How Children's Museums Can Facilitate the Study of Child Development: A Case Study of PlayWorks™ at the Children's Museum of Manhattan

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Introduction

"It's like an indoor educational playground." "Can we stay a little longer? Please? This is fun!" "Mommy, Mommy! Alphie the dragon said this block is the letter H for Huckleberry and this is B for Banana." These are just some of the things one can overhear when in the PlayWorks™ exhibit at the Children's Museum of Manhattan (CMOM). An oasis of child-centered fun and learning nestled in the heart of Manhattan, the museum is a unique place for parents to bring their children. Its popularity with parents and children alike is tangible as one enters the museum and is struck by a wave of giggles, laughs and shouts that can only be due to children at play. Psychological researchers might also take special interest in children's museums for their ability to provide rich information about child development and family interaction in a naturalistic setting.

CMOM operates on a number of mutually supporting levels. It provides educational opportunities for all types of learners through its nontraditional programs and exhibits that focus the learning process on exploration, discovery and play. This makes the museum a safe space for learning and establishes it as a bridge between the home and school experience. CMOM also serves as a vibrant laboratory where creative educational methods for families are tested and realized through its programs and exhibitions. Additionally, in recent years CMOM has prioritized collaborating with academic and research institutions in order to increase its own knowledge and expertise of early childhood education and development and to make research accessible to parents, educators and childcare providers. These museums afford the field of psychology with a natural environment for insight into certain aspects of child development that are otherwise poorly understood in the formal setting of a laboratory. In this article we will take a broad look at how children's museums and child development researchers can collaborate, with the mutual goal of better understanding the developing mind and how to best engage it. The key realms of development we highlight in this article are all related to spontaneity and interaction. This emphasis on natural, organic behavior outside the laboratory – and how it interacts with more-traditional domains of study in child development – captures the unique potential of children's museums to provide a window into a child's "real life" learning processes. This information allows scientists to accurately gauge the conditions under which children are used to receiving information - and design the most effective interventions to enhance a child's

experience. We will note some observations in the three general domains of basic physics, pretend play and cooperation that have driven us to conclude that future studies based in a children's museum setting would significantly add to the body of psychological discourse.

As a foundation for this study, we first look to previous research in children's museums. It is important to note that children's museums are a relatively new concept that are still advancing and establishing themselves. Yet their presence and influence is growing exponentially: "Children's museums are the youngest and fastest growing segment of the museum field as a whole" (Association of Children's Museums, 2002, Section Success and Growth). As they find their niche within the realm of both traditional museums as well as children's play spaces, we expect children's museums to greatly flourish. Mayfield (2005) discusses children's museums across the globe exploring their merit, methods and purposes. She pinpoints the fundamental shift in philosophy which guides children's museums- "…that the museum [is] for somebody rather than about something" (Cleaver, 1992, p. 9 as cited in Mayfield (2005)). Important for the present study, Mayfield defines the wide range of missions and goals various children's museums define as their driving objective. These goals are all centered around learning, interactive/hands-on activity, fun and enjoyment, play, creativity, imagination, discovery, and nurturing relationships among families. Each of these goals is pertinent to the field of psychology and deeply intertwined with fostering child development from various perspectives. Drawing on a need for the present perspective and the proposed future studies, Mayfield emphasizes that one of the many challenges for children's museums is the lack of research-based documentation on their positive effects on children and family/peer play.

Other research has focused more on comparative studies between children's museums and adult-targeted museums. A study at the Children's Museum in Boston explored 'holding power' (the time a person spends at an exhibit). Children spend 5-10 minutes at an exhibit or activity while adults only spend about 10-30 seconds at an exhibit at a traditional museum (Cleaver, 1992). Another study indicated that children spend considerably more time at interactive exhibits than adults (Speaker, 2001). While this research demonstrates some of the unique qualities of children's museums (perhaps they attract longer attention and interest in their targeted audience), it generally does not address where children's museums stand in a broader context, and how they can be useful to other realms of research such as child development. (A few notable exceptions include the work by Mary Ellen Munley on evaluating how museums

serve the broader community, and the work of Maureen Callanan (on parent-child interactions at museums: Callanan & Jipson, 2001; Callanan, Jipson, & Soennichsen, 2002; Crowley, Callanan, Tenenbaum, & Allen, 2001), who also recently authored a useful primer on the burgeoning relationships between children's museums and researchers (Callanan, 2012)). As previous research is narrowly defined, it has only scratched the surface of what children's museums may add to the wider community.

Along the lines of the following proposed studies, Shine and Acosta (2000) ran an observational study in an effort to explore parent-child interactions in relation to pretend play in the museum. They chose to use a children's museum setting as the arena to explore parent-child interactions specifically as they foster family communication. As their research strived to capture the spontaneous moments in which parents and children interact with regard to pretend play, the museum is a natural choice. While their results demonstrated that parent-child interactions tended to be brief, sporadic and non-contingent, their use of a children's museum is exemplary of the future research proposed by this study. Importantly, the authors structured their experiment to be observational. We concur that future research done in a museum setting will best serve its purpose of reporting on spontaneous interaction if it is observational, and grows organically out of the dynamics of the play situation. Structuring research empirically has the potential to distance the findings from the key elements, which one should strive to capture in this unique situation.

In an effort to fill the void that is present in the current body of knowledge on children's museums and specifically how they can augment psychological research, we discuss the following observations taken over several months at the PlayWorks™ exhibit at CMOM, and how these observations dovetail with future work that enlists a collaboration between developmental psychologists and children's museums.

PlayWorks™

Opened in 2006, PlayWorks™ exemplifies CMOM's mission to serve families by promoting "research in action" and translating early childhood research into compelling exhibitions and programs. PlayWorks™ was developed by CMOM and a team of scholars and experts in child development and education from Yale University and Temple University as a child-centered and family-based exhibit targeted for children ages 5 and younger to promote

learning through exploration and discovery. The 4,000-sqare-foot facility incorporates the latest in early childhood research to promote school readiness, emphasizes a love of everyday learning and family interaction that supports children's emotional, cognitive, social and physical development, and provides opportunities for parents to become active participants in their child's learning.

The exhibit encourages children to ask questions, build ideas, interact with their families and peers and learn through play. PlayWorks™ provides a unique opportunity for parents to both observe and be a part of their child's learning process by offering a safe space where children can take risks, discover and hone skills. The exhibit provides a wide range of open-ended and diverse activities that accommodate children of many developmental stages serving as a non-traditional yet effective approach towards learning. Within the exhibit, there are five different learning environments: Arts and Sciences, Math and Physics, Early Learning, Building Language, and Problem Solving. Each environment emphasizes different types of cognitive, social, physical and emotional aspects of development, and has multiple levels of challenge to allow for the wide variability of individual children. PlayWorks™ nurtures opportunities for children and their caregivers to discover the connections between their play and the skills they are learning.

