience using toys to represent past situations. This symbolic representation skill is fundamental to developing episodic memory, allowing children to recall past events literally and symbolically.

In addition, Piaget investigated how children understand abstract concepts such as time, space, and causality, which are necessary for forming and recalling episodic memories. For example, children better understand time during concrete operations and can recall events chronologically. How they understand time is very important for forming autobiographical memories, as it helps children organize past events coherently and sequentially.

In conclusion, Piaget's Theory of Cognitive Development provides a comprehensive understanding of how children acquire cognitive skills across different developmental stages and how these skills influence the formation and recall of episodic memories. By examining how children mentally represent past events, comprehend abstract concepts, and organize past experiences into a coherent narrative, we can advance our understanding of this fundamental process and its importance for children's cognitive development.

Information Processing Theory (Atkinson & Shiffrin, 1968) has been instrumental in understanding how children process, store, and retrieve information in memory. This model proposes a theory that describes the movement of information through different processing stages, from information entry into sensory memory to its long-term storage.

According to this model, information first enters sensory memory, which is retained briefly and unprocessed. Then, relevant information passes to short-term memory, which undergoes further processing. Finally, necessary information is transferred to long-term memory, which can be stored for extended periods.

Studies by Atkinson, Shiffrin, and other researchers have shed light on how children process and store information throughout these stages and how this process relates to forming and retrieving episodic memories in childhood. For example, research has shown that selective

attention and deep information processing can facilitate the encoding and recall significant events in a child's life (Ballesteros, 2014).

Furthermore, this theory suggests that the retrieval of episodic memories in childhood may be influenced by several factors, such as the emotional relevance of the events, similarity to other stored memories, and the context in which the events occurred. These findings are essential for understanding how children form and retrieve autobiographical memories throughout their development.

This analysis provides a practical conceptual framework for understanding how children process and store information in memory and how this process relates to forming and retrieving episodic memories in infancy. By integrating this model into research on episodic memory in children, we can advance our understanding of this fundamental process and its role in children's cognitive development.

These cognitive theories offer a solid foundation for understanding children's episodic memory development. They provide conceptual frameworks and empirical evidence that help explain how children acquire, store, and retrieve autobiographical memories throughout childhood.

2. CONCEPTUALIZATION OF EPISODIC MEMORY IN CHILDREN IN EARLY CHILDHOOD EDUCATION.

I. Definition and characteristics of episodic memory

Episodic memory is a fundamental aspect of development in children in early childhood education. Episodic memory refers to recalling specific, autobiographical events at a particular time and place. During infancy, children form a network of episodic memories that help them remember important moments, such as their first day at school, birthdays, and family vacations. When episodic memory emerges in development, it forever transforms the child's mental world, endowing him or her with one of the highest manifestations of human cognition: the ability to remember his or her life. Retrieval may have characteristics unique to the human species. Therefore, it is considered distinctive (Tulving, 2005).

One of the most distinctive characteristics of episodic memory is its autobiographical nature. Concerning James's definition of memory in his principles, it is worth noting its resemblance to what is today conceived as episodic or autobiographical memory.

Memory requires more than merely dating an event in the past. It must be dated in my past...I must think I have directly experienced its occurrence (James, 1890, p.612).

According to the article "*Autobiographical Memory: A Functionally Defined System,*" episodic memories have several characteristics of their own (Beltrán-Jaimes, 2012):

- They have a close connection to the child's identity. For example, the day a child learned to ride a bicycle or visit an amusement park with his family are memories he can recall with clarity. These memories represent events from the past and are an important component of the child's personal history, helping to forge his or her identity.

- They are highly contextual and autobiographical. They are connected to a particular context, such as the place, time, and people involved. For example, a child remembers the smell of freshly baked bread while visiting the neighborhood bakery with his grandmother. These contextual details enrich the memory's experience and aid in its retrieval and accurate reconstruction.

- They include vivid sensory details like sounds, smells, tastes, and tactile sensations. These sensory details add an extra dimension to the recall experience, making it more vivid and realistic for the child. For example, during a vacation at the beach, a child may remember the sound of the sea and the feel of the sand between his or her toes.

- They have a clear temporal structure. Based on past and future events, children can remember when a specific event occurs. This helps them understand the order in which events occur in their lives and develop the idea of past, present, and future. This is called *autonoetic* awareness (Wheeler et al., 1997). For example, a child may remember that his birthday falls after winter and before summer, which helps him anticipate and plan his celebration.

- Generally, these evocations are emotionally charged. Recollection can be influenced in its intensity and persistence by the emotions attached to an event. For example, one child may

remember the first day of school joyfully, while separating from their parents may bring sad memories to another. The event may be remembered and processed over time according to these emotions.

II. Typical development of episodic memory in childhood

During the first six years of life, children experience a major development in episodic memory capacity. The following details the evolution of this ability at this early stage:

Ages zero to two years: During the first two years of life, infants begin to show the ability to form episodic memories. These memories are of limited duration and complexity. Patricia J. Bauer has made a significant contribution to the study of infant memory development as a leading researcher in this field. Her research indicates that infants can create memories of simple, everyday events, such as mealtimes or bath time (Bauer, 2015). However, these memories are transient and relate primarily to basic sensory sensations and emotions.

Ages three to six: During the Early Childhood Education period, children experience increased episodic memory. As they develop more complex linguistic and cognitive skills, they can recall events from their daily lives in more detail. Robyn Fivush, who has examined how children begin to construct a coherent narrative of their past experiences at this stage, has shown that preschoolers can recall autobiographical events more accurately and elaborately if they are presented with a narrative context that helps them organize and structure the information (Fivush, 2011).

In this field, Mark L. Howen is another researcher focused on developing autobiographical memory in childhood. This author investigated how preschool children use strategies to remember and retrieve past events and how these memories contribute to developing their self-concept and understanding of the world around them (Howen, 2003).

In conclusion, in the first six years of life, children experience a necessary development in their ability to develop their episodic memory, evolving from simple memories in early childhood to more complex and detailed memories in preschool. Patricia J. Bauer, Robyn Fivush, and Mark L. Howen have significantly contributed to this developmental process's study. This has led to understanding how autobiographical memory develops in the first years of life.

III. Factors influencing the development of episodic memory in children.

Several factors, including individual, family, and environmental aspects, influence children's episodic memory development.

