January 2017

Young Children's Articulations Of Their Metacognitive Processing During Play

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YOUNG CHILDREN'S ARTICULATIONS OF THEIR METACOGNITIVE
PROCESSING DURING PLAY

by

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A Dissertation

Submitted to the Graduate Faculty

of the

University of North Dakota

in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

Grand Forks, North Dakota

August
2017

This dissertation, submitted by Dawnita S. Nilles in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

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This dissertation is being submitted by the appointed advisory committee as having met all the requirements of the School of Graduate Studies at the University of North Dakota and is hereby approved.

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PERMISSION

Title	Young Children's Articulations of Their Metacognitive Processing During Play
Department	Teaching and Learning
Degree	Doctor of Philosophy

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Dawnita S. Nilles
June 15, 2017

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ACKNOWLEDGMENTS

First of all, I want to acknowledge and thank my committee members: Dr. Kristen Votava, Dr. Pamela Beck, and Dr. Janna Schill. Your collective and individual feedback help me to shape this document in a way I could not envision. I appreciate your dedication, not only to me but to all students.

Dr. Bonni Gourneau, without you I would not have completed this degree and achieved my dream. Your guidance, cheerleading, and gentle nudges allowed me to overcome hurdles that I thought were too large to clear. I will never be able to appropriately express my thanks and gratitude. I hope that someday I can repay you by becoming a mentor to someone like you are to me.

My parents and sisters were continually whispering in my ear, saying that I could successfully achieve this degree. My husband, Dr. Matthew Nilles, picked up the slack at home, a lot, and did not complain. He urged me to dig in and get the work done. Thank you seems like such a small thing to say, but it is from my heart.

Lastly, my daughters, Alexandra and Johanna, are both the inspiration behind my entry into graduate school. You both have many gifts and you are going to change the world someday. I hope you know learning never stops. There is always something else out there that is really interesting. Ally you have inspired me to never stop. You keep working at something until you have it figured out. Hana Sue – don't ever stop playing!

ABSTRACT

The purpose of this phenomenological qualitative research study was to hear young children's descriptions of their metacognitive processes. Research has shown that play is the foundation of a child's learning and numerous studies show that play affects all areas of a child's development. Despite this, at the time of this study, there appeared to be a scarcity of published literature in which young children were interviewed about the metacognitive processes they use while playing. Children have been found to describe their thinking through non-verbal cues. They also have been able to articulate their knowledge and understanding, analyze, and evaluate the work of their brains when their words were analyzed using a hermeneutical analysis process.

Keywords: metacognition, interviewing young children, play, qualitative research, hermeneutical analysis, naïve reading, phenomenological research

CHAPTER I

INTRODUCTION

Young children, defined as individuals under the age of 8 years (Copple &

Bredekamp, 2009), spend many hours playing. Research has identified play as an

important part of a child's learning and development regardless of with whom or what the

child is playing (Bekker, Sturm, Weaseling, Groenendall, & Eggen, 2008; Burns,

Johnson, & Assaf, 2012; Broadhead, 2010; Ghafouri & Wien, 2005; Isenberg &

Quisenberry, 2002; Moore & Russ, 2008). Saracho and Spodek (2003a) defined play as

an activity that a child engages in for the simple pleasure of doing the activity, without

regard for external reward and with limited requirements. Play has been described as

being a multifaceted (i.e., voluntary, meaningful, symbolic, and pleasurable)

phenomenon, which allows children to learn through prediction and experimentation

while developing an understanding of the social world in which they live (Fromberg,

2002).

This connection between play and learning is supported and emphasized by the

National Association for the Education of Young Children (NAEYC), which has long

held the belief that children learn through play, uses the statement, "Early years are

learning years" (NAEYC, n.d., para 1) as its registered trademark. In 2009, NAEYC

released a position statement that further emphasized the importance of play and its

connection to learning, which stated, "Play is an important vehicle for children's social,

emotional, and cognitive development, as well as a reflection of their development"
(Copple & Bredekamp, 2009, p. 14). Play describes the work conducted by children.

Research has shown that play impacts all areas of a child's growth and
development. It begins with a young infant using solitary actions (i.e., shaking a rattle)
and progresses to a child playing alongside another child with increasing levels of
interaction and cooperation (Ahn & Filipenko, 2007; Bulotsky-Shearer, Bell, Romero, &
Carter, 2012; Hoffman & Russ, 2012; Piaget, 1959; Russ & Kaugars, 2001; Saltz, Dixon,
& Johnson, 1977; Vygotsky, 1967).

By the end of the preschool years (children who have not entered kindergarten),
typically developing children are interacting with one another, collaboratively creating
elaborate play schemes leading to themes (Fromberg, 2002). This elaborate play scheme
is evident as children choose a play theme (such as playing restaurant). Together,
children determine the necessary props (i.e., table, chairs, menu, dishes, food, etc.) and go
on to create a story line (for instance, a mom and dad taking their children out to eat
pizza). The children work together to assign roles to one another. Finally, the children
play out the story line.

Each of these steps involves the children practicing specific skills. The children
must remember what was involved when they went on a recent trip to a restaurant. They
will use letters and numbers as they create a menu. The children need to problem-solve
and use conflict resolution skills as they negotiate various decisions. Language and
communication skills are necessary as they carry out a back and forth conversation.
Finally, storytelling skills are important so the child's story has a beginning, middle, and
end. The children will use a number of skills as their story unfolds, which will lead to

successful learning. Each time they engage in any type of play, their skills become stronger.

Need for the Study

While there have been research studies about children's play and learning, one aspect that has not been explored is young children's awareness and understanding of their own metacognitive skills and processes (i.e., how they think and make decisions). Of particular interest to me is how young children describe what they are thinking about when they make a decision during their play. The type of decisions children make during an act of play affects the subsequent steps of the play, and therefore the learning that occurs. Asking children directly about their decision-making/thinking process is key to understanding their metacognitive awareness.

Research shows play is important. Educators believe children learn through play. There appears, however, to be a scarcity of research regarding children's articulation of their metacognitive processes used during play. School-age children have been asked about why they enjoy play (Brown, 2009; Glenn, Knight, Holt, & Spence, 2013; Miller & Kuhaneck, 2008; Smith & Pellegrini, 2013-2015), about where they like to play (Hurwitz, 2002), and with whom they want to play (Fabes, Martin, & Hanish, 2003; Glenn et al., 2013). Researchers have asked school-age children about their thinking processes and asked them to describe how they think (Flavell, Green, & Flavell, 1995); however, it does not appear that researchers have asked preschool-age children these same questions. Additionally, researchers have not asked young children what they think about as they make decisions during their play.

Further pointing to the need for asking pre-school age children questions about their metacognitive processes, early childhood education (ECE) teacher training programs typically teach about how important play is to children's learning, and how play affects future educational success. Undergraduate coursework in teaching typically includes a message about how young children learn best through hands-on exploration of their environment. Findings from a study that examines metacognitive thinking of young children involved in play will conceivably help ECE teachers gain an understanding of how younger children perceive their own thinking processes (i.e., their own metacognitive processes) that occur during play. This understanding of a child's metacognitive awareness could help ECE teachers be more purposeful in creating environments conducive to play. It may also encourage teachers to be more cognizant of their own interactions with children, (i.e., asking questions or making comments during play in an effort to deepen children's understandings of how they make decisions). Teachers and parents being purposeful in their interactions with children will encourage the children to think more deeply about their own processing, and therefore, learn more about their own thinking processes; hence leading children to have a better understanding of how they learn and gain new skills.

Furthermore, as teachers help young children learn to articulate their own metacognitive processes, the children may then share their thinking allowing parents to gain a deeper understanding of the connection between children's play experiences and knowledge acquisition. There are still individuals who do not fully appreciate the benefits that active play and exploration of the environment provides to young children. The ability for children to be able to clearly articulate their thought processes, as a natural

result of their teachers asking purposeful questions, may subsequently result in children talking about their experiences with their parents. This activity could likely increase parents' understanding of the importance of play. In this situation, parents and others should be able to see the learning that is truly occurring, rather than just the pure joy of play.

Therefore, this study was undertaken to determine if young children are capable of articulating metacognitive processes used to further their learning and developmental growth. In addition, the study design leads to ascertaining how young children explain their thinking.

Conceptual Framework

Maxwell (2005) stated that to provide validity to a qualitative research project, one must explicitly state the conceptual framework under which the research is constructed. He explained that the conceptual framework must include a researcher's ideas and beliefs about the phenomena studied, an in-depth review of theories and research previously conducted and the specific theoretical framework guiding the study. Accordingly, as the researcher, I will explain my personal interest in this study followed by the topical research and theoretical framework through which I studied the phenomenon of young children's thinking processes at work during play.

Personal Interest

I have spent much of my adult life acting as an advocate for children regarding the importance of children's play. I have provided professional development opportunities to early childhood educators, pre-service teachers, and parents. I have articulated my beliefs in many settings in front of people who espouse the belief that,

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while children's play is important, the primary function is to allow the children to have fun. They believe that "real learning" begins when the child enters a formal educational setting.

Through my graduate coursework, I began to gain an understanding of the concept of "theory of mind" or "metacognitive development," which is the process by which individuals think about their thinking (Flavell, 1979; Proust, 2010). I began to question whether young children could articulate their thinking processes, particularly during play. I believe children are truly learning while they play, but have wondered if they have the cognitive and verbal abilities to articulate what they are thinking about, thereby showing that they are learning from the activity. I became interested in hearing how children explain their decision-making and memory processes. I wondered if young children understood their own metacognitive processes as it relates to knowledge acquisition, and, if so, how they would articulate that understanding to someone else.

Topical Research

Working along these lines, I conducted a search of the existing literature using Academic Search Premier™. This widely used search engine contains published literature from a variety of disciplines including education, psychology, and sociology. I used terms such as *young children*, *talking about/describing/explaining*, and *learning/playing* in a variety of combinations. The search results revealed no published research that specifically interviewed preschool-age children, as primary participants, about their play and/or understanding of their own thinking and learning. One study conducted by Alvestad (2011) reported enlisting teachers to interview children about what they were learning in their kindergarten classroom. The children, between the ages

of four and six years, attended a kindergarten classroom in Norway. This was the only published work found that specifically asked young children about their learning.

There were an additional 42 published works with young children as the primary participants. Researchers interviewed children about various life experiences; however, none of these research projects focused specifically on children's play and/or learning. Instead, the studies were about children's experiences living with a medical condition, household strife, domestic violence, parental substance abuse, or what it was like for them to be a refugee.

Theoretical Framework

Constructivism was the theoretical framework used in this research to study the phenomenon of children's play. A constructivist researcher believes that children build their knowledge through everyday experiences (Piaget, 1952). According to Piaget, a teacher cannot simply give knowledge to a pupil. Instead, individuals must discover their own knowledge. It is through interactions that occur between individuals or between an individual and his/her environment, which leads to knowledge acquisition. Vygotsky's (1978) work expounded upon this and explained that a child's experiences involving interactions with others, adults or children, led to acquisition of knowledge and skills. Vygotsky further explained that children first learn on a social level, which he referred to as interpsychological; later, they learn more about themselves through their interactions, which he called intrapsychological.

Children use previous knowledge to construct new knowledge. Piaget (1952) indicated that each opportunity of exploration allows children to deepen their understanding of concepts and ideas they experiment with as they are engaged in play

activity. Vygotsky (1978) stated the social learning environment, in which a child engages, contributes to or limits the knowledge gained. Children use existing knowledge as they interact with people and objects in their environment constructing new ideas, which leads to new knowledge.

Researchers have continued to study early childhood education following the constructs of the constructivist approach to learning. A common belief of constructivists is that individuals construct learning as they make sense of the world around them (Murphy, 1997). Constructivist theorists, Nunes and McPherson (2003) quoted Schwandt, "Knowledge of the world is not a simple reflection of what there is, but a set of social artefacts (*sic*); a reflection of what we make of what is there" (original quote by Schwandt, 1997, p. 20). Von Glasersfeld (1982) further stated that while interaction leads to knowledge, the method of constructing the knowledge is an individualized process built upon by a learner. According to a constructivist, children build knowledge by actively engaging with the environment in which they play (Liu & Matthews, 2005). Active engagement (i.e., play) is a key component to knowledge acquisition.

A constructivist believes that because learners construct their own knowledge, there cannot be one true belief. Rather, learners are going to individually interpret their interactions with the environment or others, and then use that information to construct their own truth. Due to a learner's previous experiences and knowledge, each person's interpretations are going to be somewhat different. Knowledge acquisition becomes a meaning-making event because learners make their own meaning from each of their experiences (Vrasidas, 2000).

Looking through a constructivist lens, I surmised that young children build knowledge and ideas about the world around them through everyday experiences and interactions, which largely involves play. Many ECE teachers understand that a child is learning while playing; however, what we do not know from prior research is if young children can articulate their learning, and if they can, how do they do so. Therefore, by asking children about their metacognitive processes, I hope to gain a deeper understanding of their cognitive development. The findings with this research could be important to early childhood educators by helping them understand the role purposeful conversations have with young children as they play. The conversations may lead to a deepening understanding of the child's thinking, learning, and metacognitive awareness.

Thus, the purpose of this study was to examine young children's understanding of their own thinking and decision making processes. Qualitative research methods included interviewing children about thinking and decision-making processes during play.

Research Questions

The following research questions focused this qualitative study:

1. How do young children describe their metacognitive process(es) when making a decision during play?

2. What are children's understandings of the role of their brain in the thinking and remembering processes during play?

Delimitations of the Study

A delimitation of this study was the narrative abilities of young children. Therefore, with insight from their preschool teacher, I invited children, teacher identified as having above average verbal skills and story-telling abilities, to participate. To help the

children be comfortable with someone not regularly in their classroom, I intentionally interviewed children who saw me occasionally but who I did not directly teach day-to-day. I recruited children from an early childhood education (ECE) site where I am the director; therefore, I was not a complete stranger to the children who participated in this study.

An additional delimitation included the sample of children recruited for participation. Children recruited were from one licensed ECE program located on a university campus in the Upper Midwest. At the time of this study, this particular program employed teachers with a bachelor's degree in ECE or a related field. The philosophy of this program was that children learn through play. The curriculum, classroom environment, and mission espoused the belief that children learn through hands-on activities that are purposefully planned and individualized to meet the needs of each child. This program acted as a training site for pre-service teachers and was a location for faculty to conduct research that would add to the growth and knowledge of the ECE field at large. For these reasons, these children may have had more advantages available to them that could have influenced their abilities than similarly aged children in other locations. I took efforts to recruit families representing a variety of cultural, socio-economic, and educational backgrounds; however, this research was limited to children enrolled in a single program who met the necessary communication qualifications, and therefore, may have been a less diverse population than would be considered optimal.

Definitions

- Early Childhood: The National Association for the Education of Young Children (NAEYC) defines the early childhood years as being birth to age 8 years old (Copple & Bedekamp, 2009).

- Play: Play involves any activity a child engages in for the simple pleasure of doing the activity, results in limited external rewards, and has few requirements placed upon it (Saracho & Spodek, 2003).

- Amygdala: The region of the brain that allows for the expression of emotions (Brown, 2009).

- Cerebellum: The region of the brain that allows for control in movement and balance (Brown, 2009).

- Dorsolateral Prefrontal Cortex: The region of the brain that allows for faster decision-making abilities (Brown, 2009).

- Mature Play: A type of play in which children substitute an ordinary object as a symbol, take on a specific role and follow the rules of that particular scenario, or is play that integrates various themes and covers a span of time.

- Dynamic Model for Play Choice: A model designed by Miller and Kuhaneck (2008) to portray the various purposes children express about play.

