

Don't Forget to Play:
Examining what Play looks like in Museums for Adult Visitors

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Abstract

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While play in museums for children is not a new concept, there is little research on what play looks like for the adult visitor. This study investigates adult play in museum exhibits designed for family learning, using Stuart Brown's (2010) typology of play. Thirty visitors were observed between five exhibits at the City Museum, St. Louis MO and Science World, Vancouver B.C. Results showed that adults do play in these exhibits, and that they engage in various types of play, typically favoring body/movement play. These findings can be used by museums to understand how to create active opportunities to fully engage adult visitors.

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CHAPTER ONE: INTRODUCTION

*“You don't stop playing because you grow old. You grow old because you stop playing”
George Bernard Shaw*

We are designed to play (Brown, 2010). It starts at birth and continues throughout our lives. According to Stuart Brown (2010), “when we play, we are engaged in the purest expression of our humanity, the truest expression of our individuality” (p. 5). The “ability to play is critical not only to being happy but also to sustaining social relationships and being a creative, innovative person” (Brown, 2010, p. 6). Play is a crucial component in healthy aging (Yarnal and Qian, 2011). Studies have “demonstrated that people who continue to play games, who continue to explore and learn throughout life, are not only much less prone to dementia and other neurological problems, but are also less likely to get heart disease and other afflictions that seem like they have nothing to do with the brain” (Brown, 2010, p. 71). Play is critical to development and survival (Brown, 2010), for as Brown states: “when we stop playing, we stop developing, and when that happens, the laws of entropy take over- things fall apart” (2010, p. 73).

Play is one of the highest forms of learning, yet adults often do not engage in environments that foster opportunities for play (Brown, 2010; Grenier, 2010). Adults do not give themselves permission to play, which is unfortunate because most of our happiest memories consist of playful activities; going to the park to play on the slides, playing games with friends, exploring new places, jumping in puddles right after it rains. Adult play itself is an under-researched area, and play learning even more so. Beyond childhood, research is sporadic: “In the last decade there have been some 3,000 psychological research papers focused on children's play, but only around 40 have addressed play in adults” (Van Leeuwen & Westwood, 2008, p. 25). When museums do focus on adult learning, it is often in the form of passive activities such as lectures or docent-lead tours (Cross, 2010). Rarely are adults in museums encouraged to create,

dispute, perform, play, experiment or construct (Cross, 2010). Robin Grenier (2010) notes “museums have the potential to offer novel learning environments that allow visitors to engage with art, science, and history, these sites are an excellent context for exploring the potential of play to enhance adults’ creative thinking and generate opportunities for new learning” (p. 78).

There is a huge gap in the literature about adult play. When it is addressed, it is in the work environment, focused on how play can increase production or team morale (Grenier, 2010). However, play is more important than that. Cultural institutions are fantastic locations for lifelong learning. According to Parrish (2010), as “the potential of play in museums is centered in its ability to promote situations where a person is not only motivated to learn but is propelled into the learning process, and finds the process as satisfying and rewarding as the outcome” (Grenier, 2010, p. 78). Museums are “not offering the full range of learning activities to its adult audiences. Most of the activities that adults undertake in museums are passive. Adults “visit” while children “join.” Visit implies an obligation to have with politeness and with deference to the hosts. Join is being a part of” (Cross, 2002, p. 6)

Play is critical for lifelong learners, and more and more museums are looking to public programs to allow for broader access for this demographic. Without sufficient research on what adult play looks like, museums are more likely to continue to create passive programming that does not allow adults a full range of participation or exhibits that do not encourage adults to interact.

Purpose Statement

The goal of this research study is to examine evidence of adult play in museum exhibits. The following research questions guide this study:

1. Do adults play in exhibits that encourage family learning?
2. If adults do play, what types of play do they engage in?

Significance

This research will allow exhibit designers to create more interactive exhibits that encourage adults to play on an everyday basis. Public programmers will be able to understand how they can incorporate adult play into activities that are less passive more active. Research on this topic will inform a broader range of learning experiences in museums for adults.

CHAPTER TWO: LITERATURE REVIEW

Play is an evolutionary concept that can be traced throughout the history of civilization (Frost, 2007; Brown 2010). In fact, “the existence of play and play materials have been found in excavations of ancient ruins throughout the world, most notably in ancient Babylonia, Egypt, and many locations in Asia and South America” (Frost, 2007, p. 3). In these sites, toys, dolls, sculptures and artistic creations were discovered which can “speak to the existence and nature of play” (Frost, 2007, p. 3). Starting in “ancient Greece with Plato and Aristotle, and continuing during the Reformation, noted philosophers and educators extolled the value of play” (Frost, 2007, p. 3). Beginning in the fifteenth century the recognition of the educational value of play stemmed from “notable thinkers such as Luther, Comenius, Locke, and Rousseau” (Frost, 2007, p. 3). While the importance of play in development, learning, constructing relationships and overall wellbeing has been well documented, researched, and debated for hundreds of years, what is noticeably missing is literature on adult play in museums. This chapter positions the research study within the existing literature on play, play in museums, and play learning for children and adults in these institutions. It also seeks to extrapolate the gaps in the literature, which will allow space for this study to contribute to current museological knowledge.