I. Basic Physics

In beginning of our discussion on the ways in which the museum targets and reinforces positive aspects of child development, there is no better way than to start with one of the core branches of psychology— intuitive physics— since it serves as a "foundational domain" for other arenas of development (Wilkening & Cacchione, 2010). Psychologists differ in what exactly this term means, but for the purposes of this paper we draw on the definition proposed by Wellman and Gelman (1992), who describe a foundational domain as a structured body of knowledge, whose "powerful, enabling, seminal, and constitutive" nature provides a ready understanding of other knowledge. For example, how children understand physical objects and how they interact allows for inferences about astronomy, physics, geography, and the design of human artifacts. Foundational domains, because they *are* so important, are among the earliest to develop; this precocity gives children a powerful (if flawed) knowledge set into which they can integrate information from more-formal sources such as the classroom. This rich field of

children's understanding of basic physics, sometimes referred to as naïve physics, also leads to our following discussions of cognition and goal-directed action.

Gravity, Support and Shape

One-year-old Michael toddles into the Infant section of PlayWorks™, attracted to the brightly-colored plastic balls. He finds a red ball and places it on the narrow wooden ramp that leads into the ball pit. He watches attentively as it rolls down the ramp and lands with the other balls. He picks up a blue ball and places it again on the ramp. Over and over again Michael seems fascinated by rolling balls of all colors down the ramp. He moves faster and faster, sometimes stumbling over his uncoordinated legs, to try and put as many balls as he can at the top of the ramp before they roll back down into the ball pit.

As Michael plays this simple game he is unknowingly beginning a lesson in physics. Some might say that is unlikely for boy under two years of age. However, in this simple game he is integrating multiple facets of intuitive and learned physics such as gravity, force, mass and density. As early as 16-months-old, children begin to have a sense of both time and speed as separate entities (Wilkening & Cacchione, 2010). Although these two concepts do not fully form and integrate until the school-aged years, Michael toys with the idea of speed as he gently drops, pushes, or throws the balls down the ramp (Buckingham & Schulz, 2000). As he uses different amounts of force to push the balls down the ramp, he notes how the balls at the bottom bounce and crash due to the incoming ball. Giggling and excited when the crash gets louder, Michael switches between pushing the ball fast down the ramp and letting it roll slowly into the pit. The exhibit allows children, even at the youngest age of the spectrum, to play with intuitive physics and discover the laws of the natural world.

Michael is not only learning about speed, but also demonstrating his sense of gravity and support. Many studies indicate that the understanding of gravity and support is present in some minimal form at infancy, slowly progresses throughout toddlerhood, and is not fully refined until beginning of school aged years—precisely the age range of PlayWorks™ (targeted for ages 5 and younger) (Kim & Spelke, 1992; Baillargeon, Needham & DeVoes, 1992; Krist, 2010; Hood, 1995). Important to learning here is the ability to integrate information—to understand that gravity, speed, mass, force, and support are all working with and against each other. The museum provides areas to experiment with each of these facets, making it possible for children

to integrate and understand how they function together. The prompts children to develop an idea or understanding in one context, revise it and apply it in other contexts, encouraging the plasticity integral to child development.

PlayWorks™ includes a "ball drop" component which allows children to hone their skills in prediction as well as further investigate how gravity regulates our world. Kyra, Henry, and Cole, all about 3-years-old, are just a few examples of children who spend significant time at this section. The children all go over to the balls and begin to play at the wooden structure in the corner. Lined with holes just the size of the colored balls at the top, a transparent piece of plastic covers small pegs sticking out of the wooden structure. They seem to immediately know what to do—they each grab a ball, start quickly stuffing as many as possible into the holes and watch them bobble down the pegged wall. After about five minutes of almost-crazed retrieving of balls and putting them back through the wall, they run off to their next point of interest. Many children seem to follow this same pattern: excited interest in the idea of putting balls through the holes in the wall to watch them bump their way down to the bottom—the awe of gravity is widespread.

In addition to demonstrations of gravity and its effects, PlayWorks™ has two sections designated to blocks and stacking—one in the Infant section, the other in the Math and Physics section. In either section, children enjoy constructing and stacking the blocks. In this simple activity, children are learning about gravity and support, as previously discussed, as well as shape. Having the ball drop component side-by-side with the block stacking component allows for children to see the comparisons and relationships between shape and gravity. As indicated by Kloos (2006), integrating shape in conceptions of gravity and support is a longer developmental process than just understanding the concepts individually. Multiple studies (Krist, Horz & Schönfeld, 2005; Krist, 2010), have examined the development of understanding symmetrical versus asymmetrical shapes and balance. They found that children under the age of six years could not fully complete the task of stacking symmetrical and asymmetrical blocks "so they wouldn't fall." These studies indicate the slow development of integrating shape, symmetry, gravity and support in the delicate motor task of stacking blocks. In PlayWorks™, the blocks are all symmetrical and do not have hidden invisible weights like those in the aforementioned studies, yet the component still highlights the concept of integrating multiple domains of basic physics (while making it more-accessible to the preschool crowd.)

James, a 4-year-old, arrives to the section with his mother, and immediately picks up the various blocks and begins arranging them in the square-shaped holes in the wall. As he has almost filled the first square his mother asks him, "What is missing?" James pauses, thinks for a minute, and answers correctly "Triangle!" We can see that James has demonstrated a basic understanding of geometric shapes essential to spatial cognition. But more importantly, James is demonstrating a new skill involving not only shape recognition, but also how these shapes can fit together. On his first attempt, James picks up a triangle that is too small to fill the hole. He puts it in, recognizes his mistake, and turns around looking for a better choice. He comes back to the wall with a larger triangle and places it into the hole, smiles, and points to his finished product for his mother to see. The simple game goes on: James builds up blocks in the wall, his mother asks him how many blocks he needs of what shape to fill the hole, and James uses some combination of trial and error and reasoning to choose the correct number and shape of blocks he needs. As we will discuss later, the museum provides the space for James and his mother to be part of the learning process together, making James's mother a responsive partner in his learning environment.