- Pretend Play: A unique stage in play during which young children substitute one object for another or take on a specific role during their play (Vygotsky, 1967).

- Theory of Mind: The knowledge and beliefs of how one's mind works and how it influences behaviors (Feldman, 2012). Sometimes referred to as "metacognition."

- Lexicometric: The measurement of frequency that any given word appears in a particular piece of transcribed discourse (Scheuer, de la Cruz, and Pozo, 2002).

- Metacognition: The thoughts and/or processes a person uses to affect the outcome of a decision they are making or one's ability to monitor memory, comprehension, and thinking processes (Flavell, 1979). Sometimes referred to as "theory of mind."

- Constructivism: The theory of development that children build their knowledge through everyday experiences (Piaget, 1952).

- Phenomenological Research: This method uses examined words spoken by an individual (Flood, 2010) to learn from that individual about the experiences they have been living (Finlay, 2009).

- Qualitative Research: This method of research uses people's perceptions and understandings of a particular concept, construct, or phenomenon (Stake, 2010).

- Hermeneutical Analysis: This analysis process describes the step of reading and re-reading interview transcripts to allow themes to emerge within a single transcript and across several interviews (Lindseth & Norberg, 2004).

Organization of This Study

This qualitative research dissertation has five distinct chapters. Chapter I gave basic background knowledge to assist readers in understanding the purpose and scope of this study. The chapter established the importance of play in young children's learning and development, along with the lack of research studies that have explored the thoughts, decisions, and words of young children about their metacognitive abilities. The conceptual framework outlined a lens used to guide this study for readers. The overarching research questions were outlined and delimitations were stated to allow readers to consider the validity and reliability of findings.

Chapter II provides an extensive review of the existing literature to provide readers with necessary information to understand the concept of play as a foundation in a child's growth, development, and learning. Chapter III details the methodology, specific qualitative research methods used to gather and analyze the data, and the process of selecting participants. I also provided measures utilized to ensure validity and trustworthiness. Chapter IV provides results based on the children's spoken words and body language heard and witnessed during the interviews. Chapter V discusses assertions in more detail, which were linked to the literature reviewed. This is followed by a discussion of the limitations, implications, and recommendations.

CHAPTER II

LITERATURE REVIEW

The purpose of this study was to examine young children's understanding of their own thinking and decision-making processes during play. The following review of the literature provides information regarding previous research on play itself, types of developmental growth and learning that have resulted from play, and children's words regarding their play.

Play

Research has shown all mammals engage in spontaneous acts of play (Brown, 2009; Smith & Pellegrini, 2013-2015). Brown found, while observing animals in their natural habitat that many engaged in playful behavior with one another. They shared an example about witnessing a grizzly bear, exhibiting signs of malnourishment, who playfully interacted with a sled dog rather than satisfying his hunger. The physical characteristics exhibited by both animals identified the actions as play. This interaction occurred for a length of time each day over the course of several days.

Upon examining brains of animals engaged in playful behavior, researchers found them to be structurally different from brains of animals not engaged in playful behaviors (Brown, 2009). For instance, the brains of mammals engaged in frequent and ongoing instances of play were physically larger than mammals not engaged in frequent play. Particular areas of the brain that showed significant differences included the amygdala

(which allows expression of emotion), cerebellum (which allows for control in movement and balance), and the dorsolateral prefrontal cortex (which allows for faster decision-making abilities). Additionally, in higher functioning animals, play led to the development of secondary emotions (e.g., empathy or sympathy) and a greater ability to participate in complex social interactions (Brown, 2009).

Isenberg and Quisenberry (2002) found children's play increased the neural connections within their brains. Isenberg and Quisenberry reported that the more active a child's brain was, the more neural connections found within that brain, and those connections become permanent more quickly in active brains. Brown (2009) reported that when children used more than one piece of information (coming from separate neural connectors in the brain), new ideas or solutions resulted, along with new neural connectors. This describes how learning occurs.

Play is the primary source of development in young children (Vygotsky, 1967). Isenberg and Quisenberry (2002) boldly stated that no teacher- or parent-planned activity could substitute for the learning that occurs during child-led play. Samuelsson and Carlsson (2008) stated that learning occurs simultaneously with play. Hedges (2014) concluded that children must be active in their learning and she indicated that children learned to understand their world best by being an active participant.

The simple act of playing allows children to practice challenges while risking minimal consequences (Brown, 2009). Tahmores (2011) stated children seek solutions to help them overcome difficulties during instances of play. Almon (2013), cofounder of the Alliance for Childhood, reported children express themselves best through play

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experiences when they practice new roles or work through incidents encountered in their

everyday routine.

Children need instances of teachers and parents actively engaged in their play to

improve learning outcomes (Moore & Russ, 2008; Ghafouri & Wien, 2005). To clarify, it

is critical for teachers and parents to recognize when to intervene to further the learning

occurring versus when a child needs adults to simply observe, ask questions, and be

available to support the play. For instance, Haight, Wang, Fung, Williams, and Mintz

(1999) showed that as children become more skilled in their play, it is important for

teachers and parents to be less directly involved and instead allow the children to lead

and guide their play while a teacher or parent follows. Teachers and parents need to be

present, asking prompting questions to extend the play, making suggestions for the

incorporation of props, and protecting the boundaries of a child's play (Ghafouri & Wien,

2005); all of which furthers a child's learning. At a meeting of the National Association

of Elementary School Principals, Almon (2013) stressed children's need for opportunities

to interact freely with their environment with adults nearby supporting the learning

naturally occurring through play.

Bodrova (2008) introduced the idea of a child engaging in "mature play."

Bodrova described this phenomenon as having three possible scenarios. First, it may be a

type of play in which children substitute an ordinary object as a symbol for what they are

playing (e.g., a block used as a telephone). Second, it may include situations in which

children take on a specific role and follow the rules of that particular scenario (e.g., being

the teacher as they play school). Third, "mature play" integrates various themes and

covers a span of time.

Hurwitz (2002) showed children initiated play based on the fun they could have doing the activity; the children would then continue the activity because of the feeling of enjoyment experienced. Play, while open to interpretation, does follow a process. This process includes steps such as planning and gathering materials, assigning roles to each participant, developing a story, etc. (Hurwitz, 2002). Glenn et al. (2013) reported this play process was more important to a child's learning than the actual act of playing itself. The planning and implementing process of play contributed to the expression of enjoyment experienced by a child, which led to further playing, and therefore, further learning.

An analysis of the discourse and artwork of a focus group, consisting of children seven to nine years old, showed that they identified any activity as an opportunity for play and were able to engage in play in most settings (Hurwitz, 2002). When asked, children described play as "fun" and indicated it does not have to have a particular focus or planned outcome (Brown, 2009; Glenn et al., 2013; Miller & Kuhaneck, 2008; Smith & Pellegrini, 2013-2015). Green, Crenshaw, and Langtiw (2009) found common themes among children's play, which included actions that allowed children to be nurturing, particularly self-nurturing, or acts that allowed children to work through difficult daily occurrences, such as separating from parents in the morning. Children described play as activities that allowed them: (a) to be active, (b) to create or imagine, (c) to interact with their friends and peers, or (d) to be involved in some sort of game or entertainment (Glenn et al., 2013).

Play involves behaviors that are active, dynamic, and constructive in nature. Play is an important part of the overall healthy growth and development of young children

regardless of cultural influences (Csikszentmihalyi & Bennett, 1971; Haight, Wang, Fung, Williams, & Mintz, 1999; Isenberg & Quisenberry, 2002). Haight et al. (1999) conducted two studies, including a review of existing literature regarding play in various cultures and an empirical research study involving Irish American and Chinese children. Both studies revealed that play often involved the incorporation of objects (i.e., toys) into an activity; this was particularly true for Irish American children. Researchers noted that play was important in helping children from both cultural environments meet social interaction needs and wants. This finding supported Haight et al.'s results reported in their review of the literature (Haight et al., 1999).

Some researchers have described play as purposeless, being done only for the sake of playing, and voluntary (Brown, 2009; Smith & Pellegrini, 2013-2015). Miller and Kuhaneck (2008) countered this assertion and stated that play was purposeful because the repetition of play actions led to mastery of skills. Miller and Kuhaneck developed the Dynamic Model for Play Choice, which illustrated some of the purposes of play. Utilizing this model to analyze a child at play, one could deduce a child will choose an activity based on: (a) the activity having relational and contextual characteristics important to the child (relevancy), (b) the activity providing an appropriate level of challenge, and (c) whether or not the activity is fun. The Dynamic Model for Play Choice exemplifies how children show a preference for an emotionally fulfilling and purposeful activity. According to Miller and Kuhaneck (2008), it is the interconnection of a child's preference for emotional or purposeful activities, coupled with repetition of the activity, which leads to acquiring new skills.

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Pretend Play

Pretending is an important component of children's play, which provides for some unique and important aspects of learning and development in a young child. Vygotsky (1967) stated that imagination (i.e. pretending) is an outgrowth of play, beginning during the preschool years, which can have a lifelong impact on children's development. Vygotsky (1967) emphasized, "In play a child is always above his average age, above his daily behavior; in play it is as though he were a head taller than himself" (p. 102). It would make sense that if children were functioning at a level above where they are developmentally, then learning must be occurring. Whether children are improving cognitive or language skills, learning to move their bodies in a new way, or improving skills of interaction with peers, the children are learning.

Vygotsky (1967) explained that pretend play is unique to children and not seen in animals. He explained that acts of pretend play become a part of a child's play routine during the toddler years or early preschool years. A study conducted by O'Conner and Stagnitti (2001) found that the duration of acts of pretend play increase as children get older and gain more proficient play skills.

Pretend play involves several components; the first component is a child as the pretender. The second component is a real world in which to allow a child to pretend. Children must exhibit a representation that something imagined is different from the real place in which they exist. Also, those places must be able to co-exist (a pretend world within the real world). It is imperative that a child who is pretending be aware of the real world, the mental representation of an object, and the layering of a pretend scenario

within the real world (Lillard, 1993). Lillard explained that each of these elements of pretend play leads to an activity.

Leslie (1987) described pretend play as "acting as if" something is happening or exists even when it is not or does not. Lillard (1993) defined pretend play as "the projecting of a supposed situation onto an actual one, in the spirit of fun rather than survival" (p. 349). Lillard explained that a child who is pretending might use an object to represent something different (e.g., a stick is a pencil) or imagine an object exists that does not (e.g., forming their hand as though a pencil is in it and "writing" with the pretend pencil). Pretending can also involve a child taking on a role or acting out a situation (e.g., being a mom driving a car). The act of pretending in each of these situations involves supplanting the real world with an imaginary one, which manifests through the acts of the young child (Lillard, 1993).

Learning Through Play

Several studies have explored the topic of what children learn through play. Interestingly, when describing their own play, children in kindergarten do not separate the act of play from the learning that occurs (Samuelsson & Carlsson, 2008). Children have discussed what they learn from their play as they talk about their play scheme, but they do not attribute learning new skills or knowledge to the act of playing itself (Samuelsson & Carlsson, 2008). Leong and Bodrova (2012) reported improvement in all areas of development when a child is actively engaged in well-developed play.

Cognitive Learning/Language Development

Piaget (1959) defined cognitive development as children's ability to learn new skills, knowledge, and/or abilities. He stated that children make these particular types of

gains by testing rules, concepts, and experimenting in their environment. Language development is an important part of cognitive learning because it is often through language that children can gain new knowledge as they interact with materials, equipment, and people in their environment.

Play allows a child to test rules and properties that may seem illogical or irrational (Csikszentmihalyi & Bennett, 1971; Hurwitz, 2002). Bruner (1972) indicated that children play to test ideas and rules with minimal consequences. Children use play to help them learn to live responsibly in the world around them (Tahmores, 2011).

Pretend Play

Saracho reported pretend play may lead to increased cognitive skills. As children become preschoolers they use instances of pretend play to help them learn to group and categorize objects (Saracho, 2002a; Saracho, 2002b). Supporting this, Sutherland and Friedman (2013) reported that as children engage in pretend play utilizing toy dogs, they begin to categorize the dogs based on similarities and differences in size and color.

Hoffman and Russ (2012) concluded that pretend play may lead children to exhibit increased instances of divergent thinking. They also showed that children who show a wide range of emotions during their pretend play are better able to generate more solutions when they encounter problems in their play than children who do not show as many emotions.

Saltz et al. (1977) provided disadvantaged preschool-age children with opportunities to engage in pretend play activities based on everyday experiences (e.g., going to a grocery store or a doctor) or special outings (e.g., field trips to a fire station or zoo). Saltz et al. showed that these children's IQ test scores increased following their play

experiences. The children could sequence events and identify reality from fiction more accurately, control their impulsive behaviors, and show an increase in empathetic behaviors toward their peers following their play experiences (Saltz et al., 1977).

Theory of Mind/Metacognition

One important component of cognitive learning is the development of theory of mind. Theory of mind encompasses the understanding of how one's own mind works, how learning occurs, and how gaining new skills and abilities affect one's behaviors and beliefs (Feldman, 2012). Pretend play has a significant impact on the development of a child's theory of mind (Leslie, 1987; Lillard, 1993; Smith & Pellegrini, 2013-2015).

Leslie (1987) stated that one aspect of theory of mind is children's growing understanding that other people think, feel, and believe differently than they themselves do. He hypothesized that pretend play is the start of a child developing theory of mind. Leslie stated that a child has to understand that some individuals may believe or feel differently than the child; another person may have a different opinion on any given topic, a different perspective on a topic, or a desire to play in a different way. Leslie showed that children must have developed this aspect of theory of mind before they are able to engage in acts of pretend play.

Additionally, as children continue to engage in acts of pretend play, further enhancing the development of their theory of mind, they expand their ability to understand that their own behaviors affect others. This allows a child to understand another person's perspective and to distinguish fact from fiction (Friend, 2011). Using pre- and post-test established measures, Burns and Brainerd (1979) showed that even

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short-term engagement in pretend play scenarios improves a preschooler's ability to accept the perspective of another individual.

As stated before, a young child initially needs realistic props in their play. As a child's brain is developing and learning occurs, the child develops an ability to use less realistic props to represent an actual object. For instance, a very young child will most likely need a plastic apple to represent a real one. However, by the time a child reaches preschool, the ability to use a block to represent an apple will have likely developed. Based on how a pretend object is used, teachers can surmise that a child understands it is not a real apple. A child shows this understanding by holding a block like an apple and saying, "I am going to eat this delicious apple," but then takes a pretend bite from it. According to Lillard (1993), these types of pretend scenarios show that children are able to hold in their brain the image of an apple and the properties of a block at the same time. It is through this type of play, with a variety of objects, that children gain the ability to pretend and engage in play activities with less realistic objects, which in turn leads to further development and learning.

Sutherland and Friedman (2013), using quantitative assessment measures, found that children use play – particularly pretend play – as a way to learn about the world around them and tend to answer questions using information gained during their play. As pretend play skills increase, due to playing with a variety of materials, preschool-age children begin to explore more play topics leading to learning more about the world around them. Noteworthy from Sutherland and Friedman's (2013) study, is that children were selective about their take-away knowledge, particularly if information learned was contradictory to previously acquired knowledge. For instance, children given fictional

information, via a puppet show about what a cat would eat, did not alter their prior knowledge of what cats really ate.

Burns and Brainerd (1979), using a pre- and post-test measure, allowed a group of children to engage in a structured play activity of counting blocks with the goal of learning a skill. Another group practiced drawing a picture with a pencil to reinforce proper grasp of a writing tool. Using their test measures, they found that the children's performance improved on the desired skills (i.e., counting, or holding a pencil correctly). However, Burns and Brainerd did not ask the children specifically about learning to count or proper grasp of a pencil to find out if the children realized this was the goal of the play activity nor did they ask the children whether they had improved on either skill.