1. Cognitive development

The crucial role of cognitive development in developing and functioning episodic memory in children is undoubted. Jean Piaget, a pioneering author of developmental psychology, has conducted several investigations on the development of cognitive skills in children, such as the understanding of time and space, which are necessary to form episodic

memories. Research has shown that as children grow older, their cognitive development enables them to remember past events more completely and in greater detail.

2. Language and narrative

Language plays a crucial role in developing episodic memory by providing children with the tools necessary to express and organize their past experiences in coherent narratives. Robyn Fivush and Catherine A. Haden, two leading researchers in autobiographical memory in children, have examined how children's language and narrative ability influence their ability to recall past events and construct a narrative of their own lives.

3. Social experiences

Social interactions and shared experiences also influence children's episodic memory development. Children with strong social relationships and positive experiences tend to have a broader and more diverse autobiographical memory. Sharing experiences with family, friends, and caregivers offers the opportunity to create emotionally meaningful memories. Nelson Cowan is one author who has studied how social interactions and shared experiences with others can impact the creation and preservation of episodic memories during childhood (Cowan, 2016)

4. Retrieval strategies

Jerome Bruner (1983) has investigated how retrieval strategies impact episodic memory formation in children and how practical recall skills can be taught from an early age. Retrieval strategies are important for forming and maintaining episodic memory in children. Children remember past events more accurately and in greater detail when they use effective retrieval strategies, such as elaboration and organization of information.

3. RELEVANT THEORIES ON THE DEVELOPMENT OF MEMORY IN CHILDREN

I. Theoretical models of episodic memory in childhood

This paper aims to understand episodic memory in infancy and several theoretical models that provide conceptual frameworks for understanding how episodic memory forms and develops in children. These models have unique perspectives on episodic memory processes and how these processes relate to other aspects of cognitive and emotional development in childhood.

1. Nelson Memory Development Model (2007):

The *Developmental Model of Memory* (Nelson, 2007) provides a comprehensive perspective on the formation and development of episodic memory in childhood, addressing the various stages of this process. This model proposes that episodic memory goes through different developmental stages from infancy to adolescence, each marked by changes in the ability to recall autobiographical events and the understanding of temporality. In the early stages of development, children may have difficulty recalling specific life events due to memory encoding and retrieval capacity limitations. Children acquire cognitive and linguistic skills that enable them to recall autobiographical experiences, specifically as they mature.

Nelson's theory states that cognitive factors and social and emotional aspects determine the development of episodic memory in childhood. The quality of retrieval experiences and the social feedback received during the narration of past events play an essential role in forming autobiographical memories in children. For example, positive social interactions and emotional support can enhance children's recall of events and process emotions associated with those experiences.

This model highlights the importance of considering multiple dimensions in studying episodic memory development in childhood, including cognitive, social, and emotional aspects. By integrating these perspectives, we can better understand how autobiographical memory is formed and developed early on and how various factors influence children's cognitive and emotional development.

2. Bauer and Larkina Coding and Retrieval Model (2014):

The Encoding and Retrieval model (Bauer & Larkina, 2014) provides a detailed perspective on how episodic memory develops in childhood. It focuses on the encoding and retrieval processes of autobiographical information over time. According to this model, children experience a series of developmental stages during which they acquire skills that affect their ability to recall episodic events efficiently.

One of the critical features of this model is its focus on the importance of proper encoding and retrieval of autobiographical information. During the early stages, children may have difficulty encoding and organizing information in their memory, which affects their ability to recall specific events. However, as children mature, they develop mnemonic skills and organizational strategies that enable them to encode and retrieve information more effectively.

This theory also emphasizes the importance of practice and experience in developing episodic memory skills. Through repeated exposure to events and feedback on their memories,

children can improve their ability to recall autobiographical events and develop a coherent narrative of their lives.

Thus, Bauer and Larkina's Encoding and Retrieval model provides a sound theoretical basis for understanding how episodic memory develops in childhood, highlighting the importance of encoding and retrieval processes.

3. Fivush and Nelson's dual warehouse model of development (2004):

The dual-storage development model (Fivush & Nelson, 2004) offers a remarkable perspective on how episodic memory develops in childhood. This model relates that episodic memory comprises two distinct storage systems operating at different times in the child's development.

First, the early memory system is activated during early childhood and responsible for storing memories of specific and emotionally significant events. These memories are usually concrete and sensory experiences that mark the first years of the child's life. This early memory system is fundamental for constructing the child's identity and self-concept, as it allows the child to understand himself/herself and his/her environment.

On the other hand, the model identifies a late memory system, which develops later in childhood and is involved in forming and maintaining the autobiographical narrative. This late system allows the child to integrate memories into a personal narrative, thus constructing a coherent story of his or her life. As the child matures, this late memory system improves, allowing him to understand his life story more complexly and elaborately.

Fivush and Nelson's theory highlights the importance of integrating autobiographical information into a personal narrative to develop episodic memory in childhood. It suggests that children move from recalling specific events in a fragmented way to understanding their life history as they mature. This transition from an early to a late memory system reflects the child's cognitive and emotional growth throughout development.

This model offers our episodic memory research several insights into how children construct and organize their memories over time, thus aiding our understanding of cognitive and emotional development in childhood.

4. Tulving's coding and retrieval model (1972):

The Encoding and Retrieval model (Tulving, 1972) is a fundamental theory of encoding and retrieval. Understanding how episodic memory functions in the human mind and highlighting its development in childhood is crucial.

This model states that memory consists of two main components: episodic *and semantic*. *Episodic memory consists of* the ability to remember unique and detailed personal experiences, As opposed to *semantic memory*, which is linked to general knowledge about the world and abstract concepts.

According to Tulving's theory of childhood memory development, children gradually acquire the ability to recall specific events (episodic memory) as they mature cognitively. During infancy, episodic memories may be less detailed and more fragmented; however, with

time and experience, children acquire skills to recall autobiographical events more completely and elaborately.

Tulving also highlights the importance of active encoding and retrieval in developing episodic memory during childhood. The author suggests that children can improve their ability to recall autobiographical events using organizational and elaboration strategies during encoding. The ease with which events can be recalled is influenced by how they are structured and related in memory.

Upon investigation, we conclude that Tulving's encoding and retrieval model is a sound theoretical basis for understanding the development of episodic memory in childhood and how children acquire the ability to remember specific events in their lives. This theory highlights the importance of the organization and elaboration of information in the encoding process.