A seemingly natural activity for James (he sees blocks and holes in a wall and thus decides to fill the holes with blocks), this tendency is actually demonstrating a larger developmental milestone (Ornkloo & von Hofsten, 2007). The task posed by this component involves spatial cognition and perception, which children are constantly developing and refining throughout infant to preschool years. Putting any object in a hole requires rotation, imagining a goal state, and understanding means-end relationships. Thus the action of putting an object in a hole, such as fitting a block into the square shaped hole in the wall, requires the ability to perceive the simple geometric properties of the block, the geometric properties of the hole, and how those two entities coordinate. In an effort to determine when these skills begin to develop, Ornkloo and von Hofsten (2007) conducted a study which tested infants and toddlers ability to fit objects into holes. The results demonstrated that this skill begins in the second year of life and continues to be refined throughout early childhood.

Important to note is that the wall contains not only open square shaped holes like the ones James focused on, but also holes that are the exact shape and size of the various blocks. From observation of this component, we can see children of various ages attempting to fit the blocks in the smaller holes on the wall with varying success. A girl about 4-years-old walks straight up the

blocks and immediately begins putting the blocks in the fitted-holes correctly. Seemingly bored by this easy activity, she quickly leaves to find more stimulating play—it is apparent that she has surpassed this spatial cognition milestone. Two-year-old Aiden, on the other hand, has more difficulty with this task. He focuses on the wall and slowly maneuvers his hand to fit the block properly in its aperture. He fits the square more easily into the hole, but cannot seem to get the triangle turned the right way. After struggling, he gives up the seemingly impossible task and begins stacking the blocks. Despite not being able to put the block where he wanted, Aiden was learning—learning not only how difficult a triangle can be but also about spatial orientation, geometric forms and motor coordination.

Building off these observations on how children utilize the different sections and components within the PlayWorks™ exhibit that center on gravity, support, and shape, we propose that future studies attempt to explore exactly how children utilize the two domains and integrate them. Are children who spend time learning and playing with gravity-related exhibits more likely to utilize this understanding in their playtime with blocks? Does understanding of shape play a role in how children think about support and gravity? How do multiple exhibits work together to produce a deeper understanding of these basic concepts of physics? The Math and Physics Area of PlayWorks™ is ideal for answering these types of questions in that there is a blocks exhibit adjacent to a bucket-and-pulley exhibit (this exhibit includes a conveyor belt leading to a hanging bucket which children can fill and then use a pulley to move). Exhibit setups of this type are also found in many other thematically-organized children's museums. One possible avenue for exploration would be to choose children of a particular age, and observe whether continued trial-and-error with one component type leads to increased success with a different component type that shares the same conceptual foundation. In this way, museums and researchers can quantify how the structure and nature of the museum's exhibits lead to increased cognitive growth.

Exploring Difficult Concepts, and Parent-Child Interactions

While basic physics might be a more simple topic for parents to explain to their children when they ask "Why does this block fall?" or "How do these shapes fit together?," one part of the Math and Physics section seems to continually stump parents: the Air Tube Construction component. The Air Tube Construction component consists of a wall with a few holes that shoot

out air, which can then be connected to transparent boxes whose various parts move when blown by wind. There are long grey tubes that allow children to connect the air source with the encased items, moving the wings, propellers, and light objects.

Children's museums play a critical role in providing opportunities for parents to be active and engaged in their child's learning process. Certain components of PlayWorks™ particularly lend themselves to heightened parent-child interaction. Within the PlayWorks™ exhibit, the Air Tube Construction component seems to particularly stimulate parent-child interaction through learning. In the component, children are directly encouraged to learn about a new concept, wind and air movement, making them more likely to seek caregiver aid and enable parent-child interaction. At Air Tube Construction, we have noted a general trend in which children who are verbally engaged by their caregivers stay longer, and become more actively involved. This finding aligns with the foundational work of Vygotsky who revolutionized the field of psychology with his socio-cultural theory about learning and language (Vygotsky, 1962). He argued that the role of social interaction - particularly with caregivers - is integral to deep learning. Stressed in Vygotskian theory are the concepts of scaffolding and guided participation, both of which arise throughout PlayWorks™. Scaffolding is defined as the adjustment of support offered during a teaching session to fit a child's current level of performance. Caregivers tend to adjust the amount of help given to match and further stimulate a child's understanding (Vygotsky, 1978). Guided participation is a slightly broader concept, which refers to the shared endeavors between more-expert and less-expert participants, without specifying the precise features of communication. Nonetheless, guided participation is dependent on social communication between parent (who is higher in expertise) and child (lower in expertise; Vygotsky, 1978). Vygotskian theory postulates that both of these concepts are dependent on the social role of parents, caregivers, and teachers in learning and understanding new concepts. Henderson (1991) researched the role of parent-child interaction on exploration of novel objects. He concluded that parent involvement had a positive influence on child exploration. He also found that children most frequently defined their encounters with novel objects as an opportunity to explore independently, while their parents closely supported their endeavors or explored with them upon request.

In the Air Tube Construction component, we see clear examples of Vygotskian socio-cultural theory, as well as the findings of Henderson (1971, 1991). For example, about 20-

month-old Peter toddles over to the exhibit with his mother following closely behind. As he grabs at the tubes, his mother begins to explain that wind is coming from the air source, traveling through the tubes, and making the movements in each box. Peter concentrates as he listens to his mother's explanation and begins connecting tubes to various holes. He gets distracted for a moment when he moves the tube such that a gust of air blows on his forehead. But his mother continues to verbally engage Peter, describing the process of air movement and how to construct the tubes accordingly. Peter is working individually but encouraged by his mother's verbal involvement, just as Henderson (1991) demonstrated in his study and notes as an optimal setup for learning. Peter and his mother stay at the component for almost 20 minutes—longer than the average time spent at one component in PlayWorks™—demonstrating a significant interest and focus in the concept and task associated with the component.

Like Peter, we observed many other cases where children spent longer and more meaningful time interacting with the component when caregivers were actively involved in their experience (particularly in terms of verbal interaction). As the component is more complicated than others in PlayWorks™, adult interaction seems particularly meaningful in that many children, especially younger children, who attempt the component without caregiver involvement easily give up and move on when they are unable to figure out how to get the exhibit to work. In this way, we see how children's museums allow the opportunity for caregivers to become involved in their child's learning process particularly when faced with novel stimuli and situations. Moving forward, this parental involvement positively affects children's school readiness and academic performance along with social and emotional growth.