Ilgaz and Aksu-Koç (2005) used qualitative analysis of three- and five-year-old children's narratives explaining their play. They found that children with more practice playing were able to provide a structured and detailed narrative account of their experiences. The five-year-old children studied were able to provide a more deliberate explanation of their play experiences than those who were three-years-old (Ilgaz & Aksu-Koç, 2005).

Howe, Petrakos, Rinaldi, and LeFebvre (2005) used quantitative measures to analyze play interactions of kindergarten-age children who had an older or younger sibling. They found that children with siblings were more skilled at playing with others and better able to build a narrative of their play than children with no siblings. This finding was particularly true with kindergarten-age children who had an older sibling. This seems to indicate that children provided with many opportunities to engage in play

activities with older siblings become more highly skilled narrators. They learn to tell a more detailed story.

Baumer, Ferhold, and Lecusay (2005) implemented a teacher-directed pretend play intervention strategy that included using children's books, discussion, and free play with a group of children between the ages of five- and seven-years-old. They found through a post-test analysis that the narrative comprehension abilities of children who received a pretend play intervention strategy were higher than for children who did not receive an intervention. Children receiving a pretend play intervention were able to provide longer, more coherent narrative explanations of their experiences than children who did not receive an intervention (Baumer et al., 2005). This is further evidence that children with strong play skills have an ability to share their perceptions of play and learning. However, once again, researchers did not ask the children about their perceptions of what they were learning through their play.

Fantuzzo, Sekino, and Cohen (2004) studied children in an urban Head Start classroom who were described by teachers as having strong play skills (i.e., able to interact with other children in a give and take manner, able to use materials with the same general purpose or goal as others, etc.). They found that these children had significantly larger vocabularies than peers described as having limited play skills. Playing with blocks, in particular, had significant positive impacts on language development (Dansky, 1980; Dansky & Silverman, 1973; Saracho & Spodek, 1998), especially in children from middle and low-socioeconomic homes (Christakis, Zimmerman, & Garrison, 2007).

Bulotsky-Shearer et al. (2012) utilized quantitative measures and reported that children participating in a Head Start program who had positive play interactions with

their peers achieved higher learning outcomes by the end of a school year than children who did not. Additionally, children who had problem behaviors in the fall and were not able to interact positively with peers showed lower learning outcomes, particularly in literacy and math (Bulotsky-Shearer et al., 2012). Teachers, who made the correlation between children's play abilities and their skills, measured gains in learning outcomes but did not ask the children about their metacognitive awareness regarding improvements.

Sacha and Russ (2006), utilizing a quantitative methodology, found that when play was incorporated into the introduction of dance instruction, children were better able to recall the skills necessary to complete dance steps than children taught in a more traditional teacher-demonstrated format of dance lessons. Children in a play-centered environment took longer to recall dance steps in the second week of instructions but by the third week, they recalled dance steps quickly and required less direct instruction from their dance teacher. Children taught dance steps through play activities were more attentive during the first and third weeks of instruction. Additionally, this same group responded more positively to their dance activity during the third week of instruction than children from the more traditional teacher-demonstrated instruction group.

Social/Emotional Development

Children learn to manage their feelings in socially acceptable ways through the safe expression of conflicting emotions (Isenberg & Quisenberry, 2002). Brown (2009) found that play energizes and enlivens its participants, as well as renews their optimism; play helps a child see new possibilities and allows children's temperaments to become apparent, thereby enhancing their sense of self. Tahmores (2011) found children use play as a means to display a variety of emotions (e.g., kindness, anger, insecurities, etc.).

Tahmores also showed that during their play, children are able to express a wide range of emotions, which helps them to achieve a sense of emotional calmness.

Craft, McConnon, and Matthews (2012) found that through repeated play experiences, children generate new ideas and scenarios, leading to more play possibilities, which lead to more play experiences, which leads to new learning. Increased play experiences help children learn to maintain focus and the interest of all participants, which leads to extended experiences and a continued play cycle. Playing leads to increased social skills, which in turn leads to an increase in play activities (Craft, McConnon, & Matthews, 2012). Again, no one involved in Craft et al. studies asked a child about this increase in knowledge or skills, but researchers reported the phenomenon occurs.

Kindergarten-aged children expressed through narrative descriptions that they learned how to get along effectively with one another when playing with peers (Ahn & Filipenko, 2007). Brown (2009) reported that children discover their world and learn how to develop and maintain friendships through play opportunities. As children gain play skills, they learn to work collaboratively with one another; children often ask, "what if" questions or make "as if" statements, which helps them generate new possibilities for their play (Craft, McConnon, & Matthews, 2012).

Children, highly skilled at playing with peers, exhibit more persistence and motivation than children less skilled; children skilled at play also exhibit a more positive attitude toward learning than children who are less skilled than their age-mates (Coolahan, Fantuzzo, Mendez, & McDermott, 2000). Coolahan et al. also shared children who are disconnected from play or disruptive during play interactions display increased

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behavioral problems and decreased levels of motivation to learn over time. This seems to indicate that children who enjoy playing also enjoy learning. It appears there is a significant link between children's developing social and emotional skills and their cognitive abilities.

Fantuzzo et al. (2004) reported that preschool-age children who are more skilled at playing with their peers are better able to regulate their emotions during conflict, exhibiting higher incidents of prosocial behaviors (e.g., turn taking and sharing), and are less disruptive in their urban Head Start classrooms than children less skilled at play. These play-competent children are more likely to invite their peers to participate in an activity and show more initiative, autonomy, and creativity in their play.

An assessment conducted by Fantuzzo et al. (2004) showed children who exhibit competence in play interactions are less aggressive, shy, or withdrawn at the end of their preschool education. Play-competent preschool-age children, more skilled in peer relationships at the beginning of their Head Start year, show significantly higher gains in cognitive, social, and motor skills by the end of the academic year than their lesser skilled peers. Bulotsky-Shearer et al. (2012) showed this to be true for children who exhibit externalized problem behaviors (e.g., aggressive types of behaviors), as well as children with internalized behaviors (e.g., introverted or shy children).

Russ and Kaugars (2001) demonstrated that the type of play a child engages in significantly impacts the affect or emotional impact displayed by the child. For instance, when teachers asked children to use puppets to act out a play scenario that included angry characters, the children involved in the play more often reported feeling angry when they finished playing, while children engaged in acting out a scene involving happiness

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indicated feeling happy. This seems to indicate that children's emotions are impacted by the type of play in which they engage.

Through analysis of kindergarten-age children's narrative descriptions of their imaginative play and visual depictions through artwork, Ahn and Filipenko (2007) found that children establish their gender, moral, social, and cultural self through play. The children in Ahn and Filipenko's study built hypotheses about their own world and self. Ahn and Filipenko further showed that the children were struggling with abstract questions involving science, philosophy, and moral issues. During later episodes of play, these kindergarten-age children often went back to their earlier questions, and through modifications in their play, continued to work through their feelings as they developed a sense of their own identity (Ahn & Filipenko, 2007).

Researchers have described infants, engaged in mimicking play with their parents, as more persistent and motivated when attempting to engage that parent in a later encounter (Fawcett & Liszkowski, 2012). However, this persistence and motivation did not carry over to other adults. They showed that while infants were unable to repeat the exact mimicked behavior later, they were able to successfully encourage a social interaction with their parents (Fawcett & Liszkowski, 2012).

Connelly and Doyle (1984) showed that teachers have described children who engage in pretend play activities as more socially competent than their peers who engage in fewer instances of pretend play. Connelly and Doyle characterized children who engage in pretend play as more activity-oriented in the classroom and more popular with peers. O'Conner and Stagnitti (2011) showed that children engaged in complex pretend play are highly capable of sustaining play with others for longer periods of time than

children engaged in simpler pretend play. Children in O'Conner and Stagnitti's study also showed more affect in their play when they took on a variety of roles. These children showed improved social interaction skills, less disruptive behaviors, and remained more connected to themes and story lines of their play than less involved children (O'Connor & Stagnitti, 2011).

Children's Descriptions of Their Play and Learning

In the development of the Dynamic Model of Play, Miller and Kuhaneck (2008) interviewed children between the ages of 7 and 11 years. As reported earlier, Miller and Kuhaneck found that children played because it was fun, provided challenge, allowed for teamwork, and resulted in the formation of friendships. These children tended to play with others with similar abilities, and the environment appeared to have had an impact on the type of play in which they engaged (Miller & Kuhaneck, 2008); however, these same methods of research have not been utilized with preschool-age children.

Scheuer, de la Cruz, and Pozo (2002) asked 26 children between the ages of four- and six-years-old about their concepts of learning acquisition. Scheuer et al. asked the young children about how they believed their learning occurred and how it would occur in the future. Following the interviews, Scheuer et al. used a "Lexicometric" method to analyze children's responses, including a factorial analysis of the number of times children used specific descriptive words. She found that these children believed that learning occurred within themselves ("they just knew it") at the age of four. Whereas, the six-year-olds indicated they generated their own learning before, during, and after an experience (Scheuer et al., 2002). These older children believed something outside themselves helped them learn new concepts and skills (Scheuer et al., 2002).

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Boyoung, Chae, and Boyd (2008) interviewed a six and a seven-year old child about their experience using blocks to create a car and a house within an outline of the respective shapes. They found that these two children categorized the blocks according to their shape, figured out how smaller blocks could be used to create larger shapes, and manipulated the blocks to gain the desired shape of the outline (Boyoung et al., 2008). Boyoung et al. stated, "During the observations, the children did not state that they were engaged in mathematical actions. However, they started to understand relationships between different geometric shapes and constructed the foundation for later geometric learning" (p. 160). This is further evidence that learning can be observed when children are playing; however, it does not provide evidence that children necessarily attribute learning to the act of playing itself.

Bartsch, Horvath, and Estes (2003) had similar findings to Boyoung et al. They used statistical measures to analyze the use of the words "learn" and "teach" from transcripts of children's dialogue during naturally occurring instances of play. Bartsch et al. found, through the analysis of the children's discourse, only 33% of five children ages three- to eight referenced where they *learned* a new skill or concept. These children indicated they *learned* something by watching television or reading books.

Alvestad (2011) employed preschool teachers who interviewed ten children (ages four- to six-years-old) enrolled in a kindergarten class in Norway. The interview design elicited from the children their perceptions of learning and playing. Alvestad found, through the analysis of the interviews, that the children described their learning as taking place in kindergarten and school, as well as at home with friends and family. The children reported learning is getting to know things at school, with others, and by doing

(Alvestad, 2011). One child said she learned things within herself. Another said he

learned by doing things, and that it happened continually; however, none of the children

made a direct comment about their play leading to knowledge acquisition, nor did the

teachers ask the children specifically about metacognitive processes they may have used

during their play.

Lee (2013) used techniques such as thinking conversations and visual

representations to attempt to delve into children's thinking and analysis processes. His

pilot study found that it was possible to analyze children's metacognitive processes when

using a rubric to analyze children's comments and statements during their assessment

phase. Lee showed that when assessing children's thinking processes, instead of

outcomes of performance on tasks, a researcher is able to analyze children's

metacognitive processes. Lee did not report on what a child's metacognitive processes

are, only measures that allow for their assessment.

Chevalier, Martis, Curran, and Munakata (2015) studied the pro-active/reactive

response of children. Chevalier et al. found that five-year-old children more quickly

reacted to a situation posed by the researchers than older children. They found this to

hold true even when manipulating the situation allowing a proactive response to have a

beneficial outcome. Chevalier et al. found ten-year-olds to be more *proactive* in their

decision-making than younger children, regardless of the manipulation of the situation.

This particular team of researchers attributed the reactive mode of response exhibited in

five-year-olds to their less experienced working memory. They found a proactive mode

of response could be increased in younger children if children were prompted with

questions about possible outcomes before the children began a task, therefore, lowering

the need for additional working memory (Chevalier et al., 2015). As with studies before this one, researchers did not ask children about their decision-making processes.

Chevalier and Blaye (2016) analyzed length of time six- and ten-year-old children gazed at a task. Children studied a first task until they felt fully prepared to move on to a second task. Chevalier and Blaye found that younger children in this study moved to a second task more quickly than older children. The researchers attributed this to lower control rates in the younger children's metacognitive processes. At no time were children asked to explain their thought processes about why they chose to move on to the second task; only their gaze and rates of time were monitored (Chevalier & Blaye, 2016).

After analyzing skin conductance responses of 54 children, ages 8- through 15-years-old, Gonzalez-Gadea et al. (2015) determined that younger children were more likely to make a decision based on the probability that the outcome would include a punishment rather than a reward. They further determined that children's metacognitive knowledge of a particular test used, their age, and inhibitory control mechanism had an impact on their decisions. Gonzalez-Gadea et al. did not ask children about their decision-making processes, but instead measured bodily responses.

Conclusion

The studies cited in this literature review have shown that play is a very powerful tool in guiding young children's learning and developmental growth, a part of which is their metacognitive development is young children's descriptions of their metacognitive processes, i.e., their understanding of how they think. Chapter III will outline the methods used to seek these descriptions from young children.

CHAPTER III

METHODOLOGY

The purpose of this study was to examine young children's understandings of

their own metacognitive processes by using qualitative phenomenological research

methods. Methods employed included interviewing children about their play and

videotaping them while they were playing. I used a hermeneutical process to analyze data

in an attempt to answer the following research questions:

1. How do young children describe their metacognitive process(es) when

    making a decision during play?

2. What are children's understandings of the role of their brain in the thinking

    and remembering processes during play?

I used phenomenological methodologies when conducting this research.

Phenomenology research seeks rich descriptions of experiences from a person living

them day-to-day (Finlay, 2009). This methodology goes beyond an examination of words

to seek a deeper understanding of the perspective of a person living an experience (Flood,

2010). Approaching the subject matter of play through the lens of phenomenology meant

hearing children engaged in play activities describe their experiences. These stories led to

discovering how they articulated their own learning and the metacognitive processes they

used. This lens is particularly appropriate for studying children's lived experiences

because it "involves . . . rich description of the lifeworld or lived experience" (Finlay, 2009, p. 8). It is truly only children who are playing, interacting with materials and people in their environment, and living an experience while constructing knowledge, who can share the true meaning of how that information or those skills are acquired. Memories fade and alter as we grow older; the stories of an adult or even an older child who remembers and recounts actively playing in the past could give us information about what it *meant* (past tense) to play during a particular time. Children actively playing and interacting with materials in their environment and talking during that play can shape what it *means* (present tense) to be playing and learning. The phenomenological process allowed me to delve deeply into children's stories and descriptions, asking questions only the children knew answers to, and seeking meaning from their words about their play experience.

I chose a hermeneutical phenomenological analysis structure to gain the most information possible from rich and thick stories shared by children. My analysis process of transcribed interviews used Lindseth and Norberg's (2004) descriptive steps of hermeneutical phenomenological analysis. While using this hermeneutical analysis process, I attempted to uncover meaning from the children's words, by critically interpreting small individual pieces, from within the whole context (Steele, 1989).

Lindseth and Norberg (2004) prescribed that a researcher start the analysis process by conducting an initial reading of the transcript from an interview; a "naïve understanding" of the transcribed interview should then begin to form. Following this initial reading, Lindseth and Norberg recommended completing a "structural analysis." A structural analysis involves a researcher looking for phrases that have specific meaning

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and capturing the overall "theme" of a longer response.