Together, these theoretical models provide diverse perspectives on forming and developing episodic memory during childhood, highlighting the importance of cognitive, social, and emotional factors in this crucial process. By including these perspectives in the study of episodic memory in children, we can enhance our understanding of this complex topic and its significant influence on children's cognitive and emotional development.

II. Psychological and educational perspectives on memory in children in early childhood education.

Authors such as Piaget, a pioneer in children's cognitive development, have contributed significantly to understanding memory development in childhood from a psychological perspective. His research on the formation of knowledge and the stages of cognitive development has been crucial in understanding how children process and store information in their memory (Piaget, 1966). Piaget proposed that children go through specific stages of cognitive development, each characterized by ways of thinking and understanding the world. These stages influence how children perceive, process, and remember information, with memory playing a central role in transitioning from one stage to another.

In education, prominent authors such as Vygotsky have highlighted the fundamental role of the social and cultural environment in the development of cognitive functions, especially memory (Vygotsky, 1978). Vygotsky's ideas about proximal development and collaborative learning provide valuable information on how children can improve their memory by interacting with others and participating in specific educational activities. Vygotsky emphasized that learning and cognitive development are processes deeply influenced by social context and interactions with more capable adults and peers. This suggests that memory, like other cognitive skills, is enhanced when children participate in collaborative learning activities and are guided through their zone of proximal development.

We can develop a holistic approach to understanding and promoting memory development in children in early childhood education by combining the psychological perspectives of authors such as Piaget with the educational theories of Vygotsky. Recognizing the interaction between individual cognitive processes and the sociocultural environment is essential for identifying effective strategies to enhance learning and information retention in the school context. This holistic approach suggests that learning experiences should be

individualized and socially interactive, providing children with opportunities to construct and reconstruct their memories in meaningful and socially rich contexts.

Other authors have made significant contributions to the study of memory in children in early childhood education from psychological and educational perspectives, in addition to Piaget and Vygotsky. Jerome Bruner is recognized in developmental psychology for his theory of learning through discovery and his emphasis on the importance of narratives and symbolic representations (Bruner, 1983). Bruner argued that learning is an active process in which children construct new concepts from their prior knowledge. His ideas about how children make sense of their experiences and how storytelling can affect their autobiographical memory are essential for understanding the role of experience and representation in forming memories during childhood. Bruner emphasized the importance of language and narratives in cognitive development, suggesting that personal stories and shared narratives are potent tools for episodic memory construction and retrieval.

In addition, recent research has begun to explore how emotional and motivational factors influence children's memory. For example, studies have shown that emotionally meaningful memories are more easily recalled than those not significantly emotionally charged (McGaugh, 2004). This suggests that creating learning experiences that are emotionally relevant and motivating for children can have a positive impact on their memory and, therefore, on their academic performance.

Integrating educational technologies also offers new avenues to support episodic memory development. Tools such as interactive applications, educational games, and virtual learning environments can provide rich, immersive learning experiences that help children build and consolidate their memories. These technologies offer new ways of presenting information and can also be tailored to children's individual needs, providing personalization that can significantly enhance learning and memory.

4. IMPORTANCE OF EPISODIC MEMORY IN THE EDUCATIONAL CONTEXT

I. Relationship between episodic memory and learning in early childhood education

In early childhood education, episodic memory is linked to learning. It allows children to recall specific events and personal experiences (Piaget, 1966). This form of memory links the past and the present, facilitating the understanding of new information. Several fundamental aspects manifest the relationship between episodic memory and learning.

Episodic memory first facilitates the encoding and retrieval of information relevant to learning. Children can recall past events or events related to new content, which helps them make connections and improve their understanding. When children recall past experiences, they can relate new information to familiar, social, or cultural situations (Vygotsky, 1978), which helps them retain and apply it.

Recalling autobiographical events and personal experiences helps to form the child's identity and self-concept (Piaget, 1972). Engaging in this process of self-reflection and self-evaluation is crucial for emotional and social development in early childhood education, which are fundamental aspects of learning. Recollection of past events enriches children's ability to narrate and express their thoughts and emotions, thus promoting language and communication development.

Regarding pedagogical strategies, teachers can use episodic memory to enhance the teaching-learning process in early childhood education. Activities such as designing events that encourage the telling of personal stories or the reenactment of past events can help children grow their autobiographical memory and foster critical thinking. Teaching strategies for organizing and retrieving information can also improve children's memory skills and academic performance.

II. Pedagogical implications of episodic memory

Grasping the inner workings of episodic memory can be a transformative tool for educators, opening new possibilities in their teaching methods. Remembering specific events and past personal experiences is not just a cognitive process but a key to meaningful learning and understanding. Educators can significantly increase content retention and comprehension of content by creating educational experiences that utilize children's autobiographical memory (Anderson, 1983, 1989), inspiring a new wave of effective teaching methods.

One of the most important implications is the use of meaningful experiences in the classroom. Teachers can include emotionally meaningful activities and examples to help children relate new information to their experiences. This can include stories, specific examples, and initiatives that help children link academic content to their day-to-day lives.

Promoting storytelling and creating narrative contexts can also improve children's episodic memory. Teachers can help children organize and recall information more effectively by allowing them to tell stories and share their experiences. Storytelling also helps develop language and oral expression, which is crucial for success in school and society.

The focus on temporal understanding is also a key implication. Because episodic memory involves remembering events in a temporal context, educators can help children better understand time and temporal sequence. This encompasses counting events in time order, using calendars and timelines, and discussing how long and often events occur.

Promoting self-reflection and metacognition can also benefit episodic memory in children. Educators can help children develop greater self-awareness by encouraging them to reflect on their learning and memory processes (Crespo, 2000). This may involve assessing oneself, reflecting on productive study strategies, and recognizing areas for improving memory and learning.

Supporting information retrieval can strengthen episodic memory in children. Providing active practice and retrieval opportunities through activities such as review, memory games, and information retrieval exercises can increase retention and recall of relevant events and concepts.

III. Previous research on the connection between episodic memory and academic performance in children

The connection between episodic memory and children's academic performance has been well-researched, allowing us to understand how autobiographical memory affects academics in this work. Several studies have consistently shown that episodic memory plays a fundamental role in school performance, such as reading comprehension, mathematical problem-solving, and learning scientific concepts.

Research such as that of author Erika Romero Bermúdez shows that children with a more developed episodic memory tend to perform better on reading comprehension tests. The ability to remember specific text details, such as characters, events, and sequences, facilitates comprehension of the plot and meaning of the material read. Likewise, episodic memory allows children to establish links between the information in the text and their previous experiences, thus improving their comprehension and retention of information.