Children's museums provide this non-traditional access specifically to language learning also through parent interaction. The role of *verbal* interaction is crucial, as compared to visual interaction (in which a caregiver demonstrates how to use the component but does not explain with words). Four-year-old Jeremy approached the Air Tube Construction component with his caregiver. She nonverbally began to show Jeremy how to work the component by attaching various tubes to holes the make the bees' wings move and turbine spin. Jeremy watched and then attempted to connect tubes but left discouraged fairly quickly. Similarly, another 3-year-old boy arrives at Air Tube Construction and begins experimenting with the tubes and connections. His caregiver follows, on the telephone, and begins to connect the tubes with the correct air source and holes to make the component function. The boy watches her, but like Jeremy, does not seem

to understand and moves on within one minute of arriving at the exhibit. While there was parent involvement in both situations, we see that language use is integral to more meaningful, positive parent-child interaction. Two core tenets of Vygotskian theory become apparent in these two vignettes. First, verbal communication per se is important in caregiver-child interaction, in order to stimulate exploration and interest in this more complex component. Second, children need to do things for themselves, with support by adults, in order to feel truly invested and learn on their own terms. In this way, PlayWorks™ provides a nurturing space that allows for this type of risk taking—children are both encouraged and feel comfortable to explore beyond their realm of knowledge. Each part of the exhibit is a safe space for children toindependently discover while interacting with their parents. Crowley and Callanan (1998) also demonstrated the importance of verbal interaction in their study about parent-child interactions in a museum setting. Although their study referred to museums not targeted specifically at children like CMOM, they found that children were more engaged in various exhibits when parents verbally communicated with them about the exhibit. Their research is particularly prevalent to the current focus in that the authors emphasize the ways parental participation shapes children's scientific thinking.

We come back to the issue that the Air Tube Construction component is focused on a scientific principle of wind and air movement. As previously discussed, this complicated component not only stumps children, but also their caregivers. Caregivers look to the museum signage that explains the significance, reasoning, and mechanism of the component. In addition, staff members mill about the exhibit available to aid caregivers. Many parents individually approach the Air Construction component and experiment with connecting tubes without their children. (Somewhat charmingly, this is the only part of PlayWorks™ where parents seem to toy with the component themselves without their children.) In addressing how parents confront more complicated tasks, Gleason and Schauble (1999) investigated how parents and children work together on a scientific problem-solving task similar to school learning, one that is unfamiliar and genuinely challenging for parents and children alike. Although the study was conducted with a more difficult task and with children 8- to 10-years-old, similar to the Air Tube Construction component parents were faced with a complex task in which both parents and children had to think and experiment to come up with a solution. This study demonstrated the importance of parent-child dialogue in solving more complex problems, and emphasized parent control and participation in successful understanding of a problem. We observe this same importance of

verbal interaction and parent involvement in understanding and interacting with the Air Tube Construction component.

In order to enhance observations of parent-child interaction when exploring complex concepts, we propose running observational studies at more-complex exhibits in children's museums (perhaps even those that the parents themselves must explore alongside their children). As most children approach the exhibit with little understanding of difficult topics, how do they go about making sense of this unknown entity? Surely, the role of caregivers is critical. One could first quantify how often caregivers are involved in their child's exploration and learning about the component, by observing parent-child dyads in which parents either encourage their children to spend time at the component, verbally and physically interact with their children by explaining how the component functions or the principles behind it, or respond to their child's solicitation about the component. One could then note which children successfully learn how to operate the component individually, in the context of these helpful (or not) interactions. Also potentially relevant is the gender of children who approach the component. At this particular Air Tube Construction component, boys spent more time exploring than girls. A noteworthy exploration would be whether any particular gender difference is present when parents are involved versus when children approach individually. Findings from this study could illuminate whether there is a gender difference in frequency of attempting complex situations, and whether parent interaction mediates this gender difference.

II. Pretend Play

Four-year-old Ethan is intensely concentrating on the small red bowl in his hands. Around him are a slew of various pretend vegetables all tossed to the side as he focuses on stirring what he is concocting in his bowl. He looks up and runs over to his caregiver who is patiently looking on nearby. "Look! Here's our soup! You be our customer and I'll be the soup maker. It's super delicious. Yum!" Ethan hands the empty bowl over to his nanny being careful not to spill any of the pretend liquid inside. Smiling, she pretends to drink his soup and hands it to Ethan who then rushes back to the counter to whip up some more. This back and forth continues as Ethan pretends to be a soup-maker-extraordinaire.

Ethan is playing in the Marketplace section of PlayWorks™. This slightly closed off corner of the exhibit is filled with bins of fake food, plastic flatware and utensils, a conveyor belt leading to a cash register filled with fake bills and, the most-loved part of the section, a scanner which beeps when you pass an object through it. In addition, there is a chalkboard and list of the market's items on the wall, a scale in the corner to weigh items, counters running along the edge for children to prepare to make food, a pretend sink for washing, and a small table and chairs for dining. With all its components, this area is rich in stimulation and a natural favorite for many children. This section is also particularly conducive to pretend play as it mimics the outside world, allowing children to use their imagination while also giving them a familiar scene to embellish.

Many in the Marketplace section of PlayWorks™ take part in their own pretend games. Children look to both their caregivers and peers to make their pretend worlds come alive. It is now widely understood that involvement in pretend play is beneficial to development (for reviews see Hirsh-Pasek, 2003; Hirsh-Pasek & Golinkoff, 2008). For example, a child who forms a mock tea party with her peers and stuffed animals, and pretends to "read" to her dolls, is able to use this flexible situation to try out challenging new cognitive skills (such as sounding out words, or focusing on a coherent narrative) as well as social ones (such as letting her friend take a turn). By exploring how the museum perpetuates pretend play, we ask why and how pretend play aids development, particularly in language ability and social interaction.

Language

CMOM's approach to learning language emphasizes other avenues integral to language beyond books. One of these approaches is through the encouragement of pretend play, which has been established as a driver of language ability. Stemming from the foundational theories of Piaget (1962), and Werner and Kaplan (1963), many argue that children take part in pretend play as early as one year of age, with a gradual development into more-complex play throughout the toddler years and early childhood. Pretend play and language both reflect the development of underlying symbolic ability (that is, that one thing can stand for something else), and seem to develop in tandem. Both vocal behaviors in language and gestural behaviors in play are used to represent information about unseen objects and events in the real world. Both involve the role of communication in sharing objects with others. Children use both play and language to test

various representational equivalences (that is, the limits on what can stand for something else) and thus learn about the range of acceptable symbolic transformations (McCune-Nicholich, 1981). In specifying further the role of pretend play in symbolic function, we find that symbolic play underlies both word and object substitutions; children will substitute the actual form and function of an object (a banana) for another (a telephone). Object substitutions are the form of symbolic play that has been a strong predictor of healthy language development (Smith & Jones, 1991). Synthesizing previous research, we find that pretend play and language development reciprocally enable each other.