Figure 1. Data Analysis Process

Codes	Themes	Assertions
Several short phrases of the children's words, using the exact phrasing of the children whenever possible	One common theme conveyed by the children's words.	My assertion of what the theme, based on the children's words, was telling me.
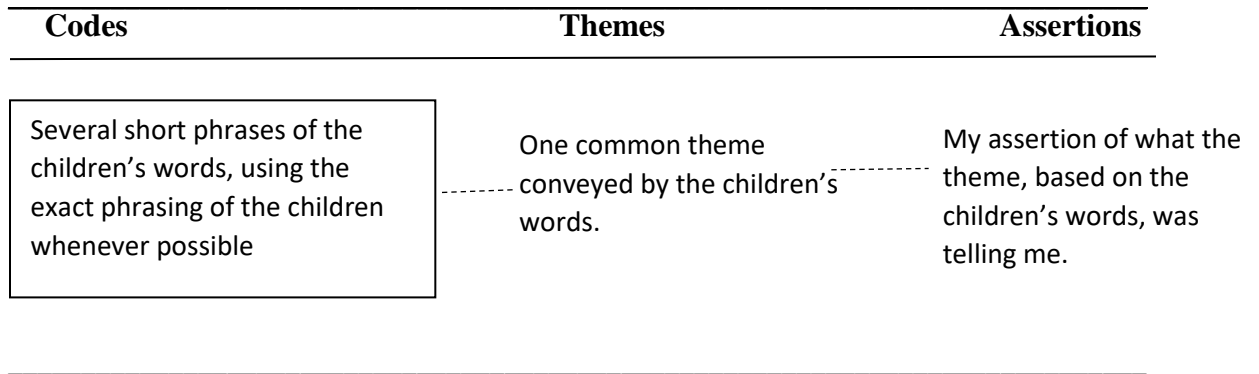
A researcher looks for occurrences of themes, or lack of occurrences, within and across transcribed interviews. These authors further recommended reading the text of interviews multiple times during the structural analysis process, without making judgments or placing value upon any words; instead, they suggested, the words on their own should speak to a researcher. This process allows overall meanings of words to form into clear pictures (Lindseth & Norberg, 2004). Themes emerge during data analysis allowing a researcher to make overall assertions, in this case about how children describe their metacognitive processes.

I began the hermeneutical analysis process with the prescribed initial reading of transcripts from interviews with participating children. I read the text of each interview multiple times, allowing the words to convey their own meaning to me. For instance:

Interviewer: Anything else you want to tell me about playing?

Jasmine: Umm. . .

Interviewer: Do you think all kids should play?

Jasmine: Yes [quiet for six seconds]. I'm thinking about another game I

like to play.

Interviewer: Okay [seven second pause].

Jasmine: Oh, there is one game that I play with [another child].

Interviewer: What's that?

Jasmine: Cheetahs, Tigers, and . . . Jaguars.

Interviewer: Okay, and are you the tiger or the jaguar?

Jasmine: Tiger.

Interviewer: What do you do while you play that?

Jasmine: There's another wild cat, jag-war-i, jagwari; it can climb trees

and swim.

During the initial reading, I read this entire interview and allowed the words to

form a picture of the message this child was conveying. I did not place value or judgment

on the words. I simply allowed them to speak to me. The theme I saw emerging was "I

think about . . . and remember." I did not see this theme across all interviews.

Following multiple readings of this and all interviews, I began to see the pauses in

the children's words as conveying evidence of thinking. I then looked more closely,

analyzing individual discourses for examples of other non-verbal cues. I was unable to

find published literature that specifically addressed children's non-verbal cues. I used the

following behaviors or actions as indicators that children were thinking and therefore

using their metacognitive processes: (a) purposeful pauses in which a statement before

and after the pause were related; (b) eyes taking on an unfocused stare, particularly when

combined with facial signs of concentration; and (c) specific body movements, such as

repetitive finger tapping, pulling on one's lip, or holding one's head in their hand (i.e.,

hand under chin or on cheek). When witnessing a combination of two or more of these

indicators, I surmised the child was thinking (i.e., using their metacognitive processes).

During data analysis, I extracted words and/or phrases from the transcripts. I used

the exact words of a child whenever possible to give the context of a discourse. By using

the exact words, I stayed true to the child's meaning adding to the trustworthiness and

validity of assertions developed later in the analysis process.

Figure 2. *Codes/Themes/Assertions From Data Analysis*

Codes	Themes	Assertions
Pauses while speaking Unfocused stares Repetitive body movement	Non-Verbal	Young children use non-verbal cues to demonstrate their metacognitive processes.
From my brain… In my brain… With my brain…	Brain exists	Five year old children understand they have an organ called a brain.
Remind me… A factory/machine… Makes knowledge...	Activity	Five year old children describe their brain as active.
It was in my brain… Goes in my brain… Memories in the middle…	Stores	Five year old children indicate their brain stores information.

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┌─────────────────────┐
│ Tells me what to do…│╲  ╲
└─────────────────────┘ ╲  ╲
┌─────────────────────┐  ╲ ╲ ╲    ┌─────────────┐        Five year old children state their
│ Moves you…          │----╲-╲---→│ Controlling │───────→ brain controls their body.
└─────────────────────┘   ╱ ╱     └─────────────┘
┌─────────────────────┐  ╱ ╱
│ Have to do what brain│╱ ╱
│ tells you…          │╱
└─────────────────────┘
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      I purposely chose a qualitative research design for this study. In order to learn how children articulate their decisions and thought processes as they play, I first had to consider how children viewed the construction of their learning how they viewed their play activities. During the initial readings of interview transcripts, I asked myself questions such as: What were children thinking as they chose a play activity? How did they choose who they wanted to interact with? What did play mean to them? And, did they learn anything from their play? By exploring children's play experiences through the lens of phenomenology, I hoped to learn the specifics about preschool-age children's desires to play. I believed asking children directly about their play and decision-making processes was the clearest, most straightforward means to learn important information about metacognition and the phenomena of play.

Recruitment of Participants

      After receiving approval from the local Institutional Review Board (IRB) (Appendix A), I asked preschool teachers at a state-licensed early childhood education (ECE) program to identify potential children to participate in this study. The teachers identified children with high language abilities would be able to communicate effectively during an interview process. Additionally, it was important the children actively engaged

in play because, as reported by Ilgaz and Aksu-Koç (2005), children who become deeply absorbed in their play are better able to provide a rich narrative of their experiences.

I asked ECE teachers to approach children's parents about allowing their children to participate in a qualitative research study. Each teacher had a script (Appendix B) that explained the general nature of the research and types of questions I planned to ask. I had teachers ask parents for permission for a graduate student (not identified by name or title beyond "graduate student") to contact them regarding their child's participation in a research study. Teachers made the initial contact with parents because I am the director of the ECE program. I did not want any parent to feel pressured into consenting to their child's participation. Teachers did not disclose the names of parents who declined consent. Teachers utilized this process until eighteen parents gave consent to be approached by the researcher.

At this time, I approached each parent to discuss the purpose of the study, the nature of interview questions, and my reasons for being interested in this subject. I further explained the consent form and description of the study, specifically noting that I would be interviewing children in a room set aside from the regular educational classrooms. This room had large windows, which allowed ECE teachers to observe interactions between researcher and child. This setting diminished the possibility of coercion during an interview. I explained to each child's parent(s) that their child could stop the interview and return to the classroom at any time. After explaining this information and answering any questions, I gave parents the option to sign the consent form for their child's participation.

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During the analysis of the two interviews with the first nine children, I noticed that five year old children appeared to have a different understanding of their metacognitive processes, possibly a more developed understanding. I then chose to expand the number of participants to include an additional nine children who were five years old.

Of the 18 children selected, one child who completed the initial interview, did not want to be videotaped while playing; a second child, after participating in a first interview, had unforeseen events occur that precluded that child from completing the study. Accordingly, I was able to complete the research methods (i.e., interview/videotaping/interview) with 16 participants. The interviews were transcribed and analyzed using a hermeneutical process to allow relevant themes to emerge.

For purposes of anonymity, I assigned a pseudonym to each participant, and used only that pseudonym to refer to each child in reporting the results. As indicated previously, all the young children who chose to participate in some or all of this study attended a single state licensed early childhood education program located on the campus of a university in the Upper Midwest. Table 1 contains information about participants from the first part of the study. Table 2 contains information about participants from the second part of this study.

Table 1**.** List of Participants From the First Portion of the Study.

Name*	Age	First Interview	Second Interview
Amanda	Four	Yes	No
Andy	Three	Yes	Yes
Bill	Four	Yes	Yes
Jasmine	Five	Yes	Yes
Jason	Five	Yes	Yes
Kathy	Four	Yes	No
Laura	Three	Yes	Yes
Nora	Five	Yes	Yes
Theo	Five	Yes	Yes

Pseudonyms Only

Table 2**.** List of Participants From the Second Portion of the Study.

Name*	Age	First Interview	Second Interview
Hannah	Five	Yes	Yes
Shelby	Five	Yes	Yes
Ally	Five	Yes	Yes
Claire	Five	Yes	Yes
Becky	Five	Yes	Yes
Jenna	Five	Yes	Yes
Cierra	Five	Yes	Yes
Beth	Five	Yes	Yes
Aleah	Five	Yes	Yes

Pseudonyms Only

Interviews

Interviewing participants, more than once, allows a researcher to gain a unique

perspective into the phenomena being studied (Seidman, 2006). The first interview

allows a researcher to learn, in general terms, about a topic. The second interview allows a researcher to guide participants through their experiences, giving them an opportunity to provide details. This process allows participants an opportunity to mentally reconstruct their experience. The use of this specific interviewing process leads a researcher to a deeper understanding of the purposes behind phenomena from participants' perspective. It provides a researcher with an opportunity to ask specific questions about a topic while delving deeper into participants' stories by asking appropriate follow up questions (Seidman, 2006).

Leading Questions

Leading questions are not the norm when conducting a qualitative study; however, I found it necessary in this particular study due to the ages of these young children. Robin, Keegan, and Ward (2003) suggestions that qualitative interviews are structured but flexible, interactive in nature, and the researcher needs to be prepared with a variety of probes and techniques that will guide the participant to share information regarding the research topic. I purposely chose this age group because of the gap in published research that asks young children about their metacognitive processes. I also found it necessary, due to their ages, to use leading questions when interviewing them to allow me to delve deeper into the area of their metacognitive processes. According to Robin, Keegan, and Ward (2003) it is necessary to be prepared with techniques that will guide the participant, hence, I used leading questions to guide the child to speak directly about their thinking. For instance:

Interviewer: How did you learn it then?

Jason [with a bored tone of voice]: I just figured out how to do it.

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Interviewer: But how did you figure it out?

Jason [with a bored tone of voice and looking at the screen]: I just figured

out how to do it.

Interviewer: Okay, did your brain help?

Jason [sharply with a clipped tone of voice]: No.

Interviewer: Your brain doesn't have a part in this?

Jason [still sharp]: No.

Interviewer: Do you use your brain for learning?

Jason: Yeah [stated as though this should be obvious].

Interviewer: How does your brain help you learn?

The primary focus of this study was to learn how young children describe their

metacognitive processes. For this reason, at times, I had to use leading questions to guide

my young participants to the subject of their thinking processes.

Interview Structure

For this study, I interviewed each child twice and videotaped them playing

between interviews. The specific purpose of the first interview was to gain a breadth of

knowledge about their play choices. Videotaping play experiences allowed me to see the

children and hear their dialogue. During the second interviewed the child and I watched

the videotape of their play. This allowed me to delve more deeply into specifics of each

child's play experience. I periodically stopped the video and asked the children why they

had chosen to do something, what they were thinking about as they made a decision

during their play, or how they had learned or remembered whatever skill or activity we

were watching.

Specifics of the Interviews

At the beginning of the first interview, I explained the purpose of the study and interview process to the children using developmentally appropriate language. I explained that they did not have to answer my questions and could stop the interview at any time. Each interview was audio recorded for later transcription and analysis. The primary purpose was to establish a relationship of trust and sharing with the children. First, I would greet the children and inform them that I was using my iPad to record their words to help me remember our conversations. It was at this time I told the children, they could stop the interview at any time and go back to their classroom. I began engaging the children in some general conversations about themselves and/or about their day in an attempt to put them at ease and help feel comfortable.

Once children appeared comfortable and became talkative, I asked open-ended questions that would elicit stories about their play. I asked questions such as: (a) Tell me about your favorite thing(s) to play? (b) What do you like about playing them? (c) How do you decide what to play? (d) How do you decide when the play activity is finished? (e) Who do you like to play with? (see Appendix C for a complete listing of questions.) After each question, I asked appropriate probing questions to gain a deeper understanding of a children's thinking about their play. Some of these probing questions included: (a) What do you think about when you are playing? (b) What were you thinking about when you made this decision? (c) How did you learn to do that? I asked these questions in an attempt to gain an understanding of the children's awareness of their metacognitive processes and their perceptions of any learning. Additionally, I asked questions about each topic that seemed important or relevant at the time of the interviews.

Following these initial questions, if a child did not broach the subject of "thinking," or their metacognitive process, I then asked a leading question, such as, did your brain help you with that decision. If children said "yes," then I continued with open-ended questions such as, a) how did your brain help? Or b) tell me more about that. In the event the children said "no," I dropped the subject and attempted to approach it at a later time during the interview.

The children's yes/no response to questions allowed an opportunity to explore their thinking more deeply by asking probing questions about the observed actions during the videotaped play. During the time children processed and answered follow up questions; I had an opportunity to watch their body language to obtain clues into their thinking processes. It was through analysis of the children's words, along with messages sent from body language, facial expressions, and tone of voice that I was able to make assertions about their metacognitive processes.

I acknowledge that I used closed-ended questions because basing assertions on this type of question is not the norm in a qualitative research. To clarify, I felt this technique was essential to this study because of the age of participants interviewed. During reporting of the analysis, I did not include analysis of closed-ended questions per se, other than to give readers some foundational information. Instead, I used responses to open-ended follow-up "why" or "how" questions to support my themes and subsequent assertions.

Following first interviews, I videotaped children while they were actively engaged in a play activity. As director of an early childhood education program, I was able to observe the children in this study naturally, in their classroom environment. It was

common for the children to see me enter and leave classrooms throughout a day, so it was typical for me to present. While watching videotaped play interactions, I looked for examples of skills or concepts a child was using (i.e., sharing, counting, conversing back and forth with another child, problem solving, etc.). I used each child's words from the first interview and videotaped play to tailor questions to each child for their second interview. I used the second interview to gain deeper insight into experiences each child had while playing.

I conducted a second round of interviews after videotaping the children playing. This interview began with re-establishing trust the children. I reminded children of some topics and stories they had shared with me during their first interview. Then I showed them the videotape of them playing and asked them to tell me about their play. I asked specific questions to gain a deeper understanding about that particular experience (see Appendix D). While viewing the video, I stopped it periodically, asking the children what they were thinking about when they performed a task or made a specific decision. I asked them how they knew to do "that" or how they remembered a specific skill or task. This allowed an opportunity to gain information from children about their thinking processes.

Analysis Process

The first stage of the hermeneutical phenomenological analysis process consists of an initial reading of transcribed interviews. From this initial reading, I got a sense of the big picture of the children's thoughts. Interviews ranged in length from 5 to 28 minutes, as determined by interests and desires of each child. I kept each child engaged in their conversation as long as possible through questions and probes. Interviews ended when a child indicated they were finished.