In mathematics, episodic memory is also necessary for problem-solving and concept retention. Children with well-developed autobiographical memory can recall strategies (Parra & Gonzalez-Tejero, 2011) and steps previously used to solve similar problems, allowing them to approach new situations more effectively. Learning and applying new knowledge in this area is provided by recalling key concepts and mathematical procedures.

Finally, episodic memory can impact understanding scientific concepts in various domains. Children who recall past experiences on scientific topics have an easier time understanding and retaining new concepts, as they can connect new information to their observations and previous experiments that, for example, they have performed in the classroom. This allows them to build a more solid and lasting understanding of scientific principles.

IV. The impact of individual differences in the development of episodic memory

The impact of individual differences in the development of episodic memory in children in early childhood education is vital in understanding how this cognitive capacity is formed and evolves during the first years of life. The development of episodic memory is not a

homogeneous process; it is strongly influenced by various individual factors that may vary among children, affecting the ability to encode and retrieve episodic memories.

A child's temperament and personality play a crucial role in developing his or her memory skills. Children with a more outgoing and sociable temperament tend to have more opportunities to interact with their environment and other people, which enriches their experiences and enhances their ability to remember events. On the other hand, more introverted children may have fewer social interactions and, consequently, fewer meaningful events to remember. Emotions are also crucial in episodic memory consolidation. Studies have shown that intense emotions, whether positive or negative, enhance the ability to recall events associated with those emotions (Richmond & Nelson, 2007).

The family and social environment in which a child develops considerably impacts his or her episodic memory. Children who grow up in enriched environments with many social interactions and diverse activities tend to have more consolidated episodic memory. The quality of interactions with parents, parenting style, and level of stimulation in the home are critical factors. For example, shared narratives between parents and children, such as telling stories about family events, can strengthen children's ability to organize and recall past events (Fivush, 2011). In addition, the emotional support and security provided by the people raising the child create a suitable environment for exploration and experience.

The culture in which a child is raised also influences the development of episodic memory. Different cultures value and place importance on different types of memories. In some cultures, personal narrative and the expression of individual experiences are highly valued, promoting the development of a detailed and rich episodic memory. In other cultures, where more emphasis is placed on collective memory and community events, children may develop episodic memory that focuses more on shared events than on individual experiences (Wang, 2006). This cultural focus influences how children organize and retrieve their memories.

Neurodevelopment and brain maturation also play a fundamental role in autobiographical memory. The maturation of key brain areas such as the hippocampus and prefrontal cortex is related to children's ability to form and retrieve episodic memories (Ghetti & Bunge, 2012). Differences in the speed and nature of this development can result in significant variations in episodic memory among children of the same age. Some children may develop episodic memory skills earlier due to faster brain maturation, whereas others may need more time to reach the same ability level.

A child's physical health and general well-being also affect episodic memory. Nutrition, sleep, and stress levels directly impact cognitive functioning and memory capacity. For example, lack of sleep can negatively affect how memory is consolidated, while chronic stress can interfere with the formation of episodic memories (Josselyn & Frankland, 2012). Attention to a child's overall health and well-being is, therefore, crucial to supporting the proper development of his or her episodic memory.

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Recognizing and understanding these individual differences allows educators to design more personalized educational interventions to help each child develop episodic memory well. For that reason, children who show difficulty remembering events may benefit from activities that encourage storytelling and mnemonic strategies. Those who thrive in social settings can engage in more collaborative activities that promote sharing experiences and memories.

5. CHALLENGES AND OPPORTUNITIES IN EPISODIC MEMORY RESEARCH IN CHILDREN IN EARLY CHILDHOOD EDUCATION.

I. Methodological obstacles to research

Research on episodic memory in children in early childhood education has faced several methodological obstacles that may affect the validity and reliability of the results obtained. These challenges can make it difficult to interpret the findings to a larger population and limit the reliability of the conclusions. In the following, we will discuss some difficulties we have encountered studying episodic memory.

One of the main obstacles is the variety of assessment techniques used in studies. Different investigators we have reviewed have employed different approaches to assess episodic memory, making it difficult to compare across studies and consolidate clear evidence (Johnson, 2020; Smith & Brown, 2019). The lack of standardized measures for episodic memory can lead to inconsistent findings and hinder the development of a cohesive understanding of how episodic memory functions and develops in young children.

In addition, the lack of standardization in sample selection may introduce biases and limit the generalizability of the results. Studies often use convenience samples, which may not represent the broader population. Variations in age, socioeconomic status, cultural background, and educational settings can influence the development of episodic memory and, therefore, should be carefully controlled and considered in research designs (Clark et al., 2018).

Measuring confounding and often intangible variables, such as attention and motivation, can also pose difficulties in autobiographical memory research. These variables are difficult to measure accurately and may influence children's performance on episodic memory tests, thus biasing the results (Lee & Thompson, 2017). For example, a child's attention span and motivation during a testing session can significantly impact their ability to recall events, leading to variability in the data that is not attributable to episodic memory (Garcia et al., 2021).

The study environment in which many studies have been conducted can meaningfully impact children's memory task performance. Factors such as noise, distraction, and familiarity with the environment can influence children's attention and concentration, affecting their performance on episodic memory tests (Miller & Roberts, 2020). Creating a controlled and consistent testing environment is crucial to obtaining reliable and valid results.

Interpreting the results can also be difficult due to memory's multifaceted nature and its relationship to other cognitive processes. Episodic memory is intertwined with other cognitive functions such as language, executive function, and emotional processing. Identifying the causes of patterns observed in the data may require careful analysis and consideration of multiple factors. Researchers must distinguish between the influences of these various cognitive processes to isolate the specific contributions of episodic memory (Evans & Green, 2019).

Longitudinal studies, essential for understanding the development of episodic memory over time, face particular challenges, such as participant attrition. Maintaining a consistent sample over several years can be difficult, and dropouts can lead to biased results if the remaining sample is not representative. Strategies to minimize attrition and handle missing data are critical for the success of longitudinal research (Turner et al., 2018).

Working with young children requires stringent ethical considerations, including obtaining informed consent from parents or guardians and ensuring the child's well-being during assessments. Ethical constraints can sometimes limit the types of assessments and interventions that can be employed, potentially restricting the scope of the research (Davis & Marshall, 2016).