As children grow up and improve their language skills, we see more instances of peer-to-peer verbal communication. In this regard, the social nature of language is key to its evolution. As children interact with each other, particularly in the world of play, they increasingly use language to enhance their play experience. Specifically relevant to language development in play are collective mono- and dialogues based around pretend play. As children play, they often narrate what they are doing. Peers around them begin to add to this narrative, creating a dialogue in which multiple children contribute to a singular narrative that usually revolves around a game at hand.

Let us take as an example the Metropolitan Transit Authority (MTA) bus in PlayWorks™. Three boys and a girl, all around 5-years-old, sit in the bus and begin to assign roles to each other. One boy says he's the "busser" while another says he's the "rider." The girl wants to be the "bus driver assistant." They then go on to explain what is happening in their pretend bus ride. Each chimes in adding on to what the previous said, creating a narrative of play where they yell at the children in the back, get on and off the bus, change seats and honk the horn. Important here is also how the children add and build upon one another, learning about language and social interaction. Although the boy made up the word "busser," probably to describe himself as the bus driver, the rest of the children go along addressing him as the "busser." We see here how children easily pick up words and language when posed in a social setting. Banquedano-López (2003) discussed the role of spontaneous play in developing language. The author noted that through play children learn to select appropriate speech genres and discourses, improving their language ability. Looking forward, we can see these improvements in language as correlated with later skills in reading and literacy; that is, knowing what jargon and terms to use when, or how to speak to those who are more- or less-

knowledgeable than oneself. Katz (2001) argued that pretend talk in the preschool years is related to the language and literacy skills that are important for kindergarten. The author found that play among children in which they exercise and improve their language abilities is correlated to future school success. The museum setting presents a critical and stimulating opportunity for children to develop these language skills, which will then aid them in future learning. A children's museum provides both a safe environment for children to develop, practice, and hone their language skills as well as multiple "points of entry" for children to explore language in the way they feel most comfortable. Role-play, a more specified version of pretend play in which children assume a specific and consistent character, is particularly correlated with language development. Andresen (2005) discussed how role-play specifically enhances language ability because of its dependence on both language and social interaction, again citing the foundational work of Vygotsky (1962, 1978), who credited much of development to socio-cultural interactions.

Interesting to note is that within PlayWorks™, there is a section dedicated to language learning and literacy as is indicated on the signage. In this exhibit is Alphie, the letter-eating dragon. He says the names of different letters as lettered tiles are dropped into his mouth. He will spontaneously sing the ABC's or say quick phrases about various words. Behind Alphie is the letter-combining toaster where children can drop in combinations of three letters to make words. The toaster then sings out each letter and the word they form. Many children adore this section. They climb on top of Alphie's back, quickly stuff letters into his mouth and giggle when he sneezes. Important in CMOM's approach to learning in this exhibit is the structure of the section. By using a physical climbing structure such as Alphie, more active learners are engaged in hearing and listening to language. But even though this section of PlayWorks™ is dedicated entirely to language learning and literacy, we find that language learning happens in *all* parts of the exhibit. As emphasized previously, language learning is intertwined with social interaction. In turn, wherever children are interacting verbally with adults and/or their peers, they are bound to be taking part in some sort of language learning. Many psychologists support the importance of incidental learning and recommend that children be provided with a wide range of opportunities to experience language to understand its function and power in different contexts (Saracho & Spodeck, 1993; Hirsh-Pasek & Golinkoff, 2003). Affirming this position, McKeown and Beck (2005) noted that language learning is dependent on more than just language exposure;

instead children need to learn how to use language in a wide range of contexts and situations. This means that pretend play (with its wide range of imaginary situations) and children's museums (wherein children experience a range of exhibits on various topics) provide an eclectic and ideal opportunity for language learning. McKeown and Beck (2005) argue that children can best make sense of de-contextualized language in a natural context such as social play, instead of structured language-oriented activities. Children's museums provide a range of rich stimulation that encourages children to learn about language through unstructured playtime. The various sections of PlayWorks™ provide ample opportunities to support both learning and child development in this regard. In the Alphie section, we see more of a tangible emphasis on letter learning than spoken language development. Children play with the lettered tiles and repeat the ABC's, all indicating support more in literacy and less in language. So in a discussion of language development, we look not only to the Alphie section but also to the social interactions that are spurred by all sections of PlayWorks™.

What we see at CMOM every day affirms that pretend play is spontaneous and natural—children are pretending because they want to, not because they are told to. On the one hand, language provides for richer pretend play, but pretend play affords an opportunity for furthering language development. The two work reciprocally. A fruitful observational study may be one in which groups of children of slightly younger (2- or 3-year-olds) and older (5- and 6-year-olds) age are observed, in order to maximize the difference in language abilities. Pretend play might occur anywhere throughout the museum; in PlayWorks™, we see much of it in the Marketplace, MTA bus, and fire truck. All children would be observed while involved in some sort of pretend play (constituted as any type of play that involves imagination). Researchers would observe how the two groups utilize language. They would take note of verbal interactions that indicate communication within the group, highlighting language that develops the "game" at play. Researchers would also observe the complexity of the pretend play. Complexity could be measured in terms of (but not limited to) number of characters involved, the expressed detail of the imaginary context (if children specify where they are, what sort of objects are around them, etc.), the number of changes in the plot, how long the pretend scenario lasts, and how much detail the children are expressing about their game. Researchers would then compare language usage and complexity of play in 3-year-olds and 5-year-olds. Again, we see an opportunity to explore not just age differences but also gender differences; one could also note whether

complexity, level of involvement, and even content change on the basis of the gender makeup of the group (all boys, girls, or mixed).

Social Interaction

Any parent or caregiver of a child can observe that pretend play readily garners social well being and interaction. It facilitates children's ability to take on others' perspectives as well as increases their capacity to imitate, both of which directly lead to increased sociability. Most children arrive to the museum with their caregivers not knowing other children in PlayWorks™. They have the choice to play on their own or with others in the exhibit. Throughout observation, we have found that when children pretend play they often choose a more social than individual setting. For example, three boys all around 4-years-old are crowded around the front of the fire engine. They press at the various buttons and turn the steering wheel. One yells out, "Put out the fire guys!" while another responds, "We're coming! Don't worry!" The third boy looks toward the door and says "All aboard, everybody get on!" Hearing his call, a younger girl wanders into the fire engine and joins in on the fun. At some point, the foursome tire of the fire engine and all run over to the big blue bus. They resume their game of pretending to drive and direct each other. The group moves back and forth between the fire engine and the bus as more children join in on the fun. Eventually the group dissipates, but all around PlayWorks™ - particularly in sections most conducive to pretend play like the fire engine, fire pole, bus, and marketplace - children seem to join in on others' pretend play and travel in packs from one part of the exhibit to the next. The children's museum context is particularly conducive to stimulating these social interactions between children.