I repeated the process of analyzing data by doing an initial reading of a transcript to form a "naïve understanding" of the words. Then a structural analysis was conducted by reading each transcript several times. As themes emerged, I held them in mind while repeating another reading of each interview. This practice allowed me to determine if new themes from the second interviews fit with themes that emerged from the first interviews. It also helped me identify anything missed during the first readings. I conducted a final reading and structured analysis of both first and second interview transcripts together, considering all themes and thoughts collectively.

I re-read entire interview texts for each child while reflecting on themes to allow assertions to emerge regarding the research question. For example, how do young children articulate their metacognitive processes? Reading transcripts while asking myself questions about children's articulations of their metacognitive processes allowed me to make final assertions about the children's abilities. Lindseth and Norberg (2004) pointed out that there are not strict rules that apply to the hermeneutical phenomenological analysis process, but that a researcher needs to allow the text to create images of what words are conveying.

<div align="center">**Trustworthiness**</div>

I approached the analytical process with as much objectivity as possible to signal a sense of trustworthiness in reporting my assertions; however, phenomenological research includes experiences and thoughts of a researcher. I had to be aware of Husserl's "*epoché of the natural sciences*" as described by Wertz et al. (2011, p. 125). In other words, I had to abstain from allowing my own scientific knowledge to influence my conclusions. I "bracketed" (put aside) my own experiences and beliefs to "return to 'the

things themselves'" and made every effort to not allow my knowledge to influence

meanings or images created by the children's words (Wertz et al., 2011, p. 125). I was

aware of my own thoughts and biases about children and their play; my intent in

reporting this was to be transparent. I, as director of an early childhood education

program, purposefully chose a team of educators who believed that play is how children

learn best. The teachers used a play-based learning curriculum because we believe in the

outcomes play-based learning provides for growth and development of a young child. I

am forthcoming about this information because it is a part of myself as a researcher.

Additionally, to have a level of trustworthiness in my reported assertions, I was

cognizant of Husserl's second "*epoché of the natural attitude*" (Wertz et al., 2011, p.

125), of my "natural attitude" (Wertz et al., 2011, p. 126). I did not comment on my

beliefs or personal thoughts regarding children and play; instead, I was simply a vessel to

report what children told me about their lived experiences about play. The use of a peer

debriefer helped to ensure I was allowing children's words to guide my assertions about

their experiences, and not my own biases. The peer debriefer read small sections of my

interviews and themes to help ensure I was staying true to the words of the children and

not allowing my own thoughts and beliefs to influence my assertions.

While children's words were my primary source of information about their

thoughts, feelings, and reasoning about their individual play experiences, I used the

preschool teachers as another source for accuracy in findings. I asked two of my ECE

teachers to read portions of each transcript without using children's names and who were

not enrolled in their classroom. They were asked to if they agreed with my understanding

of the children's words based on my reported themes. Also at the start of the second

interview, I did a member check with the children, by asking them about emerging

themes and allowed them to correct me if I had misunderstood what they told me. I used

developmentally appropriate language to help children understand what I was saying.

Additionally, I had a colleague, outside of ECE, review portions of my interviews as a

form of peer debriefing, lending further trustworthiness to my assertions.

Reflexivity

Several steps in the analysis process allowed me to reflect on my findings. I took

my major thoughts back to children and asked them about themes I heard to ensure I had

interpreted the children's words without influence from my own biases. The use of

multiple readings of transcripts, as described by Lindseth and Norberg (2004), led me to

read participants' words without interpretation. An additional step that allowed me to

reflect continually on my findings, while bracketing my biases, was the procedure of re-

reading prior interview transcripts after analyzing new data and developing new thoughts.

I continually checked to ensure I did not overlook any details of participating children at

play. Being a researcher and needing to be transparent in my research, I was very aware

of my own thoughts and biases about children and their play. I used children's words and

thoughts of my ECE teachers to help ensure I "bracketed" (put aside) my thoughts and

feelings as much as possible.

CHAPTER IV

RESULTS

The purpose of this study was to examine young children's understandings of their own metacognitive processes. This study used qualitative research methods, which included interviewing young children about their play and videotaping them while they played. Additionally, children were interviewed a second time while watching a videotape of their play.

I designed the first round of interviews to learn about children's thought processes using play as the vehicle to a conversation, allowing me to gain a breadth of knowledge about this topic. I designed the second round of interviews to delve more deeply into children's awareness of their own metacognitive processes, affording me the opportunity to gain depth of knowledge. As I listened to children's words and silence, observed facial expressions, and watched body language, I witnessed children's individual thinking processes. I asked questions that led children to think deeply about their metacognitive processes, thereby allowing them an opportunity to express themselves. Interviewing children, following their lead in conversations, asking probing questions, and most importantly, respecting their time to speak or not speak, granted the opportunity to explore avenues of young children's metacognitive processes.

For this qualitative study, I analyzed the discourse of interviews using a hermeneutical phenomenological process. As I read children's words, I continually considered my research questions:

1. How do young children describe their metacognitive process(es) when making a decision during play?

2. What are children's understandings of the role of their brain in thinking and remembering processes during play?

Early in this study, when I was visiting with a child's parent about my research interest, the parent shared how her 5 year old daughter described that when she learns something new, she "puts it in a drawer" in her brain. Moreover, if she forgets something, it is simply because she "put it in the wrong drawer and couldn't find it." Clearly, this particular five year old was aware of her metacognitive processes. This conversation was the starting point for my research, which led to the formation of my main research question: How do young children describe their metacognitive processes?

While methodically analyzing interviews through the hermeneutical process, one overarching theme and four assertions came to the forefront. Chapter IV outlines supporting evidence from the 17 interviews of the theme and assertions. The theme was that young children articulate their thinking processes using nonverbal cues. Being cognizant of their nonverbal cues, the four assertions include children understanding: 1) they have a brain, 2) it is active, 3) it remembers information, and 4) it controls their body.

Overarching Theme

Young children use non-verbal cues to demonstrate their metacognitive processes.

Initial readings of transcripts led me to become aware of children's use of nonverbal communication. I began to notice the young children's faces, bodies, words, and silence as being their vehicle to convey use of metacognitive processes. Children interviewed "spoke" loud and clear about their thinking (i.e., metacognitive) processes. I simply had to remain quiet while watching and listening.

Amanda, one of the participants, used moments of silence to convey her metacognitive processes as she told me about what she liked to play. She stated, "tag, hide and seek, hmmm . . . [5 second pause] . . . coloring . . . [3 second pause] . . . books [pause] . . . reading . . . [2 second pause] . . . spelling . . . [4 second pause] . . . and I like to grow flowers." Her pauses were of varying lengths. She said some of the words – such as "coloring," "books," and "reading" – slowly with a quiet voice and was looking away with her eyebrows squished. She stated, "I like to grow flowers" quickly and louder, conveying she was wrapping up her list of what she liked to play. I surmised, based on pauses, facial expressions, varying volume, and speed of articulation, Amanda was using her metacognitive process and thinking about different activities she liked to play.

When I asked Claire to tell me more about her play, she paused and looked down at her hands for a full 8 seconds before excitedly saying, "Then [friend's name] and the girls told me and the other girls, you do all that work and were so hot from doing all that work." Whereas, Becky paused for 9 seconds, looking straight ahead, before she said, "I don't know" in response to a question about how she decides what she wants to play next. Aleah appeared to be thinking when she paused for 4 seconds before responding she

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likes to play catch. I interpreted these examples of pausing during an interview as moments of children using their metacognitive processes.

Jasmine looked directly into my eyes every time I spoke to her, whether I was asking her a question, clarifying what I heard her say, or simply talking about what I saw her do in the videotape. Due to this consistent use of direct eye contact, I deduced when she looked away with focused concentration, she was thinking. I interpreted her body language as telling me she was searching for answers to my questions. For instance, when I asked Jasmine why a particular type of play was important for young children, she looked away from me, turning her head toward the wall and tilting it slightly to the right, for 2 full seconds, while quietly muttering, "Uhhhh." She turned back, looked directly at me, and said, "Because" (with her voice becoming faint toward the end of the word and drawing out the 's' sound). She again paused, silently looking away for 3 seconds, before responding with sing-song excitement in her voice and her body bouncing in her chair, "You can write a story [with 'story' said as though it were three syllables]." It appeared to me as though Jasmine put a lot of thought into searching for a reason why playing was important for young children.

While Jason was watching the video of himself putting together a puzzle, I asked him how he learned to put it together. He stated with a bored tone of voice, "I just figured out how to do it." I pressed him about how he "figured it out:"

Interviewer: But how did you figure it out?

Jason [looking at the screen of an iPad and using a bored tone of voice]: I

just figured out how to do it.

Interviewer: Okay, did your brain help?

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Jason [sharply with a clipped tone]: No.

Interviewer: Your brain doesn't have a part in this?

Jason: [still sharp] No.

Interviewer: Do you use your brain for learning?

Jason: Yeah [said quickly and as though this was the obvious answer].

Interviewer: How does your brain help you learn?

Jason [stated very slowly and quietly, with his eyes squinted, looking at
  the iPad screen, and leaning in closely]: I don't know.

Jason seemed to be very sure of himself at the start of this exchange; however, by the end of the interview, his words (slow and quiet), facial expression (eyes squinted), and his body language (leaning in) made it appear as though he was thinking deeply about the question, trying to determine how he had learned to put that puzzle together.

Nora appeared to be very expressive in conveying to me that she was thinking during a period of play with several sets of snap-together blocks, which she referred to as "hockey goalies." With these lined up "hockey goalies" on the floor in front of her, she sat on her legs, with her feet tucked under her. She ran her finger from one set of blocks to the next with a look of focused concentration, her face relaxed, eyebrows pulled together, and lips pressed tightly in a straight line. She did not say anything during this time. After she touched each set of blocks, she sat back on her heels and looked at them for a moment, her eyes slowly moving across the line of blocks. Then, leaning forward and using two fingers, she lightly touched each set of blocks with one finger, and then moved her fingers to the next two sets of blocks. She, again, sat back on her heels, with a puzzled expression on her face (i.e., her eyes would squint as her brow furrowed). She

paused, with this puzzled expression on her face, and looked at her set of blocks. She again lightly touched each set of blocks with one finger.

I inferred, from watching the scene that Nora was counting; however, when I asked her, she said, "No." After we watched this scene a second time, Nora paused and with a questioning lilt at the end of the word, she quietly said, "Counting?" Whether she was counting her goalies or not, it appeared that Nora was deep in thought, using her metacognitive processes, as she was thinking about what she had been doing. She was not able to articulate her thought processes, but it appeared to be what she was doing.

During my interview with Cierra, I asked her how she thought about certain things. After my question, she paused for 4 seconds, and then she quietly and slowly stated, "'cause my horse was a pony . . . [finger tapping her lip as she looked down at her knees for 3 seconds] . . . and he likes eating hay." As for nonverbal cues from Beth, she stared straight ahead, with a relaxed face, not focusing on anything in particular, and said, "I sometimes like to write and make pictures and color and paint." She did not take long pauses between each answer, but she spoke slowly and deliberately while staring ahead. When asked, "How do you think?" another participant, Ally, replied, "I . . . [10 second pause] . . . I don't know." She appeared to be thinking about how she thinks before she answered. Like other children, Ally appeared unable to articulate her thought process using words; however, her pause conveyed her thinking.

The following excerpt illustrates how Olivia's communicates her metacognitive processes:

Interviewer: Can you tell me your favorite thing to play?

Olivia [4 second pause with her eyes squinted almost closed]: With Jeeps.

Interviewer: What kinds of things do you do with that jeep?

Olivia [3 second pause and then answering in a very matter of fact tone]:

Pretend that I'm driving outside.

Interviewer: Okay, and when you're driving outside, where do you pretend

you're going?

Olivia [2 second pause then with excitement]: To the mall.

Interviewer: What do you do at the mall?

Olivia [3 second pause, eyes squinted]: Go buy stuff.

Interviewer: Sounds like a lot of fun. Why do you like to drive the jeep?

Olivia [4 second pause]: Uhhhhhh . . . [3 second pause, looking up at the

ceiling with her head tilted back and a little to the side] . . . Because, I

have nothing else to play with.

As I continued to ask Olivia questions about other toys, she did tell me about other activities, like her Barbie dolls. She paused before answering, but spoke with confidence until I asked her, "So, what if you can't play with the jeep or the Barbie dolls, then what are you going to do?" She responded, after a 5 second pause, "Paint [silence] orrrrrrrr (drawn out for nearly 3 seconds] colllllorrr [drawn out for 2 seconds and said quietly]." The further we delved into what other activities she liked to play the longer her pauses became, ranging from 3 to nearly 15 seconds. She spoke quietly at times, then quickly and with enthusiasm at other times.

Claire was busy when I interrupted her play to invite her to a second interview. I took advantage of her active engagement in an attempt to learn more about her thinking. Our conversation went as follows:

Interviewer: So, what were you doing in the classroom when I came in?

Claire [7 seconds, eyes moving but not focused]: I was plllaayyinng [word drawn out several seconds].

Interviewer: Okay, what were you playing?

Claire: House [stated quickly and with conviction].

Interviewer: Oh, tell me about that.

Claire [2 seconds]: We were playing [stated slowly and drawn out], and we were playing Cinderella, and [a friend] and me and the other girls and [a friend] [quick pause] was the stepmother, that was the mother that was super mean.

Interviewer: Is she good at being super mean? [Claire nodded] Funny. Tell me more about the play.

Claire [8 seconds, eyes squinted almost closed, leaning forward in her chair]: Then [her friend] and the girls told me and the other girls you do all that work, and we were so hot from doing all that work.

Interviewer: How did you decide to play house and to play Cinderella?

Claire [3 seconds]: Weeelllll [drawn out for 4 seconds], we just wanted to play Cinderella with the girls and stuff, so I let the girls play with Cinderella and [another friend] really wanted to play, so I let her.

Claire used pauses, facial expressions, and body language to convey she was indeed thinking.

All of the five year old children I interviewed used moments of silence, exhibited facial expressions of concentration, stared off into the distance, or completed a repetitive

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action like tapping their lip with their finger, either separately or in combination with a variety of other body motions. I interpreted these actions to be moments of thinking, moments of using their metacognitive processes. So while none of these children empathically stated, "This is how I think," all of them did indeed exhibit thinking; they used metacognitive processes to answer questions, give examples, and solve problems. Their non-verbal cues spoke loud and clear about their ability to use thinking processes, even if their words did not.

<div align="center">

Assertions

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Following the emergence of the overarching theme that children are able to articulate their metacognitive processes through non-verbal cues, I re-read their interviews with a focus on my research questions. I found the children appeared to be knowledgeable about and understand that they have this physical organ called a brain. They described their brain as active. They further indicated two primary purposes of their brain: storing information and controlling their body. The remainder of this chapter will provide support of these assertions.

Assertion One

Five year old children understand they have an organ called "a brain."

Several times during the interviews, I asked such questions as: "How do/did you think of . . . ?" or "How do/did you know . . . ?" The majority of five year old children interviewed made some reference to their "brain." Jasmine, for instance, stated, "I know that in my brain." At another point, she simply stated information she needed was, "in my brain." Theo responded in a similar way saying, "It was just in my brain." When Jason was asked, "How do you think of things?" He stated, "from my brain." Later, he replied,

"I just learned it from my brain." Aleah stated, " 'cause I just think of it [in] my brain." The children who were three or four years old did not specifically mention their brain or make any reference to this organ in response to these or similar questions.

Nora mentioned that she had what she called "knowledge." I asked her where she keeps her knowledge, and she replied, "in my brain." Later, she was talking about how she gets her "knowledge." Nora stated that it goes through her "ears." I asked where else the knowledge goes besides her ears, and she stated, "My ear drum, into my brain." When asked how she thinks of her knowledge, she stated, "with my brain." Theo stated, "with my brain," when asked about how he thinks of the things he learned about hockey.