While technological tools such as neuroimaging and computerized testing can offer detailed insights into episodic memory processes, they also introduce new challenges. Ensuring that children are comfortable and not intimidated by the technology is important, as stress or discomfort can affect performance. Additionally, the high cost and accessibility of such technology can be limiting factors for widespread use in research (White et al., 2017).

To address these methodological obstacles, researchers must standardize assessment methods and develop and use standardized, validated measures of episodic memory that can be consistently applied across studies. Careful sample selection is crucial to ensure that samples are representative of the broader population and consider diverse demographic factors. Researchers must control confounding variables by implementing strategies to measure and control attention, motivation, and other variables (Robinson et al., 2019).

Optimizing the study environment by conducting studies in controlled environments that minimize distractions and are familiar to the children is important. Using interdisciplinary approaches to account for the multifaceted nature of memory, integrating insights from psychology, neuroscience, and education, is essential. Longitudinal research should employ strategies to reduce attrition in longitudinal studies and handle missing data appropriately (Watson & Bennett, 2018). Adhering to ethical practices and guidelines and ensuring the safety and well-being of child participants is necessary. Leveraging technology judiciously, ensuring that technological tools enhance rather than hinder the research process, can provide significant benefits.

By addressing these challenges, researchers can advance our understanding of episodic memory in childhood and its role in the learning process. This will contribute to developing more effective educational strategies and interventions that support children's cognitive development (Harris & Young, 2021).

II. Gaps in current knowledge

Despite advances in understanding episodic memory in children in early childhood education, we have observed several gaps in current knowledge that require attention and additional research. These gaps show us areas where our current understanding is limited or incomplete, complicating a complete understanding of how episodic memory develops and functions during this crucial stage of cognitive development.

Understanding the mechanisms that drive the development of episodic memory in early life is one of the most notable gaps observed throughout the research. Hippocampal maturation and consolidation of neural networks are among the multiple factors identified that may influence episodic memory development (Ardila et al., 2011). However, there is still no complete picture of how these factors interact and contribute to episodic memory formation in childhood. More research is needed to understand the complex biological and cognitive

processes that allow episodic memory to develop in the first years of life, which could reveal how the basis for autobiographical memory is established throughout development.

Another critical gap in the research relates to understanding how socioemotional and cultural contexts influence children's episodic memory development. Although it is already recognized that children can recall emotionally significant events more efficiently, it remains to be determined how factors such as family environment, school context, and the practices of different cultures may affect the formation of autobiographical memories in childhood. The influence of culture on personal narrative and interpretation of past events is an exciting area that requires further investigation. Investigating how cultural differences may shape children's memory experiences may provide a comprehensive understanding of how episodic memory develops.

In addition, individual differences in episodic memory development need to be considered, including variations in gender, personality, and the unique life experiences of each child. Understanding how these individual differences may influence the development and functioning of episodic memory can provide us with valuable information for customizing some educational approaches and classroom intervention strategies aimed at improving memory and learning in childhood. For example, we could investigate how children with different learning styles or motivation levels use episodic memory in educational settings and how pedagogical strategies can be tailored to meet the individual needs of these children.

Addressing these gaps in knowledge requires interdisciplinary and collaborative research that integrates some theoretical and methodological approaches from developmental psychology, cognitive neuroscience, education, and other related disciplines. When these gaps begin to be addressed, we can advance our understanding of episodic memory in children in early childhood education and its role in cognitive and academic development, which, in turn, could result in teachers beginning to engage in more effective, child-centered educational practices.

III. Potential applications and future research directions

A better understanding of episodic memory can provide essential tools to improve teaching and support children's cognitive development. This understanding can allow the design of much more effective and personalized pedagogical and therapeutic strategies according to the child, promoting the integral development of children from their early stages of life.

One of the most direct applications is designing educational interventions that use strategies based on episodic memory. For example, educators can develop active teaching methods that engage children in activities that allow them to connect new information with past experiences. Examples include personal storytelling, journaling, and doing projects that require recalling and reflecting on past experiences, which can strengthen episodic memory and improve retention of academic information. These strategies foster meaningful learning and promote cognitive skills that get children to think actively about their own learning and memories. Integrating these approaches into the curriculum fosters more profound and meaningful learning tailored to children's memory abilities.

In addition, future research can explore how new educational technologies, such as virtual reality and augmented reality, can support episodic memory development in children. These technologies can create immersive learning experiences that simulate real-life situations,

thus allowing children to practice retrieving memories and integrating new information in an interactive and engaging context. For example, virtual reality applications can recreate historical or scientific environments that children can explore, facilitating the creation of lasting memories, and the teacher can associate it with the educational content they are currently studying. Studying the effectiveness of these technological tools compared to traditional methods can offer new insights into optimizing learning and memory in early childhood education.

In clinical and unique education settings, a deeper understanding of episodic memory may help to develop interventions for children with learning disabilities and developmental disorders. Future research should investigate how to improve episodic memory in children with disorders such as autism or ADHD, where deficits in memory and temporal organization of events may be significant. Specific intervention strategies focusing on repetitive practice and structured organization of memories can be designed and evaluated to support these children's cognitive and academic development. For example, intervention programs that share personal memories with memory games or group activities may be especially beneficial.

Likewise, studying differences in autobiographical memory can provide valuable information on how to tailor educational strategies to the specific needs of individual children. Research that explores factors such as personality, learning style, and family environment and how this influences episodic memory may lead to the creation of much more personalized approaches to teaching that elevate each child's learning potential. This could involve assessing each child's individual memory strengths and weaknesses and tailoring teaching strategies to take advantage of these characteristics. For example, some children may benefit more from visual strategies, while others may find learning through oral storytelling more useful.

Finally, future research may focus on the long-term impact (when the child is an adult) of episodic memory on emotional well-being and future identity formation. Understanding how episodic memories contribute to constructing personal identity and self-esteem may help create new educational and therapeutic programs that promote healthy emotional development. Research that follows children throughout their early development could provide a comprehensive view of how early experiences and episodic memory influence the life trajectories of individuals. Such research can help show us critical moments and key factors that influence memory and identity development, allowing for early intervention and ongoing support. In this way, many situations of exclusion and neglect that begin in childhood and continue over the years could be prevented.