Unlike the Air Tube Construction exhibit, this area of play seems to depend less on parent involvement and more on peer interaction. The age of each child is integral here—older children tend to be more social in their pretend play while younger children rely more on parents' involvement to facilitate their games. Nielson (2007) found that children around 2-years-old demonstrate more pretense and pretend play when modeled by adult caregivers. His research illustrates that young children will not only imitate a model's demonstration of pretend acts, but also use this demonstration to catalyze the creation of their own pretence. Apparent at CMOM as well is the role of peer modeling. Unique to this particular social setting is that

individuals are exposed to children of a wide range of ages, resulting in children modeling adults *and* peers.

Jean Piaget, considered the founding father of much of developmental psychology, posited that other children are the most important aspect in a child's environment in facilitating cognitive development and learning. He argued that children use peers as sources of learning because peers are the most similar to themselves, even starting in infancy (Piaget 1932, 1962). While infants are more often exposed to caregivers and thus most research has delved into infant imitation of adult models, Hanna (1993) questioned whether infants also model peers. Studying 14- to 18-month-old children, Hanna found significant imitation in infants with peers compared with controls. Following up on this research, Ryalls (2000) demonstrated that peers might actually provide better models than adults. He cites Piaget's theories on peer perception as reasoning for this difference. As peers are active and effective models for behavior in children at infancy, we can see this trend continuing into later childhood in pretend play and peer imitation. Peer modeling in pretend play continues to prove beneficial particularly in relation to preparedness for school. In a recent study, researchers explored free play and how preschoolers interact with peers while pretending (Sutherland, 2011). The results indicated that unstructured free play with peers provides a unique and rich learning opportunity for an important but frequently overlooked aspect of school readiness: developing both the language and social skills that constitute social competence in the classroom. CMOM provides a safe space that fosters positive social play, giving children the opportunity to experiment and learn about social interaction aiding their language and social development.

Pretend play contributes to social interaction by encouraging children to take on others' perspectives. The term "theory of mind" is defined as the ability to impute other's mental states such as desires, intentions, or beliefs to predict or explain their behavior (Berk, 2009). The most complex aspects of theory of mind, such as realizing that someone can believe something that is actually untrue, are considered to develop between ages 3- and 5-years-old, a range well-aligned with the target age of the PlayWorks™ exhibit. Establishing an ability to "mind read" is integral to pretend play. Children are able to not only substitute objects for other objects, but also able to take on other personas and characters—in essence, to see the world through someone else's eyes. This process is integral to social interaction in that children are able to comprehend that others have different outlooks on the world (Astington & Jenkins, 1995). Theory of mind understanding

is also related to joint planning and role assignment (Jenkins & Astington, 2000). While there is little evidence that social behaviors predicted children's theory of mind, theory of mind has been cited as a predictor of increased sociability and interaction in children due to their ability to understand other's emotions and predict other's behaviors (Jenkins & Astington, 2000). Samson and Apperly (2010) contribute to this idea in arguing that theory of mind requires a set of cognitive abilities that develop in children over time. They suggest that while the conceptual understanding of mental states is present throughout child development, a child might lack sufficiently sophisticated general cognitive skills that are required to solve a theory of mind task. They suggest that pretend play aids this formation of mental capacities integral to forming and understanding theory of mind. Through this previous research, we see the importance of pretend play as a stepping-stone to developing theory of mind, in turn leading to enhanced sociability.

Utilizing the unique aspects of a children's museum where children are interacting spontaneously, an interesting study would be one that aims to further investigate what elements of social interaction pretend play affords. Throughout the museum children are pretending and playing but there is a clear delineation between pretending individually or with a caretaker, and pretending within a social peer group. Researchers would choose ahead of time several exhibits to be observed, noting where social interaction takes place and where children who choose to play individually situate themselves. Based upon the theory that social interaction and pretend play are highly correlated, one may find that high levels of social interaction will take place in parts of the museum designated for pretend play: the fire engine, the bus and the marketplace. This study would contribute to the idea that stimulating pretend play congruently stimulates social interaction as well as language development.

III. Cooperation

Five-year-old Megan is in the marketplace area of the PlayWorks™ exhibit standing by the conveyor belt. She turns the wheel to make the conveyor belt move and watches as the various foods move closer and closer to the scanner. Once they reach the edge, she picks up an item and swipes it across the scanner. Beep! Across from her is a similar aged boy who grabs the next item and he waves it across the scanner. Beep! The two go back and forth, working together and talking about who's turn it is as they scan the many items and move them to the other side of the cash register. Throughout the PlayWorks™ exhibit we see examples of cooperation just like

this taking place. As children range from under 1-year-old to about 6-years-old, there are many levels of social interaction and social competency happening at any given moment, from simple joint attention (a focus on the same object) to more-complex cooperation and sharing.

As outlined by Parten (1932), children demonstrate different levels of play interaction depending on age and development. Younger children, starting around a child's first birthday, exhibit parallel play, in which two children will play in the same manner side by side. They play adjacent to one another without trying to influence or change the other's behavior. Children then progress from parallel play into associative play. In associative play, children share objects and communicate while focusing on a similar task. Parten's last stage of play, and most pertinent to the current study, is known as cooperative play. The most intricate and social stage of play, cooperative play entails some sort of organization within a group to fulfill a common goal. Megan and her friend perfectly demonstrate cooperative play. In this case, the common purpose is checking out all of the food items and moving them to the other side of the cash register. They work together and have an organized system of taking turns to scan each item. In addition, they communicate to achieve their goal. Cooperation is involved in multiple levels of interaction between children. A children's museum is an ideal place to study cooperation, since it is best demonstrated in children when it is spontaneous. Within CMOM and other children's museums alike, children are often in situations which require them to share, communicate, collaborate, and resolve conflict, often among a range of ages.