At one point when discussing where information is stored, Nora responded, "in my brain," as she pointed to her forehead. I said, "You are pointing to your forehead and saying the information is in your brain. Is that where your brain is?" Nora indicated that was where her brain was located. Jasmine had enough knowledge and understanding of this organ to be able to describe it. She explained that she had gone to a nearby city and saw "this big brain that went upside down, and it looked like a giant walnut."

Shelby explained to me, while watching her video, that she was using a stencil to draw a picture of her mom. A portion of our conversation included:

Interviewer: Why did that stencil make you think of your mom?

Shelby: Because it looked like her.

Interviewer: Oh. How do you know what your mom looks like? Because

your mom's not here.

Shelby: Because I remember what she looks like.

Interviewer: How do you remember?

Shelby: Because I think of her.

Interviewer: How do you think of her?

Shelby: In my brain.

Interviewer: Okay. You are pointing to your forehead when you said that.

Where is your brain?

Shelby: Here [still pointing to her forehead].

Interviewer: Right here in your forehead? You're kind of rubbing up and

down your forehead. Your brain's inside there?

Shelby: It's inside.

Ally was playing beauty salon as she brushed and pretended to curl her teacher's hair. She told me she knew how to do someone's hair because she had been to a hair salon many times, and she remembered it. I asked her where she keeps that memory, and she pointed to her head. I asked what was in her head that helped her keep her memories, and she replied, quite simply and in a matter-of-fact tone, "A brain." Ally went on to describe her brain. She explained that she has good and bad memories.

Interviewer: Do you keep the bad memories in the same place as the good

memories?

Ally: Yeah, they're mixed up.

Interviewer: Okay. And where are they at in your brain?

Ally: They're in the middle of my brain [said with confidence].

Later in the same conversation . . .

Interviewer: So you said that your "rememberings" are in the middle of

your brain.

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Ally: Yeah.

Interviewer: Does that mean there's a front of your brain?

Ally [2 second pause, said quietly, while looking down]: No [with an

uplifted lilt at the end as though asking a question].

Interviewer: There's just a middle of your brain? There's nothing around

it?

Ally: [8 second pause with no response, just looking down].

Later in the same conversation . . .

Interviewer: So do you have a back of your brain? [Ally nods yes.] What's

in the back of your brain?

Ally: [4 second pause with no response].

Ally appeared to understand that she had a brain, and it was involved in thinking

and remembering. She was not able to articulate her thinking process.

Claire loved to play Cinderella, but was willing to consider other play themes. I

asked her how she decided whether she wanted to play something different. She

explained it to me in this way:

Claire [2 second pause]: I just [3 second pause] think of it in my head and

try to think when I want to play a different princess, I just play house,

just playing house.

Interviewer: How do you think in your head?

Claire [3 second pause, looking down, with a look of concentration on her

face]: With my brain [pointing to her head].

Interviewer: Okay. Where is your brain? [Again points to her head.] How

do you know it's in your head?

Claire: Because [2 second pause], I'm a pretty smart missy.

I interpreted Claire's pauses and actions to indicate use of her metacognitive

processes as she shared this information.

Becky spent a great deal of time talking about pretending. It was one of her

favorite things to play. She was using mud to make birthday cakes during videotaping. I

asked her how she pretends, and she stated:

Becky: Because I just think of it in my head.

Interviewer: Okay, so you pretend in your head?

Becky: Mm-hmmm.

Interviewer: How does that work? How do you pretend in your head?

Becky [3 second pause]: I'm going to pretend in my head.

Interviewer: What in your head helps you to pretend?

Becky [4 second pause]: Right up here my . . . [tapping her forehead].

Interviewer: You're forehead helps you pretend? How does your forehead

help you pretend?

Becky [2 second pause]: Because I just think it up, and then it helps me

like, Don't forget.

Interviewer: But, what's in your forehead?

Becky: I don't know.

Interviewer: Okay. That's just where you think about things? [Nods yes.]

Okay.

Later in this conversation, Becky indicated there was a right and left side, along with a back and middle of her brain. She was not accurately able to label the factual parts of her brain. She certainly showed her awareness to having a brain and boldly stated separate areas of her brain had different functions.

The above examples indicate five year old children appeared to have knowledge about the existence of and an understanding of the basic function of this organ called a brain. It is interesting that children who were three or four years old did not name the brain or reference it, specifically, regardless of how I phrased the questions. Andy, Bill, Laura, Kathy, and Amanda did not refer to their brain during their interviews.

Assertion Two

Five year old children describe their brain as active.

The young children interviewed described their brain as being active. They described it as reminding them of things and helping them think. Some children had elaborate explanations of how active their brains were, while others just described activities.

Theo was telling me about one morning when he was playing with a friend. He described how they were doing some silly dances together. I asked him how he decided to dance with his friend, and he stated, with a playful tone to his voice, "because my brain dances." Nora stated that her brain played hockey "over and over and over and over." Jasmine stated that her brain would "remind me" of events she had experienced or information learned at an earlier time. Jason explained the work his brain did by saying, "I just think, and it's there." While talking about building a rocket ship with magnetic

tiles, I asked Theo what his brain was doing. He stated that it was busy making "sure it doesn't break or anything."

Claire described her active brain as "something like a machine up there." She went on in her description of this machine saying, "Maybe how you make clothes . . . you put more in, and it makes clothes up, and then it comes out the other side, and then it's made." She appeared to be indicating that, like clothes, this machine might produce thoughts. I asked her to describe how this machine would work, and she stated:

> Claire: Maybe a little house that starts the machine and makes the machine
> go and gets the machine [3 second pause] to make the machine work [rate
> of speech slowing down considerably] and stuff and put batteries in there.
> Interviewer: So this machine is busy thinking about these things? What is
> your brain doing?
> Claire: Making the pictures inside while the picture machine points them
> in your brain. Then you have eyes that look in your brain at the other side
> of your eyes.

Later in this interview, when asked what the "little machine" looked like, she stated, confidently after a 3 second pause, "a factory." She went further in her explanation in how the machine works by stating, "It takes pictures [short pause] like with a camera." She clarified the machine's duties when she said she would shake her head, and the pictures would fly out, but they would sometimes come back after a long time. Claire clearly viewed her brain as being a very active organ.

Becky did not describe her brain as a machine; however, she stated she would push a button (as she pointed to a spot above her right eyebrow) and "Click, then it's on."

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Once her brain was on, Becky indicated she was able to think about things. Cierra stated that a brain "makes you think and [3 second pause] eat." She later explained her brain makes her alive. When asked how her brain made her think, eat, and stay alive, she was unable to give any information, but she was confident in the purpose of her brain.

Becky also revealed that her brain "vibrates" when it is thinking. Aleah pointed out that her brain made energy and sent it to her lungs. Aleah characterized her brain as sometimes being a "bother" to her. She said her brain "talks to" her and gets louder and louder if she does not listen.

When asked how his brain helped him, Theo responded that it made you "really smart." To clarify, I asked him if it was his brain that made him really smart. He looked at me with his eyes squinted a bit, his eyebrows drawn in, and his chin pulled down toward his chest and he said, "Yes." His tone of voice and body language conveyed to me that I should not have needed to ask that question because the answer was obvious. Nora stated, when I asked her what her brain did, that, "it works." When I attempted to probe further and find out about the kind of "work" her brain did, she quite simply stated, that it "makes knowledge." Regardless of the follow up questions I asked, Nora did not expound on how her brain worked to make knowledge.

Nora and I were talking about how she likes to read books to her stuffed animals. When asking her how she learned to read, she replied:

Nora [leaning in closer to me and down toward the table, her voice very

soft, her eyebrows up and her shoulders pulled up]: I don't really

know how to read.

Interviewer: You don't know how to read [mirroring her body posture]?

What are you doing then?

Nora: Making an imaginary story.

Interviewer: How do you make an imaginary story?

Nora: With my brain.

Nora appeared very confident in the fact that her brain was capable of actively making up imaginary stories she enjoyed telling her stuffed animals.

By the age of five years old, children, through their words, actions, and non-verbal cues, appear to be able to suggest their brain is active. It talks to them, makes energy, produces materials like a factory machine, and dances. While they were not able to use sophisticated terms and descriptions of the activity their brains conducted, they were all confident their brains were indeed active in their heads.

Assertion Three

Five year old children indicate their brain stores information.

As I read and re-read transcripts to learn what the children interviewed were telling me about their metacognitive processes, another assertion emerged about memories being stored in their brain. The children were unsure how memories got into their brains, but they indicated they could recall events from the past because those events were stored in their brains. In fact, when I asked Hannah where she keeps her memories, she stated:

Hannah: In my head [without hesitation and said with confidence].

Interviewer: In your head? You were pointing to the side of your head.

You just keep them in your head. Is there anything in your head that

helps you keep them?

Hannah: Mm-hmmmm [affirmative].

Interviewer: What is that?

Hannah [stated as fact that should be common knowledge]: My brain.

Hannah was confident about her brain's ability to keep memories for her.

Claire confirmed that idea when she stated her memories were "in my head." She went on to state memories stayed in her head "until it gets out." She explained that if you did not think about memories for a long time, they would get out of your head, but she did not know where they went if they left her brain.

Becky stated she used her brain a lot because "it reminds me about things, and it reminds me about everything I need." Nora was the most explicit about her brain having a role in storing information. The following reflects our conversation as Nora described for me how she learned new information.

Interviewer: Where does stuff go when you learn it [3 second pause]? You

are pointing to your head. Where does it go in your head?

Nora: Your knowledge.

Interviewer: Your knowledge goes in there. [Nora nodded.]. And where do

you keep it?

Nora: In my brain.

Interviewer: What all is in your brain?

Nora [3 second pause]: Knowledge.

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Nora's words illustrated to me that she appeared to understand that she called "knowledge" went into and remained in her brain. She went on to describe that the knowledge came out her mouth when she needed to use it, further indicating that she may have understood this information was stored in her brain. Jasmine also referred to "knowledge," indicating she kept it "in my brain."

Cierra described memories went in the middle of her brain. I asked how memories got to the middle of her brain, and she expounded, "It [the memory] said 'excuse me' to the one that was in the way." She appeared to think her memories were capable of speaking to one another in her active brain.

When I asked Theo how he knew so much about the game of hockey, he replied, in a matter of fact tone of voice, "I don't really know, it was just in my brain." While using some blocks to play a game of hockey in their classroom, one of Theo's friends became upset. She clearly expressed with her words and body language (hands on her hips, and her body bent slightly forward at the hip) that she was angry. She stated that Theo "always got to go first" when they were playing. Theo, immediately remedied the concern by saying, "The other turn you can start, and then the next one [another child] can start." I stopped the video and asked Theo where he got the idea to have an order like this for starting the game. He stated, "my brain" in a tone that conveyed to me that he just retrieved this notion from his brain and used it to help his friend be less angry about how the games started. He did not articulate on how he accessed this information.

At one point during the interview, Theo was explaining the importance of having a goalie on the ice. He stated that sometimes if a team is behind in points, they pull the goalie. I asked if it was better to have a goalie playing or not. Theo indicated that it was

best to have one playing. I asked him how he learned that, and he leaned back in his chair, paused briefly, with his head tipped back, and stated, "I don't know, I just saw it once."

When Nora was explaining that she had watched hockey and learned from it, I asked her what she did with the information she learned. She smiled, laughed a little, looked away from me, and stated, "I play it over and over and over and over and over." I asked her if it looked like a movie, and she stated it did not, rather, it looked "like real hockey."

I had previously witnessed Jasmine read instructions for a game she wanted to play. I asked her how she had learned to read. She stated, quite simply, that she knew the letters, their sounds, and was able to put them together to be words. I asked her how she knew what sound went with which letter. She gazed off to the side for a few seconds, and then, quietly but confidently, looked at me and stated, "Um, [2 second pause] um [brief pause], I know that in my brain, so I think about it." Similarly, I asked Jason how one thinks about things, and he stated, "from your brain." This appeared to indicate, once again, that if information was in your brain, you could think about it and use the information later.

The five year old children interviewed appeared to have made a connection between their brains storing information and later being able to think about and discuss it. Cierra noted that her memories were in her brain, and she had to "get it into my brain somehow." She described how she knew it was hard to get memories into her brain, but did not explain the process beyond saying, "Maybe you suck them in."

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Ally described how her brain kept her memories and that "it's packed" with "dreams and numbers." When asked how the memories got into her brain or how she retrieved them back to think about, she quietly and slowly stated after several seconds, "I don't know." I attempted to ask the same question about how memories got into her brain. She paused for approximately 6 seconds, looking around herself but not focusing her eyes on anything, shrugged her shoulders, and very quietly said, "Don't know." The young children who were three or four years old talked about thinking and showed evidence of recalling information. However, they did not attribute any of the process as being a function of their brain.

Laura when asked what she was thinking about when she played with her dolls, stated, "I put them away, take one toy out of my room, and I put it back in when I'm done with it." I attempted to clarify her meaning by asking if she was telling me she thinks about rules when she is playing. Laura stated, "and I have to take one out again." This suggested to me that she was remembering the rules of playing with her dolls; she did not tell me how she remembered that particular rule or how she recalls memories.

Assertion Four

Five year old children state their brain controls their body.

As stated earlier, five year old children interviewed shared their analysis of what duties their brain performed, while the younger children did not convey a similar message. The older children stated in a variety of ways that their brains controlled their bodies. Theo indicated that his brain "controls my eyes," "controls my bones," "makes my hands do that," and "tells me what to do." Shelby shared her brain ". . . helps you. It moves you, everything." Claire specified that her eyes were a part of her brain. She could

not clarify how her brain and eyes worked together, but she was certain that her brain controlled her eyes. Claire also indicated her brain controls her ears and nose by allowing entry of sounds and smells.

Jasmine and Jason indicated that their brains controlled their learning. When asked how they had learned something, they both responded by saying, they "learned it from my brain." Jason went further by inferring that all his thinking came "from my brain." Nora gave examples of specific body parts that were controlled by her brain. She stated "my mouth" and "my eardrum" were under the control of her brain. Theo indicated that his brain "makes sure it doesn't break things" when referring to his hands while building with magnetic tiles.

Theo stated most emphatically that his brain controlled him when he said, "You have to do what your brain says." I attempted to gain further insight into this notion of having to listen to your brain with Theo. I asked him how his brain tells his body what to do. He confidently stated, "You can do whatever you want, but your brain controls you, so you can do whatever you want."

Beth commented that her "brain conducts my body so it doesn't do the wrong thing." She stated that her brain did not talk to her, but it could think; and somehow from that thinking, she knew what she was supposed to do and not do. When I asked Aleah how she knew she was finished playing, she said:

Aleah: 'Cause we think it.

Interviewer: How does that happen?

Aleah [5 second pause]: 'Cause [2 second pause] you think of it [looking

across the room, but not focused on anything], and then your brain

says yes or no.

Interviewer: How does your brain decide that it's yes or no?

Aleah: 'Cause the energy keeps your brain; and when it's sleeping, the

energy wakes my brain up, and I'm like, "What's that?"

Aleah did not comment further on the energy waking her up so her brain could think. She was confident that her brain had control over her playing and finishing a game. The five year old children comments implied they believed their brains controlled their bodies. They had varying ways of explaining this control, most simply stating they did not know how it happened.

Conclusion

The five year old children interviewed appeared to have knowledge that their brains existed as physical organs in their bodies. They seemed to understand that this organ, the brain, served an important function to their learning and knowledge acquisition. These children, in particular, showed indications that they viewed their brains as being active, capable of storing information, and of having control over their bodies. The ability to evaluate how they used their brains and how a brain acquired knowledge appeared to be emerging in these children. These examples show that children, given adequate time to think, are able to express their metacognitive process through nonverbal cues.