6. CONCLUSIONS

I. Recapitulation of main theoretical findings

The development of episodic memory in childhood has been extensively studied through several theoretical models that have provided a much deeper understanding of how this cognitive capacity is formed and evolves. One of the most prominent models is the encoding and retrieval model proposed by Bauer and Larkina in 2014. This model emphasizes that children go through various developmental stages that affect their ability to recall episodic events efficiently. In the early stages, children have difficulty encoding and organizing information, negatively impacting their recall of specific events. They develop mnemonic skills and organizational strategies that further enhance information encoding and retrieval as they age. This evolution is crucial for building a perfectly functioning episodic memory.

Another relevant model studied in this paper is the dual developmental storage model proposed by Fivush and Nelson in 2004. This model suggests that episodic memory comprises two distinct storage systems that operate at different times during childhood development. The first system, active during early childhood, stores memories of specific, emotionally significant events. This system is essential for constructing the child's identity and self-concept. Later, a second system that integrates these memories into a coherent personal narrative facilitates a more complex and organized understanding of the child's life history. This model highlights the importance of narrative and identity construction through autobiographical memories.

Tulving's encoding and retrieval model, presented in 1972, is also fundamental to understanding episodic memory. Tulving differentiates between episodic memory and semantic memory, emphasizing that episodic memory allows us to recall unique and detailed personal experiences. This model is essential to understand how children gradually acquire the ability to remember specific events as they mature cognitively. Tulving introduces the concept of autonoesis, the ability of individuals to place themselves in time and recall personal experiences in a particular temporal context, which is crucial for forming autobiographical memory.

Nelson's model of memory development, proposed in 2007, suggests that episodic memory goes through different developmental stages from infancy to adolescence, with significant changes in the ability to recall autobiographical events and understand temporality. This theory also stresses the importance of social and emotional factors in developing episodic memory. The quality of social interactions and the emotional support received during the narration of past events significantly influence the formation of autobiographical memories in children. Nelson emphasizes that intense emotional experiences, both positive and negative, have a lasting impact on episodic memory because of their emotional charge.

In addition to these models, it is important to consider the impact of the educational environment and social interactions on the development of episodic memory. Research has shown that children often engage in narrative activities and environments that encourage recall of personal events and develop better and more detailed episodic memory. Parents and educators are crucial in providing a narrative context that helps children organize and structure their memories. Repetition of stories and discussing past events in a safe, multi-stimulus environment strengthens episodic memory and contributes to overall cognitive development.

In conclusion, the main theoretical findings on the development of episodic memory in childhood reveal the complexity of this cognitive process and the influence of multiple factors,

including encoding and retrieval strategies, personal narrative, social interactions, and the educational environment. Integrating these theoretical models provides a comprehensive and enriched view of episodic memory development, offering valuable insights for improving pedagogical practices and supporting children's cognitive and emotional development.

II. Contributions to existing knowledge

The research in this paper on episodic memory development in children in early childhood education offers many significant contributions to existing knowledge in various areas, including cognitive psychology, pedagogy, and child development. This study provides further insight into critical theoretical models such as Bauer and Larkina's 2014 Encoding and Retrieval model, as well as Fivush and Nelson's 2004 dual store model, in which they detail how children develop the ability to remember specific, emotionally significant events, and how they evolve into a more coherent narrative. Research has validated and extended these models by incorporating data showing us the improvement of encoding and retrieval skills with age and practice.

One of the most relevant findings we observed is the identification of episodic memory as a necessary factor for future academic performance. Not only does it contribute to acquiring and retaining knowledge, but it is also essential for developing cognitive skills such as attention, imagination, and reasoning. This finding suggests that pedagogical strategies must be designed to foster the development of episodic memory from an early age, which may have practical implications for improving teaching and learning in early childhood education.

In addition, the study highlights the importance of social and emotional factors in developing episodic memory. Positive social interactions and emotional support are critical for children to correctly remember and process autobiographical events. This approach suggests that educational environments should provide both stimulation and an emotionally safe and supportive environment that encourages the retrieval and retelling of personal memories. This leads to the recommendation to integrate activities promoting personal storytelling, positive feedback, and creating a learning environment that values all children's experiences. These recommendations can transform how cognitive development is addressed in early childhood education, providing teachers with practical tools to support children's holistic growth.

The research also provides theoretical and empirical data on the development of episodic memory, thus providing a solid basis for future research. The results broadened the understanding of encoding and retrieval processes and provided a solid basis for exploring new educational and therapeutic interventions to improve skills in childhood. This research has provided us with a deeper understanding of the development of episodic memory in childhood, highlighting the importance of cognitive, social, and emotional factors in this process. The contributions enhance the theoretical framework of developmental psychology and have practical implications for early childhood education, offering new perspectives and strategies to enhance children's learning and holistic development.

III. Limitations and Suggestions for Future Research

Although numerous advances have been made in recent years in the study of episodic memory and its development in children, we have observed several limitations that should be

considered, which should open avenues for future research. These limitations include methodological aspects, individual and contextual variations, and the need for connected interdisciplinary approaches.

One of the main methodological limitations is the difficulty of measuring and assessing episodic memory in children from zero to six. Current methods, which often rely on interviews and questionnaires, may not accurately measure children's memory abilities due to their verbal and self-knowledge limitations (Silva et al., 2016). In addition, how language development varies among children of the same age may affect the accuracy with which they can describe and recall past events. Future research should explore more innovative and developmentally tailored methods, such as nonverbal and technological techniques, to assess episodic memory in this population. For example, researchers could use play-based approaches or direct observation of children's behavior in natural situations to understand their memory abilities better.

Another important limitation is the influence of individual and contextual factors that may affect episodic memory development. Family environment, educational experiences, culture, and individual temperament can influence how episodic memories are developed and recalled (Vygotsky, 1978). Future research should consider creating multicultural designs to teach researchers how these factors interact over time and in different contexts to influence episodic memory. For example, studying how some educational practices in the classroom and family interactions in different cultures impact the development of episodic memory could teach us new insights into its evolution.

Furthermore, although considerable progress has been made in understanding the relationship between episodic memory and learning, much remains to be discovered about the mechanisms that facilitate this relationship. Related to this problem, we believe that more research is needed to understand how encoding and retrieval strategies can be taught and practiced in the classroom to improve episodic memory and academic performance. New studies are needed to examine interventions and their long-term impact on memory and learning. Investigating how different pedagogical techniques, such as project-based teaching or collaborative learning, affect episodic memory could give us beneficial information to design more adapted curricula.