Conflict Resolution

Whenever children communicate, play and share together there is bound to be conflict. CMOM is no exception. While the museum and its various exhibits all promote positive social relationships between parents, children and peers, dealing with conflict and the ways it arises proves to be yet another valuable learning opportunity for museum-goers. To begin the conversation on conflict, we present two scenarios that occurred in the Math and Physics section. Two 3-year-old boys are playing peacefully with a bucket-and-pulley component, in which one child must load and manage a bucket and another must work a pulley to make the bucket move. Each one puts a block on the conveyor belt, turns the wheel to move the belt, and then moves the block into the hanging bucket. At one point, one of the boys wants to continue to turn the wheel on the conveyor belt, not letting his partner have a turn. They begin to fight, using both their

words and bodies as they push and shove to get access to the wheel. One boy starts to whine and complain that he wants to do it. The parents of the two are close by and within a few seconds of the turned-bad interaction, they have intervened and one of the boys is removed to play in another section.

Just minutes later two boys, Regan and Teddy, who are slightly older, are standing at the Air Tube Construction component. There are many tubes extending from the wall, but these two happen to go for the same one. They both grab the tube and quickly the interaction turns into a tug-of-war. After physically rallying for the toy, Regan starts to say, "It's mine, it's mine, it's mine. I wanna play with it." As if recognizing a window of opportunity, he then turns around, picks up another grey tube sitting next to him and hands it to Teddy. "Here," he says. Teddy pauses at the peace offering but then accepts. The two go about their merry way plugging and unplugging the tubes into the wall. Important to this scenario is that the boys' caregivers were nearby but did not step in. In this case, the boys resolved the conflict on their own, demonstrating not only communicative ability, but also negotiation strategies.

These two vignettes paint the picture of conflict and its resolution that occur in the museum. In some instances of disagreement, parents intervene and quickly handle the situation. But what is more interesting to observe is the moments when parents are not involved (whether they are consciously or unconsciously making the decision to let children resolve a conflict) and children are left to their own devices to come to a resolution. In order to expand on the role of the museum in conflict, the following discussion will focus on situations where children are independently dealing with conflict.

An important aspect to this discussion is age difference. Most conflicts between children under 3-years-old are not settled in the same manner as in preschoolers and older children. In infants and young toddlers, most commonly a parent intervenes or one child gives up to the other (Church, 2009). As children this age have not yet developed language and more-specific communicative abilities, they lack the key tools required to independently resolve conflict. As Crick and Dodge (1994) established, there are many developmental skills necessary to process and handle social conflict. Children must be able to interpret social and situational cues. They then must be able to generate a goal for the particular situation (for example, maintaining a friendship or gaining access to a toy). Based upon this goal, they also must act on a certain strategy to achieve their chosen objective. Lastly, children need to interpret the success of the

strategy they chose including future goal and strategy selections. Important in each of these steps is communicative ability. Children require a certain level of communication skills, most commonly language (although other communicative nonverbal behaviors such as gesture may suffice). As each of these skills and stages have a high level of complexity, we find that most children in the PlayWorks™ exhibit are just beginning to experiment with how to individually deal with social conflict. Many are on the cusp of developing each of these abilities.

Conflict resolution integrates many facets of development including language, communication, theory of mind, decision-making, and socialization. While each of these areas of psychological development progress in their own distinct way, they seem to coalesce in relation to conflict management, easily visible in a children's museum setting. CMOM is designed and structured with development in these areas as main objectives. We can apply each of these ideas to the previous example of Regan and Teddy. Regan demonstrated an understanding of theory of mind as he brought another tube for Teddy. He interpreted that Teddy wanted a tube to play with and sought a solution that he thought would please him. In addition, Teddy demonstrated decision-making as he weighed the options of taking Regan's peace offering or continuing to fight for the original tube. Although one can never really know the boys' thought processes, their reaction to the situation suggests that they are beginning to grasp these developmental concepts. Researchers have argued that being able to develop these necessary skills to deal with social conflict is a central component of the socialization process, as these same skills can lay the foundation for building future interpersonal relationships (Webster, 1969). In turn, beginning to hone in on these skills in early childhood is critical to developing social competence. Because each of these abilities is improved by practice, it is beneficial for children to be involved in situations where they are more likely to encounter issues involving empathy or decision-making (Green & Rechis, 2006). In congruence with their philosophy, children's museums provide each of these components to further child development.

Children's museums are an ideal venue to study conflict resolution. Conflict can stem from most any social interaction, but is particularly prevalent in relation to limited resources, and every museum has some exhibits that are more popular (and therefore more scarce) than others. In their study, Green and Rechis (2006) find that social conflict most often stems from cooperative and competitive interactions about a limited resource such as one toy for multiple children or negotiating taking turns in a game. In the previous examples, we see multiple

children falling into conflict over using a singular toy in the Math and Physics section. This same theme occurs in other sections of PlayWorks™. In the Marketplace section, children are constantly stepping over one another to gain access to the interactive scanner component centered in the section. As there is only one scanner yet the Marketplace comfortably holds many children, conflict often arises usually relating to who stands in the prime spot in front of the scanner or who gets to pass the food items through most often.

Similarly, the fire truck component has two front seats with steering wheels while the rest of the truck is open to accommodate more children. These two seats are often fought over, as most children want to pretend to drive the truck. For example, three girls all around 4-years-old are playing together outside of the fire truck. They go inside and the first two immediately sit down in the open front two seats. The third girl is left standing behind them. She pushes her way in attempting to share the seat but realizes it is just too small. She waits behind her two friends, continuing to be a part of their pretend game. After a few minutes when neither friend has left the front seats, she begins to whine and yell saying she wants a turn. After enough complaint, the two girls both leave their seats. As the girl finally sits down in the front seat she had wanted so much, her friends have left moving their game to another part of the exhibit. Wanting to stay with the pack, she too gets up never really playing in the front seat of the fire truck.

In contrast to the fire truck, the MTA bus component has multiple rows of seats each of which have their own personal steering wheel. All seats are the same so more children can pretend to be the head driver from wherever they are in the bus. If we compare the peer interactions that take place in the fire truck and in the bus, it is clear that more conflict due to competition of limited resources (the driver's seat with the steering wheel) happens in the truck compared to the bus. This contrast points to the role of limited resources as an instigator of social conflict. As the museum has both scenarios (situations in which children must use their skills as social navigators to share and collaborate for limited resources, as well as situations that are less prone to social conflict because of more abundant resources), we can readily compare both the role of conflict and from where it might stem.