CHAPTER V

DISCUSSION

The overarching purpose of this study was to examine young children's descriptions of their metacognitive processes. I used qualitative phenomenological methods to gather data, followed by a hermeneutical analysis process to find themes across the children's words and to make assertions about the broad question asked: How do children articulate their metacognitive processes? While analyzing interview transcripts, I asked these sub questions:

1. How do young children describe their thinking process(es) when making a decision during play?

2. What are children's understandings of the role of their brain in thinking and remembering processes during play?

An unexpected sub question arose after beginning the analysis process: How do children describe the role of their brain in learning and retrieval of information? The fact that five year old children consistently referred to their brain when discussing decision making and thinking led me to interview an additional sample of five year old children. I was interested in learning if it was common for five year old children to make references to their brain or if it was an anomaly among two of the initial five year olds interviewed.

Overview of Dissertation

Chapter I contained a broad overview of this study by providing basic background knowledge regarding the importance of young children's learning and development. Chapter II provided an extensive review of the existing literature about children's play. The literature linked play to a foundation of learning that children use later in their educational journey. The review also established there was a lack of published studies in which researchers asked children about their metacognitive processes. Chapter III defined methodology and specific methods used to complete this study. Chapter IV used excerpts of children participant's words to show the emergence of an overarching theme and subsequent assertions. Chapter V contains: (a) an overview of methodology used in this study, (b) a summary of the research theme and assertions, (c) links between theme and assertions and existing literature, (d) outlines of possible implications of research results to early childhood education, (e) limitations of this research, (f) conclusions, and (g) recommendations for further research.

Overview of the Methodology

This phenomenological study is comprised of words from the interviews of 18 young children, a videotape of the children engaged in play, and a second interview with the children while they watched the videos. My goal was to hear words children used to describe how they made decisions, and to hear why they made specific choices. While children watched videos of themselves playing, I posed purposeful questions to allow children to delve deeper into their metacognitive processes. During the interview, I listened to not only their words but also watched their non-verbal cues their bodies.

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Hearing young children's words or watching them during the silence of their pauses, seeing facial expressions, and observing messages their bodies conveyed, allowed me to "see" their thinking processes. While pondering questions, young children had an opportunity to think deeply and articulate their thought processes while watching themselves play. This method afforded the opportunity to explore avenues of young children's metacognitive processes.

I interviewed children enrolled in a single early childhood education (ECE) program located on the campus of a university in the Upper Midwest. An overarching theme emerged using a hermeneutical analysis process, explained by Lindseth and Norberg (2004). As Lindseth and Norberg recommended, I used the exact words of children whenever possible, to allow for the emergence of commonalities among their descriptions of play and metacognitive processes. After a theme emerged from interview transcripts, I made assertions about children's perceptions of their brain and its role in thinking and remembering. In the next section, I will discuss the theme and subsequent assertions based on the children's words.

Overarching Theme

Young children use non-verbal cues to demonstrate their metacognitive processes.

Young children clearly articulated use of their ability to think. They did not use words to tell me this message; however, their pauses, facial expressions, and body language clearly indicated they thought before responding to my questions or requests for additional information.

Geurten and Willems (2016) reported that children as young as 20 months showed use of their metacognitive processes while searching for a hidden object. They further

suggested, three year old children showed use of their thinking processes when making decisions. They went on to explain that four year old children used cues from their environment to help recall specific memories. Geurten and Willems interpreted children asking for help, making decisions, and using cues from their environment as examples of their metacognitive processes. The non-verbal cues, discussed by Geurten and Willems, are similar to those I identified as children using their thinking processes.

Assertions

While interviewing the first seven children, it was the five year olds who when asked how they knew how to do something, they indicated the information was in their brain. Each of them spoke in age-appropriate detail about their brains helping them and retaining information. The three and four year old children did not refer to their brain. I found this to be interesting and purposefully chose to interview more 5 year old children for further exploration. All of these children also discussed their brain. In reviewing their words, the following assertions arise:

Assertion 1: Five year old children understand they have an organ called a brain.

Assertion 2: Five year old children describe their brain as active.

Assertion 3: Five year old children indicate their brain stores information.

Assertion 4: Five year old children state their brain controls their body.

Upon seeing this commonality in use of the word *brain*, I conducted an EBSCOHost search using terms: young children discuss/describe/talk about their brain. There were not any publications regarding children specifically speaking about their brain. However, I did locate two articles that spoke about children and their memory, in which the authors related it to metacognitive development or function. The five year old

children in my study, spoke about remembering events – a picnic with grandparents, the rules parents had at home, and incidents of playing with a specific toy in their classroom or at home. These children were not able to identify a timeframe for remembered events, only that they "had done" this or "this one time . . ." something had occurred. All references to remembering were made in past tense indicating to me it was something that occurred at an earlier time.

Flavell, Green, and Flavell (2000) reported five year old children were able to recall recent events under specific conditions. They also stated five year old children did not give detailed accounts of their remembered events or activities. The interviewed children provided a significant amount of information about events that I surmised had not happened within the previous 24 hours; for instance, a picnic with grandparents. I interviewed Beth on a Thursday; I feel confident she had not gone on a picnic in the woods with her grandparents during the previous day. She recalled events of that picnic in detail. Of course, I had no way to verify the authenticity of the memory; however, that was not the focus of my study. Instead, I was interested in where she believed this memory was stored. She indicated it was stored in her brain.

While hearing their words, I learned young children talked about having a brain. They articulated their brain was busy indicating it was a functioning organ in their body. They also had a basic understanding of how their brain works. They did not use technical language of neurons, synaptic connections, or other scientific descriptors of their nervous system, as it relates to allowing a brain to stimulate various body parts to create action or store memories. However, they did articulate a basic understanding of a brain functions – how it controls the body and stores memories.

Implications and Recommendations for Teachers

Information presented in this dissertation may be valuable for early childhood educators because it can guide teachers as they make curriculum decisions. This study underscores an important aspect of early childhood education, which tells teachers young children need time to process questions and formulate answers. Teachers should not rush children through the learning process. Instead, children should be granted time to think through a question or problem, without someone giving them the answer. Children showed me they have the ability to think. Dewey (1938) and Vygotsky (1967) reported that children need time to think about and process information. This study serves as a reminder to teachers about this important implications of early childhood education. Children need time to explore their world; time to interact with one another or with a more educated peer or adult; they will learn according to their own timeline.

Another important implication of this study is that teachers must understand children do have the ability to use metacognitive processes. When asked a thought-provoking question, young children displayed the ability to think about it. My recommendation would be that teachers, when developing their curricula, methodically and purposefully anticipate questions they can pose to children. For instance, if teachers plan an activity using Play-Doh, they can be prepared to ask a child why they chose to create a particular shape. Then teachers can restate children's responses in a way that prompts them to note their thinking processes. Teachers may respond with, "You were thinking about the drum you were playing with earlier, so you decided to make one with Play-Doh," thereby assisting children in understanding how a previous act may help them

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make a decision about later actions. It may lead to the children critically thinking about how their thoughts affect their actions.

A further recommendation based on the same implication, would be for teachers to be purposeful while guiding children through thinking errors. Teachers can ask prompting questions. For example, if young children are struggling to put together a puzzle, they are not going to benefit from teachers simply saying, "Think about where the piece might fit." Instead, teachers could make guiding statements, such as, "The piece you're holding has one of the dog's eyes on it. Where do you think it should go?" This would allow children to learn how to think through the process of where pieces belong in a picture. Then, when children correctly fit the piece where it belongs, teachers could ask about their decision. This would allow children to practice articulating metacognitive processes with feedback from their teacher.

Additionally, another implication for teachers would be to understand young children's metacognitive processes are emerging during preschool years. I would further recommend that teachers be aware of teachable moments during which they can encourage young children to explore their thinking processes. For instance, if a child is putting together a train track, a teacher could use that activity to ask, "How did you know how to put those pieces together so that your train could go all the way around?" This would encourage children to think about why they did something or why they made a particular decision.

The implications are far reaching. If teachers encourage young children to think through their thinking, making this process a habit, later in life children may be equipped with skills to think more critically about their decisions. When the consequences are

greater than putting a puzzle piece in the wrong spot or having your train fall off a track, it is important for individuals to understand their decision making process. It is an important skill or tool children will use later in life.

Limitations

One limitation of this study concerns demographics of participants. All participants attended a single early childhood education program located on a university campus in the Upper Midwest. Children were from families in which education was highly valued, as exhibited by the fact that all the parents held a post-secondary degree and held terminal degrees. It is likely these children had opportunities to which other children may not have had access. A second limitation included gender. The majority of the recruited five year old interviewed children were female, due to the limited population. There may be gender differences in the understanding of how a brain functions in male children.

Conclusions

After gathering themes from children's words, I surmised five year old children are capable of expressing that their brains help them learn and remember. These children implied that information went into their brain and could be accessed later. However, none of them articulated how this happened. In this study, I surmised from the data that children convey, through words, silence, facial expressions, and body language, that they are thinking. In summary, children expressed knowledge about their brain by indicating they have one, and it plays a role in thinking and remembering. However, even though I interpreted these signs as thinking, the children did not articulate an understanding of their thinking process other than saying their brain was involved.

Recommendations for Further Research

I would recommend repeating this study using a broader demographic sample. These participants were not diverse enough to make generalized statements about children's thinking processes. I would further recommend isolating individual pieces of videotapes to help children truly capture what they were thinking "in that moment." The five year old children, in particular, used the context of play to help describe their thinking. It may be beneficial to help children describe their thoughts more specifically by isolating individual acts of decision-making when asking questions. By narrowing the scope of an incident, it may allow a researcher to delve into specific thought processes.

Additionally, it may be beneficial to interview all children playing together. For instance, interviewing all four children engaged in playing hockey may stimulate an individual child giving the child more insight into his or her own thoughts, when that child hears someone else describe what that someone else was doing or thinking during the same play. Finally, conducting studies regarding children's understanding of their metacognitive processes and how those processes relate to self-regulation, learning styles, methods of studying, or any host of topics may be beneficial to helping children articulate their thinking processes. This, in turn, may help children better understand themselves as learners.

APPENDICES

UND UNIVERSITY OF **NORTH DAKOTA**

DIVISION OF RESEARCH & ECONOMIC DEVELOPMENT

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March 22, 2016

Principal Investigator:	Dawnita Nilles
Project Title:	Metacognition: Young Children's Descriptions of Knowledge Acquisition
IRB Project Number:	IRB-201603-339
Project Review Level:	Expedited 6, 7
Date of IRB Approval:	03/22/2016
Expiration Date of This Approval:	03/21/2017
Consent Form Approval Date:	03/22/2016

The application form and all included documentation for the above-referenced project have been reviewed and approved via the procedures of the University of North Dakota Institutional Review Board.

Attached is your original consent form that has been stamped with the UND IRB approval and expiration dates. Please maintain this original on file. *You must use this original, stamped consent form to make copies for participant enrollment. No other consent form should be used.* It must be signed by each participant prior to initiation of any research procedures. In addition, each participant must be given a copy of the consent form.

Prior to implementation, submit any changes to or departures from the protocol or consent form to the IRB for approval. No changes to approved research may take place without prior IRB approval.

You have approval for this project through the above-listed expiration date. When this research is completed, please submit a termination form to the IRB. If the research will last longer than one year, an annual review and progress report must be submitted to the IRB prior to the submission deadline to ensure adequate time for IRB review.

The forms to assist you in filing your project termination, annual review and progress report, adverse event/unanticipated problem, protocol change, etc. may be accessed on the IRB website:
http://und.edu/research/resources/human-subjects/

Sincerely,

Michelle L. Bowles, M.P.A., CIP
IRB Coordinator

MLB/sb
Enclosures

Cc: Dr. Mary Baker

The University of North Dakota is an equal opportunity / affirmative action institution.

Appendix B

Script for Preschool Teacher

A graduate student in the Dept. of Teaching and Learning, (Teacher Education doctorate program) is conducting a research project to learn about children's understanding of their own knowledge acquisition. The graduate student has asked UCLC preschool teachers to identify children who actively engage in play and also have high verbal skills to participate in the research. I thought of your child. If you were to give your consent to the researcher, your child would be interviewed twice and would be videotaped while playing in our classroom one time. The interviews would take place at UCLC during the hours your child regularly attends. May I give your name and contact information to the graduate student so they may contact you directly to explain the purpose of the research, the methods that will be used, and the consent form? You would be able to ask questions and have everything explained to you at which time you would be asked to sign a consent form, if you are comfortable with your child participating.

Child's Name: _____

Parent's Name: _____

By providing your name and your child's name you are giving permission for the researcher to contact you.

Appendix C
Interview 1 Question Bank

1) Do you like to play? What do you like to play? What do you use when you are playing?

2) Why do you play with {toy}?

3) How do you decide what you want to play?

4) How do you know when you are done playing {activity}? What do you do if you are told you have to stop playing {activity/toy} and you don't think you are done?

5) Who do you like to play with? How do you decide who you will play with? What do you do if they don't want to play with you?

6) When you are playing {activity} what do you think about?

7) When you are playing {activity} and something isn't working right {blocks fall over; someone is arguing with you; you can't get the dolls clothes on…), how do figure out how to fix it?

8) Do you think that being able to play is important? Why or why not?

Appendix D
Interview 2 Question Bank

Observation/Videotaping will occur - I will be making note about specific skills or behaviors I see the child using or doing.

Interview 2 Question Bank

These questions will be based on what I observed while the child was playing. The child and I will watch the videotape together. I will periodically stop the video to ask a specific question about why the child did a specific action or what they were pretending when they were (activity). These questions will be completely based on the play activity itself and what I see the child doing.

If I observe a child building with blocks, for instance, my questions would be:

1. You were building with the blocks. You looked like you are really having fun. Tell about what you were building.

2. How did you decide to build {that}?

3. You were building with {child's name}, did you decide to play with him/her or did he/she join you? Why did you/they choose to build together?

4. How did you decide that you wanted to put that toy inside the blocks you were building with? What does it do? What made you think of that?

Depending on the specifics of what I saw:

1. I noticed that your { } was really strong and didn't tip over at all. How did you learn to build like that?

2. At one point you and {child's name} got sort of angry at one another. Do you remember what happened? Can you tell me about it? I saw that you worked it out. How did you learn to talk to each other about it like that?

3. I heard you count the blocks and you had eight of them stacked up. How did you learn to count all the way to eight by yourself?

OR If I observe a child putting a puzzle together:

1. You really worked hard on that barnyard puzzle. You smiled really big when you showed your friends you had finished it by yourself. How did you know where the pieces went?

2. How did you learn to do that by yourself?

3. You are sort of moving this piece around looking for where it goes, what were you thinking about?

OR If I observe a child drawing a picture:

1. You were really working hard on drawing a picture at the table. Tell me about that picture.

2. Why did you decide to draw {that}?

3. It looks like you made the (that) by drawing that shape. What shape is that? How do you know that?

4. I noticed you were writing your name on the picture. When did you learn to write the letters in your name? How did you learn to write them?

My final question for all the children will be: Do you think you learn new things while you are playing? Why or why not? If not, then how do you think you learn all the things (giving specific examples based on the observations) that you can do?

REFERENCES

Ahn, J., & Filipenko, M. (2007). Narrative, imaginary play, art, and self: Intersecting worlds. *Early Childhood Education Journal*, *34*(4), 279-289.