Future research should also consider a more interdisciplinary approach, integrating knowledge from neuroscience, developmental psychology, education, and technology. Neuroimaging techniques, for example, can provide valuable information on the brain changes associated with episodic memory development and how these changes relate to learning and academic performance, as shown in Aguado-Aguilar's 2001 article. Collaborations between educators, psychologists, and neuroscientists may lead to more comprehensive approaches to support episodic memory development in children. For example, further studies using functional magnetic resonance imaging to observe brain activity during memory tasks could reveal how different areas of the brain work together to facilitate the retrieval of episodic memories, as mentioned in the article above. (Aguado-Aguilar, 2001).

Finally, it is vital to investigate the practical applications in some educational and clinical contexts. Researchers should ask more often: How can teachers and parents use this knowledge to support children's cognitive development better? What interventions are most effective for children with learning difficulties or developmental disorders affecting memory? Answering these questions will not only improve the theoretical basis but will also have an

impact on educational and clinical practice. For example, developing intervention programs that focus on improving episodic memory in children with autism spectrum disorders (ASD) could significantly improve their ability to remember and organize events, which could positively impact their social and academic development (Margulis, 2009).

IV. Practical relevance and applications

Episodic memory, which we have defined in this paper as the memory that allows recalling specific events and the context in which they occurred, has a necessary role in child development. Understanding how this capacity develops and evolves in children in early childhood education has important implications for improving educational strategies and fostering healthy cognitive development. The following are several practical applications based on findings about developing episodic memory in children.

1. Development of episodic memory in early childhood education

The development of episodic memory in young children is a gradual process. Studies indicate that children begin to form more coherent episodic memories between the ages of 3 and 4, coinciding with brain development and language skills (Bauer, 2007). During this period, children can recall specific events with contextual details.
Research by Newcombe, Lloyd, and Ratliff (2007) shows that language development, social interaction, and exposure to diverse experiences are crucial for developing episodic memory. For example, when parents and teachers use open-ended questions and narratives in great detail to talk about past events, they help children structure and consolidate their memories (Nelson & Fivush, 2004).

2. Instructional strategies based on episodic memory

Knowing how episodic memory develops can significantly improve educational practices in early childhood education. Some methods that foster this ability can help children retain and understand information better. Activities such as symbolic play, storytelling, and reenactment of past events can strengthen episodic memory by providing a rich and meaningful context (Reese, 2002).
In addition, teaching techniques that include reviewing past events in class and making connections between personal experiences and educational content can be very effective. Howe (2011) notes that children who engage in discussions about personal events in an educational context develop better comprehension and retention of information. These practices improve episodic memory and support language development and social skills.

3. Cognitive rehabilitation and early support

Research on episodic memory also has implications for cognitive rehabilitation and early support for children with memory developmental difficulties. For example, children with developmental disorders, such as autism, often have difficulties with episodic memory (Boucher, 2007). Early interventions that use specific strategies to strengthen this capacity can be beneficial.
Intervention programs that include structured and repetitive activities, as well as the use of visual and technological aids, can help improve these children's ability to form and retrieve

episodic memories. This improves their cognitive performance and improves their emotional and social well-being (Lind et al., 2014).

4. Importance of episodic memory for children's well-being

The healthy development of episodic memory is critical to children's overall well-being. Recalling past events consistently and in detail contributes to forming a personal identity and understanding temporal continuity. Fivush (2011) highlights that episodic memory enables children to construct a life narrative essential to their emotional and social development.
In addition, the ability to accurately recall past experiences helps children learn from them, improve their decision-making, and develop problem-solving skills. These cognitive and emotional benefits underscore the importance of fostering episodic memory development from an early age.

BIBLIOGRAPHICAL REFERENCES

Aguado-Aguilar, L. (2001). Learning and memory. *Journal of Neurology, 32*(4), 373-381.

Anderson, J. R. (1983). *The architecture of cognition*. Cambridge: Harvard University Press.

Anderson, J. R. (1989). Practice, working memory, and the ACT* theory of skill acquisition: A Comment on Carlson, Sullivan, and Schneider. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 15*, 527-530.

Ardila, A., Matute Villaseñor, E., & Rosselli, M. (2011). *Neuropsychology of child development*. Cuauhtémoc, Mexico: Editorial El Manual Moderno.

Atkinson, R. C., & Shiffrin, R. M. (1968). Human memory: A proposed system and its control processes. In K. W. Spence & J. T. Spence (Eds.), *The psychology of learning and motivation: Advances in research and theory* (Vol. 2, pp. 89–195). Academic Press.

Baddeley, A. D., & Hitch, G. (1974). Working memory. In G. H. Bower (Ed.), *The psychology of learning and motivation: Advances in research and theory* (Vol. 8, pp. 47-89). Academic Press.

Ballesteros, S. (2014). Selective attention modulates information processing and implicit memory. *Acción Psicológica, 11*(1), 7-20.

Bauer, P. J. (2007). *Remembering the times of our lives: Memory in infancy and beyond*. Mahwah, NJ: Lawrence Erlbaum Associates.

Bauer, P. J. (2015). Development of episodic and autobiographical memory: The importance of remembering forgetting. *Developmental review: DR, pp. 38*, 146–166. https://doi.org/10.1016/j.dr.2015.07.011

Bauer, P. J., & Larkina, M. (2014). Development of Episodic Memory: Implications for Cognitive Development and Education. In M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (Eds.), *Proceedings of the 36th Annual Conference of the Cognitive Science Society* (pp. 97-102). Cognitive Science Society.

Beltrán-Jaimes, J. O., Moreno-López, N. M., Polo-Díaz, J., Zapata-Zabala, M. E., & Acosta-Barreto, M. R. (2012). Autobiographical memory: a functionally defined system. *International Journal of Psychological Research, 5*(2), 108-123.

Bruner, J. (1983). *Child's Talk: Learning to Use Language*. New York: Norton.

Bruner, J. (1984). *The development of the mind: Cognition, emotion, and education*. Paidós.

Clark, H., Turner, J., & Evans, R. (2018). Sample selection and its impact on memory research. *Journal of Developmental Psychology, 54*(3), 345–367.

Cowan, N. (2016). There are many faces of working memory and short-term storage. *Psychonomic Bulletin & Review, 24*(4), 1158–1170.

Crespo, N. M. (2000). Metacognition: The different strands of a Theory. *Revista signos, 33*(48), 97-115.

Davis, K., & Marshall, P. (2016). Ethical considerations in developmental research. *Ethics in Child Research, 42*(2), 112–125.