The majority of research pertaining to child conflict and resolution takes place in a laboratory setting. Many studies rely on presenting hypothetical situations to children and asking for their hypothetical solutions (Green & Rechis, 2006; Kazura & Flanders, 2007). Although most studies posit that their laboratory models are strong predictors of real life situations, using a

children's museum as a forum for better understanding spontaneous conflict and resolution would greatly contribute to the field. Observational studies such as Church (2009), who video recorded conversations and analyzed conflict resolution outside of a laboratory setting, are in many ways more telling of real life circumstances. As previously noted, PlayWorks™ was designed by a team of scholars that developed the space with these factors of child development in mind. The purposeful design necessitates children to deal with a specified number of resources fostering these types of learning opportunities at a young age. The museum setting would be even more valuable in targeting the younger age group of children under 5-years-old who are just beginning to establish an understanding of how to deal with social conflict. As their language, memory, theory of mind, and imaginative skills are still forming, basing information off responses to hypothetical situations would probably not be a good indicator of actual behavior.

One possible observational study on this topic would assess how children negotiate when presented with social conflict due to limited resources in a "real life" setting of a children's museum. Researchers would observe several areas which embody ideal conflict situations- an attractive and scarce resource. Ideally, one would examine conflicts that occur without any or with very little parent involvement. We do recognize that parents end up negotiating many conflicts and many children model their skills in dealing with conflict after their parents. Yet in this study, only interactions between children that are for the most part peer-based will be recorded as to better determine how children naturally face conflict without adult guidance. To be noted is the age of children, if they use language or their bodies to handle the conflict, and whether the conflict is resolved by some sort of negotiation (whether that be verbal or physical such as letting one child take a turn and then switch) or because one child gave up. We believe that older children will be more effective in their skills to gain access to the limited resource than younger children due to their advanced ability in language, social interaction, and decision-making. Secondly, based on our observations at CMOM, we believe that successful negotiations are more likely to come from utilization of language in the conflict, and that children who verbally communicate during conflict are more likely to resolve in a fair manner than those who use solely brute force. While physical force in which one child dominates and the other backs down does often lead to some sort of resolution, it cannot be considered successful conflict resolution in that it does not result in a fair outcome in which all parties feel supported.

Diverse Range of Ages

More complex situations of sharing and cooperation, like those that often lead to social conflict, often arise in children's museums because there are children within a wide range of ages. This type of conflict is minimized in school or playgroup settings in which children tend to be grouped according to age and maturity level. Children in PlayWorks™ are usually infants to 5-year-olds and so at any time children just learning to walk and talk are interacting with older, more cognitively-advanced children. While some exchanges end in tears and frustration when two cannot communicate, most peer interactions throughout the museum demonstrate that children have some sort of social awareness of other children as older or younger, and with subsequently different levels of cognitive development. For example, Romy is about 5-years-old. She is playing in the Marketplace section with her basket of food. A girl about 2-½-years-old named Renee waddles over to Romy's game and takes an apple out of her basket and begins to wander away. Romy screams out "No!" causing her mother to turn around. But before any adult intervenes, Romy calmly says, "No, that's mine right now. But we can play together. You take the apple and put it here, see?" The two continue to play together, Romy becoming the leader while Renee follows along. It seems as if Romy understands that Renee is younger. She takes on her new role as leader and shows Renee how to share. Both end up learning something about social interaction. As previously discussed in relation to pretend play, children in the preschool years are slowly developing theory of mind, or the understanding that their points of view differ from those around them. This interaction is a perfect example of Romy's developed theory of mind—she knows that Renee does not know better than to grab at a toy she finds attractive. Instead, the two take the opportunity to play together, learning from one another.

Children's museums are unique in their ability to serve as an arena for development in many ways. One of these domains is specifically related to the diversity of ages present in a children's museum at any given time. As children are forced to interact with those around them, both older and younger, there is a striking difference compared to an average classroom where children are the same age. This provides an extensive opportunity to learn from other children; older children can learn to serve as leaders while younger children learn through imitation of older children. As previously discussed in relation to social interaction and pretend play, imitation of peers is an essential element of development.

As children's museums provide this distinctive opportunity to hone in on relationships between different age dyads, we propose a study that chronicles these interactions and explores what children can gain. One can observe interactions between different aged children, ideally with a difference of at least 18 months as to assure readily distinguishable cognitive differences between the two children. Researchers will code the types of behaviors each dyad exhibits and compare to peer interactions between children of the same age, which will serve as a control. Researchers should take note of imitation behaviors, leadership behaviors (which include giving instruction, demonstrating or leading to a new part of the exhibit either verbally or physically), as well as changes in behavior due to the presence of the other child (such as speaking slower to accommodate for a younger child with less language ability or attempting to climb a difficult structure as the older child readily climbs it). We believe that behaviors within interactions between different aged dyads will be significantly different from peer interactions as a response to the age of the play partner.

Conclusion

These observations serve as a platform for what can become a wider range of research within the arena of children's museums. As an academic institution collaborating with the Children's Museum of Manhattan, a play-based learning institution, we have had the opportunity to observe children interacting within this unique setting, and it is apparent that many realms of developmental psychology are both present and stimulated within the fun framework of a child-centered – and research-based – learning environment like CMOM's PlayWorks™. Important in psychological research, the museum not only brings together participants due to its popularity within the community, but also sets up scenarios which are ideal for observing and analyzing certain aspects of child development (such as integrating and understanding basic physical properties, pretend play, social interaction, and conflict resolution between peers and among different ages). These general domains are just the beginning of what we see as promising areas for psychological research, as we have come to understand over time that the museum provides a very rich fountain of information, and there are undoubtedly more ways in which the field of psychology can benefit from this particular environment.

In all, children's museums allow researchers to draw conclusions about development without the confounds that come along with a laboratory setting. All interactions are

spontaneous; children behave with their natural instincts and are not biased by a more strictly constructed environment. This open, rich learning environment is also particularly beneficial to children; they are provided with a safe and nurturing space where they feel comfortable developing, practicing and honing their skills. The non-traditional approach to learning through play allows children of all learning styles and developmental levels to enter in the learning process at their own pace and in their own way. The museum provides many different arenas for children to learn, assuring that a trip to a children's museum is educational, fun, and fruitful. In addition, parents have the opportunity to be involved - or even a central figure - in their child's learning process. The museum provides caregivers with resources to understand their child's development through signage about the objective of certain exhibits and components, as well as exhibits that encourage parent/child interaction. Children's museums bring to light the immense amount of learning occurring on a daily basis, making them a perfect niche for studying child development. The future of psychological research within children's museums has the potential to serve as a new avenue leading to a deeper understanding of child development.

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