Akturk, A. O., & Sahin, I. (2011). Literature review on metacognition and its measurement. *Procedia Social and Behavioral Sciences*, *15*, 3731-3736.

Almon, J. (2013, September/October). It's play time! The value of play in early education and how to get teachers on board. *Principal*, 12-15.

Alvestad, M. (2011, November). You can learn something every day! Children talk about learning in kindergarten – Traces of learning culture. *International Journal of Early Childhood*, *43*(3), 291-304.

Bartsch, K., Horvath, K., & Estes, D. (2003). Young children's talk about learning events. *Cognitive Development*, *18*, 177-193.

Baumer, Ferhold, & Lecusay. (2005). Promoting narrative competence through adult-child joint pretense: Lessons from the Scandinavian educational practice of playworld. *Cognitive Development, 20*, 576-590

Bekker, Sturm, Weaseling, Groenendall, & Eggen. (2008). Interactive play objects and the effects of open-ended play on social interaction and fun. In: Proceedings of International Conference on Advances in Computer Entertainment technologies (ACE), 389-392

Boyoung, Chae, & Boyd. (2008). Young children's block play and mathematical

learning. *Journal of Research in Childhood Education, 23*(2), 157-162

Broadhead. (2010). *Early Years Play and Learning: Developing Social Skills and*

Cooperation. New York: RoutledgeFalmer

Brown, S. (with Vaughan, C.). (2009). *Play: How it shapes the brain, Opens the*

imagination, and Invigorates the soul. New York: Penguin Group (USA) Inc.

Bruner, J. S. (1972, August). Nature and uses of immaturity. *American Psychologist*,

27(8), 687-708.

Bulotsky-Shearer, R. J., Bell, E. R., Romero, S. L., & Carter, T. M. (2012, January-

February). Preschool interactive peer play mediates problem behavior and

learning for low-income children. *Journal of Applied Developmental Psychology*,

33, 53-65.

Burns, M. S., Johnson, R. T., & Assaf, M. M. (2012). *Preschool education in today's*

world: Teaching children with diverse backgrounds and abilities. Baltimore: Paul

H. Brookes Publishing Co.

Burns, S. M., & Brainerd, C. J. (1979, September). Effects of constructive and dramatic

play on perspective taking in very young children. *Developmental Psychology,*

15(5), 512-521.

Chevalier, N., & Blaye, A. (2016, July/August). Metacognitive monitoring of executive

control engagement during childhood. *Child Development*, *87*(4), 1264-1276.

Chevalier, N., Martis, S. B., Curran, T., & Munakata, Y. (2015, June). Metacognitive

processes in executive control development: The case of reactive and proactive

control. *Journal of Cognitive Neuroscience*, *27*(6), 1125-1136.

Christakis, Zimmerman, & Garrison. (2007). Effect of block play on language acquisition and attention in toddlers: a pilot randomized controlled trial. *Archive of Pediatric and Adolescent Medicine, 161*(10), 967-971

Coolahan, K., Fantuzzo, J., Mendez, J., & McDermott, P. (2000, September). Preschool peer interactions and readiness to learn: Relationships between classroom peer play and learning behaviors and conduct. *Journal of Educational Psychology*, *92*(3), 458-465.

Connolly, J. A., & Doyle, A. B. (1984, September). Relation of social fantasy play to social competence in preschoolers. *Developmental Psychology*, *20,* 797-807.

Copple, C., & Bredekamp, S. (Eds.). (2009). *Developmentally appropriate practice in early childhood programs: Serving children from birth through age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.

Craft, A., McConnon, L., & Matthews, A. (2012, April). Child-initiated play and professional creativity: Enabling four-year-olds' possibility thinking. *Thinking Skills and Creativity*, *7*, 48-61.

Csikszentmihalyi, M., & Bennett, S. (1971). An exploratory model of play. *American Anthropologist*, *73*(1), 45-58.

Dansky. (1980). Make-Believe: A mediator of the relationship between play and associative fluency. *Child Development, 51*(2), 575-579

Dansky & Silverman. (1973). Effects of play on associative fluency in preschool-aged children. *Developmental Psychology, 9*(1), 38-43

Dewey, J. (1916). *Experience and education*. New York: Touchstone.

Fabes, R. A., Martin, C. L., & Hanish, L. D. (2003, May-June). Young children's play qualities in same-, other-, and mixed-sex peer groups. *Child Development*, *74*(3), 921-932.

Fantuzzo, J., Sekino, Y., & Cohen, H. L. (2004, March). An examination of the contributions of interactive peer play to salient classroom competencies for urban Head Start children. *Psychology in the Schools*, *41*(3), 323-336.

Fawcett, C., & Liszkowski, U. (2012, December). Mimicry and play initiation in 18-month-old infants. *Infant Behavior and Development*, *35*, 689-696.

Feldman, R. S. (2012). *Child Development* (6th ed.). New Jersey: Pearson Education, Inc.

Finlay, L. (2009). Debating phenomenological research methods. *Phenomenology & Practice*, *3*(1), 6-25.

Flavell, J. H. (1979, October). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist*, *34*(10), 906-911.

Flavell, J. H., Green, F. L., & Flavell, E. R. (Eds.). (1995, January). Young children's knowledge about thinking. *Monographs of the Society for Research in Child Development, 60*(1), 1-96.

Flavell, J. H., Green, F. L., & Flavell, E. R. (2000). Development of children's awareness of their own thoughts. *Journal of Cognition and Development*, *1*, 97-112.

Flood, A. (2010, January). Understanding phenomenology. *Nurse Researcher*, *17*(2), 7-15. doi: 10.7748/nr2010.01.17.2.7.c7457

Friend, M. (2011). *Special education: Contemporary perspectives for school professionals* (3rd ed.). New Jersey: Pearson Education, Inc.

Fromberg, D. P. (2002). *Play and meaning in early childhood education.* Boston: Allyn & Bacon.

Geurten, M., & Willems, S. (2016, December). Metacognition in early childhood: Fertile ground to understand memory development? *Child Development Perspectives*, *10*(4), 263-268.

Ghafouri, F., & Wien, C. A. (2005, June). "Give us a privacy": Play and social literacy in young children. *Journal of Research in Childhood Education*, *19*(4), 279-291.

Glenn, N. M., Knight, C. J., Holt, N. L., & Spence, J. C. (2013, May). Meanings of play among children. *Childhood*, *20*(2), 185-199.

Gonzalez-Gadea, M. L., Scheres, A., Tobon, C. A., Damm, J., Baez, S., Huepe, D., . . . Ibanez, A. (2015, July). Stop saying that it is wrong! Psychophysiological, cognitive, and metacognitive markers of children's sensitivity to punishment. *PloS ONE*, *10*(7), 1-17. doi: 10.1371/journal.pone.0133683

Green, E. J., Crenshaw, D. A., & Langtiw, C. L. (2009). Play theme-based research with children. *The Family Journal: Counseling and Therapy for Couples and Families*, *17*(4), 312-317.

Haight, W. L., Wang, X.-l., Fung, H. H.-t., Williams, K., & Mintz, J. (1999, November/December). Universal, developmental, and variable aspects of young children's play: A cross-cultural comparison of pretending at home. *Child Development*, *70*(6), 1477-1488.

Hedges, H. (2014, February). Young children's "working theories": Building and connecting understanding. *Journal of Early Childhood Research*, *12*(1), 35-49.

Hoffmann, J., & Russ, S. (2012). Pretend play, creativity, and emotion regulation in

children. *Psychology of Aesthetics, Creativity, and the Arts*, *6*(2), 175-184.

doi:10.1037/a0026299

Howe, N., Petrakos, H., Rinaldi, C. M., & LeFebvre, R. (2005). "This is a bad dog, you

know…": Constructing shared meaning during sibling pretend play. *Child

Development*, *76*(4), 783-794.

Hurwitz, S. C. (2002). For parents particularly: To be successful – Let them play.

Childhood Education, *79*(2), 101-102.

Ilgaz, H., & Aksu-Koç, A. (2005, October-December). Episodic development in

preschool children's play-prompted and direct-elicited narratives. *Cognitive

Development*, *20*(4), 526-544.

Isenberg, J. P., & Quisenberry, N. (2002, Fall). A position paper of the Association for

Childhood Education International. Play: Essential for all children. *Childhood

Education*, *79*(1), 33-39.

Lee, S. W. F. (2013). Adapting cognitive task analysis to explore young children's

thinking competence. *Journal of Research in Childhood Education*, *27*, 208-223.

Leong, D. J., & Bodrova, E. (2012, January). Assessing and scaffolding make-believe

play. *Young Children*, *67*(1), 28-34.

Leslie, A. M. (1987). Pretense and representation: The origins of "theory of mind."

Psychological Review, *94*(4), 412-426.

Lillard, A. S. (1993). Pretend play skills and the child's theory of mind. *Child

Development*, *64*, 348-371.

Lindseth, A., & Norberg, A. (2004, June). A phenomenological hermeneutical method for

researching lived experience. *Scandinavian Journal of Caring Sciences*, *18*(2),

145-153. doi**:** 10.1111/j.1471-6712.2004.00258.x

Liu, C. H., & Matthews, R. (2005, July). Vygotsky's philosophy: Constructivism and its

criticisms examined. *International Education Journal*, *6*(3), 386-399.

Maxwell, J. (2005). *Qualitative Research Design: An Interactive Approach* (2nd ed.).

Thousand Oaks, CA: Sage Publications, Inc.

Miller, E., & Kuhaneck, H. (2008). Children's perceptions of play experiences and play

preferences: A qualitative study. *American Journal of Occupational Therapy*,

62(4), 407-415.

Moore, M., & Russ, S. W. (2008). Follow-up of a pretend play intervention: Effects on

play, creativity, and emotional processes in children. *Creativity Research Journal*,

20(4), 427-436. doi:10.1080/10400410802391892

Murphy, E. (1997, Summer). *Constructivism: From philosophy to practice* [Web site].

(ERIC Document Reproduction Service No. ED444966). Retrieved from

http://files.eric.ed.gov/fulltext/ED444966.pdf.

National Association for the Education of Young Children [NAEYC]. (n.d.). Early years

are learning years. Washington, DC: Author. Retrieved from

https://www.naeyc.org/academy/families/early_years

Nunes, M. B., & McPherson, M. A. (2003, January). Constructivism vs. Objectivism:

Where is difference for designers of e-learning environments? *Proceedings of the*

3rd IEEE International Conference on Advanced Learning Technologies, Athens,

Greece, ICALT'03, 496-500. doi: 10.1109/ICALT.2003.1215217

O'Connor, C., & Stagnitti, K. (2011, May-June). Play, behaviour, language and social skills: The comparison of a play and non-play intervention within a specialist school setting. *Research in Development Disabilities, 32*, 1205-1211.

Piaget, J. (1952). *The Origins of Intelligence in Children.* New York: International Universities Press.

Piaget, J. (1959). *The language and thought of the child*. New York: The Humanities Press.

Proust, J. (2010). Metacognition. *Philosophy Compass*, *5*(11), 989-998.

Robin, L., Keegan, J., & Ward, K. (2003). In *Qualitative Research Practice: A Guide for Social Science Student and Researchers.* Ritchie & Lewis (Ed.) Sage Publications, Inc: Thousand Oaks, CA

Russ, S. W., & Kaugars, A. S. (2001, April). Emotion in children's play and creative problem solving. *Creativity Research Journal*, *13*(2), 211-219.

Sacha, T. J., & Russ, S. W. (2006, April). Effects of pretend imagery on learning dance in preschool children. *Early Childhood Education Journal*, *33*(5), 341-345.

Saltz, E., Dixon, D., & Johnson, J. (1977, June). Training disadvantaged preschoolers on various fantasy activities: Effects on cognitive functioning and impulse control. *Child Development*, *48,* 367-380.

Samuelsson, I. P., & Carlsson, M. A. (2008). The playing learning child: Towards a pedagogy of early childhood. *Scandinavian Journal of Educational Research*, *52*(6), 623-641.

Saracho, O. (2002a). Play and young children's learning. In B. Spodek (Ed.), *Today's kindergarten: Exploring the knowledge base, expanding the curriculum* (pp. 91-109). New York: Teachers College Press.

Saracho, O. N. (2002b, October). Young children's creativity and pretend play. *Early Child Development and Care*, *172*(5), 431-438. doi: 10.1080/03004430214553

Saracho, O., & Spodek, B. (1998). Preschool children's cognitive play: A factor analysis. *International Journal of Early Childhood Education*, *3*, 67-76.

Saracho, O. N., & Spodek, B. (2003a). Introduction: Historical antecedents of early childhood education play. In O. N. Saracho & B. Spodek (Eds.), *Contemporary perspectives on play in early childhood education* (pp. vii-xv). Greenwich, CT: Information Age Publishing, Inc.

Saracho, O. N., & Spodek, B. (2003b). Understanding play and its theories. In O. N. Saracho & B. Spodek (Eds.), *Contemporary perspectives on play in early childhood education* (pp. 1-20). Greenwich, CT: Information Age Publishing, Inc.

Scheuer, N., de la Cruz, M., & Pozo, J. I. (2002, June). Children talk about learning to draw. *European Journal of Psychology of Education*, *17*(2), 101-114.

Schwandt, T. A. (1997). Qualitative inquiry: A dictionary of terms. Thousand Oaks, CA: Sage Publications, Inc.

Seidman, I. (2006). *Interviewing as qualitative research: A guide for researchers in education and the social sciences* (3rd ed.). New York: Teachers College Press.

Smith, P. K., & Pellegrini, A. (2013-2015). Learning through play. In R. E. Tremblay, M. Boivin, & R. D. Peters (Eds.), *Encyclopedia on Early Childhood Development* (pp. 1-5) [Online]. Montreal and Laval, Quebec: Centre of Excellence for Early Childhood Development, and The Strategic Knowledge Cluster on Early Child Development, respectively. Retrieved from http://www.child-encyclopedia.com/sites/default/files/textes-experts/en/774/learning-through-play.pdf

Smith, P. K., & Vollstedt, R. (1985, August). On defining play: An empirical study of the relationship between play and various play criteria. *Child Development*, *56*(4), 1042-1050.

Stake, R. E. (2010). *Qualitative research: Studying how things work*. New York: The Guilford Press.

Steele, R. S. (1989). A critical hermeneutics for psychology: Beyond positivism to an exploration of the textual unconscious. In M. J. Packer & R. B. Addison (Eds.), *Entering the circle: Hermeneutic investigation in psychology* (pp. 223-237). Albany: State University of New York Press.

Sutherland, S. L., & Friedman, O. (2013, September). Just pretending can be really learning: Children use pretend play as a source of acquiring generic knowledge. *Developmental Psychology*, *49*(9), 1660-1668.

Tahmores, A. H. (2011). Role of play in social skills and intelligence of children. *Procedia – Social and Behavioral Sciences*, *30*, 2272-2279.

von Glasersfeld, E. (1982). An interpretation of Piaget's constructivism. *Revue Internationale De Philosophie*, *36*(4), 612-635.

Vrasidas, C. (2000). Constructivism versus objectivism: Implications for interaction, course design, and evaluation in distance education. *International Journal of Educational Telecommunications*, *6*(4), 339-362.

Vygotsky, L. (1967). Play and its role in the mental development of the child. *Soviet Psychology*, *5*(3), 6-18.

Vygotsky, L. (1978). *Mind in Society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Wertz, F. J., Charmaz, K., McMullen, L. M., Josselson, R., Anderson, R., & McSpadden, E. (2011). *Five Ways of Doing Qualitative Analysis: Phenomenological psychology, grounded theory, discourse analysis, narrative research, and intuitive inquiry.* New York: The Guildford Press.