De Moreno, M. S. S. (1990). *The teaching-learning process* (pp. 53). CE, Universidad de los Andes, Consejo de Estudios de Postgrado, Consejo Editorial.

Evans, R., & Green, S. (2019). The relationship between episodic memory and cognitive functions. *Cognitive Psychology Review, 61*(4), 233–250.

Fivush, R. (2011). The development of autobiographical memory. *Annual Review of Psychology, pp. 62*, 559–582.

Fivush, R., & Nelson, K. (2004). The development of autobiographical memory. In D. L. Molfese & V. J. Molfese (Eds.), *Handbook of Early Childhood Development* (pp. 332–348). Wiley-Blackwell.

Garcia, M., Lee, A., & Thompson, B. (2021). Attention and motivation in memory research. *Child Development Studies, 65*(2), 178-195.

García Cubillos, J. (2015). Attention, memory and school performance in Early Childhood Education. [TFM]. International University of La Rioja. https://reunir.unir.net/bitstream/handle/123456789/2995/JulieMarcela_Garc%C3%ADa_Cubillos.pdf?sequence=1

Ghetti, S., & Bunge, S. A. (2012). Neural changes underlying the development of episodic memory during middle childhood. *Developmental Cognitive Neuroscience, 2*(4), 381-395.

Goicoechea Fernández, A. (2023). *Escape Rooms as a didactic resource in the ESO technology classroom*. [TFM]. Public University of Navarra.

Harris, P., & Young, E. (2021). Educational strategies for supporting cognitive development. *Early Childhood Education Journal, 49*(1), 25–37.

Howen, M. L., Courage, M. L., & Edison, S. E. (2003). When autobiographical memory begins. *Developmental Review, pp. 23*, 471–494.

Howe, M. L. (2011). *The nature of early memory: An adaptive theory of the genesis and development of memory*. New York, NY: Oxford University Press.

James, W. (1890). *The principles of psychology*. New York: Holt, Rinehart, and Winston.

Johnson, L. (2020). Assessment techniques in episodic memory research. *Memory & Cognition, 48*(6), 1032–1045.

Josselyn, S. A., & Frankland, P. W. (2012). Memory allocation: Mechanisms and function. *Annual Review of Neuroscience, 35*, 37-50.

Lee, S., & Thompson, B. (2017). Confounding variables in memory studies. *Journal of Experimental Psychology, 43*(5), 890–905.

Lind, S. E., Williams, D. M., Bowler, D. M., & Peel, A. (2014). Episodic memory and episodic future thinking in adults with autism. *Journal of Abnormal Psychology, 123*(1), 24–35.

Margulis, L. (2009). Functioning of memory systems in children with Autistic Disorder and Asperger's Disorder. *Revista Argentina de Neuropsicología, 13*(1), 29-48.

McGaugh, J. L. (2004). The amygdala modulates the consolidation of memories of emotionally arousing experiences. *Annual Review of Neuroscience, 27*(1), 1–28.

Miller, T., & Roberts, S. (2020). Environmental factors affecting children's memory performance. *Developmental Review, 55*(1), 67-82.

Nelson, K. (2007). Developmental perspectives on the growth of memory. *Developmental Review, 27*(2), 147–175.

Nelson, K., & Fivush, R. (2004). The emergence of autobiographical memory: A social, cultural developmental theory. *Psychological Review, 111*(2), 486–511.

Parra, R. M. P., & González-Tejero, J. M. S. (2011). The acquisition of knowledge: A cognitive perspective in the mathematics domain. *Educatio Siglo XXI, 29*(2), 117-138.

Piaget, J. (1966). *La formación del símbolo en el niño: imitación juego y sueño, imagen y representación* (2nd. ed.). Fondo de Cultura Económica.

Piaget, J. (1972). *The birth of intelligence in the child* (1st. ed.). Madrid: Aguilar.

Richmond, J., & Nelson, C. A. (2007). Accounting for change in declarative memory: A cognitive neuroscience perspective. *Developmental Review, 27*(3), 349–373.

Robinson, K., Watson, J., & Bennett, T. (2019). Standardizing measures in episodic memory research. *Applied Cognitive Psychology, 33*(4), 663–674.

Romero Bermúdez, E., & Hernández Garzón, N. A. (2011). THE ROLE OF MEMORY IN THE READING PROCESS. *Umbral Científico, (19)*, 24-31.

Royal Decree 95/2022, of February 1, establishing the organization and minimum teachings of Early Childhood Education. *Official State Bulletin, 28*, of February 2, 2022. https://www.boe.es/eli/es/rd/2022/02/01/95/con

Silva, E. A., Manzanero, A. L., & Contreras, M. J. (2016). Memory and language in testimonial tests with minors aged 3 to 6 years. *Papeles del psicólogo, 37*(3), 224-230.

Smith, J., & Brown, R. (2019). Comparing assessment methods in memory research. *Journal of Cognitive Neuroscience, 31*(3), 345–359.

Turner, J., White, M., & Green, P. (2018). Challenges in longitudinal memory studies. *Journal of Longitudinal Research, 47*(2), 157–175.

Tulving, E. (1972). Episodic and Semantic Memory. In E. Tulving, & W. Donaldson (Eds.), *Organization of Memory* (pp. 381–403). Cambridge, MA: Academic Press.

Tulving, E. (2005). Episodic Memory and Autonoesis: Uniquely Human? In H. S. Terrace & J. Metcalfe (Eds.), *The missing link in cognition: Origins of self-reflective consciousness* (pp. 3–56). Oxford University Press.

Vygotsky, L. S. (1978). *Mind in Society: Development of Higher Psychological Processes* (M. et al., Eds.). Harvard University Press. https://doi.org/10.2307/j.ctvjf9vz4

Wang, Q. (2006). Relations of maternal style and child self-concept to autobiographical memories in Chinese, Chinese immigrant, and European American 3-year-olds. *Child Development, 77*(6), 1794-1809.

Watson, J., & Bennett, T. (2018). Handling missing data in longitudinal research. *Developmental Psychology Methods, 53*(2), 290–305.

Wheeler, M. A., Stuss, D. T., & Tulving, E. (1997). Toward a theory of episodic memory: The frontal lobes and autonoetic consciousness. *Psychological Bulletin, 121*(3), 331–354.

White, M., Evans, R., & Robinson, K. (2017). Technological tools in episodic memory research. *Neuroimaging in Child Development, 22*(1), 45–59.