What is Play, and What Does it Entail?

Play is perhaps the most prevalent “universal characteristic of human existence,” (Shaffer, 2014, p. 59) something we have all participated in (Mainemelis & Ronson, 2006). Yet, defining play can be challenging, due to varying definitions in the field (Brown 2010; Burghardt, 2005; Curtis, 1994; Gordon & Esbjörn-Hargens 2007; Mainemelis & Ronson, 2006; Pellegrini, Dupruis & Smith, 2007; Smith, 1994; Sutton-Smith, 1997). Some see play as an activity. Dutch

anthropologist Johan Huizinga noted, “An activity is play if it is fully absorbing, includes elements of uncertainty, involves a sense of illusion or exaggeration, and, most importantly, exists outside of ordinary life” (Gordon & Esbjörn-Hargens, 2007, p. 63). Others see play as a process. The British Toy and Hobby Association (2011) defined “play [as] a process that is freely chosen” (p. 15). Stuart Brown (2010), Director of the National Institute for Play, defines play as anything that is spontaneous, “done for its own sake” (p. 17). More specifically, he says it “appears purposeless, produces pleasure and joy, [and] leads one to the next stage of mastery” (White, 2012, p. 2). According to Gwen Gordon & Sean Esbjörn-Hargens (2007), play theorist Brian Sutton-Smith “warns us, an absolute definition for play at the level of cosmology and physics can never be proven scientifically” (p. 3). Contemporary definitions on play share common characteristics that give a rough illustration of what play often entails.

Play must be primarily fun, for if it is not enjoyable, then it is not play. It is exciting, uplifting, euphoric and pleasurable (Brown, 2010; Caillois, 1961; Melamed, 1987; Sutton-Smith, White 2012; Yarnal & Qian, 2012; Anning, 1994). Brown notes that “the state of play is one in which attention is focused exclusively on the pleasurable play activity” (p. 102). Play is repeatedly performed in varying forms, as we age we tend to stick to certain types of enjoyable play. For adults, play grows more complex with time, and as it “engages more individuals, it becomes a distinct world that players seek to revisit. Traditions emerge, and play itself acquires characteristics that are ritual-like” (Masters, 2008, p. 858).

Play must be intrinsically motivating. In Rachel White’s 2012 *The Power of Play* study, it is suggested “children engage in play simply for the satisfaction the behavior itself brings. It has no extrinsically motivated function or goal” (p.2).

Next, play must be voluntary (Brown, 2010; Caillois, 1961; Mainemelis & Ronson, 2006; Masters, 2008; Sutton-Smith, 1997; White, 2012). Gordon & Esbjörn-Hargens (2007) note, “freedom is a hallmark of play” (p. 65), not only in the sense that one must choose to play or not, but also in the sense that freedom can mean what one decides to play and if it is solitary or social.

Play is thought to be hands-on (Brown, 2010; White, 2012; Yahya, 1996). Participants are encouraged to be physically part of a process through the manipulation of objects or construction with materials. Hands-on interaction facilitates growth in cognitive and physical development, learning and social skills which are discussed further on in this chapter.

One must bring imagination and creativity to certain play situations (Caillois, 1961). Having the capacity to be creative in play allows individuals to create alternative worlds and identities far removed from their everyday lives. Players can use their creativity and imagination to create unique uses of objects (Masters, 2008). For kids, creativity and imagination in play can transform the family dog tied to a red wagon, into a horse pulling a covered wagon on the Oregon Trail.

Play also entails a process of trial-and-error, removing the negative consequences or the pressure to be correct. There is not a right or wrong answer when playing; mistakes become an important part of the play process (Melamed, 1980; Mainemelis & Ronson, 2006). According to Anning (1994), “play provides an excellent opportunity to try combinations of behaviors that wouldn't be tried under functional pressures” (p. 70), allowing one to discover comfortable behaviors or activities (Brown, 2010; Mainemelis & Ronson, 2006).

Environments can foster play and are crucial in the process: “There is a place for play: as needs dictate, the space for hopscotch, the board for checkers or chess, the stadium, the

racetrack, the list, the ring, the stage, the arena, etc.” (Caillois, 1961 p. 6). Play flourishes in spaces that encourage the act, no matter what it may look like (Brown, 2010; Henderson & Atencio, 2008).

Stuart Brown's Types of Play

With these common characteristics in mind, Stuart Brown (2010) has constructed a rubric, breaking play into six types: Body/movement, object, imaginative, social, storytelling/narrative, and creative.

1. Body and movement play, often referred to as physical or locomotor play, is the most popular and earliest form of play we experience. Brown notes that it starts in the womb, going from infants squirming and waving arms, to learning how to use objects as tools such as eating utensils. Brown (2010) sees movement as “primal and accompanies all elements of play” (p. 84). Body and movement play is universal, “our knowledge of the physical world is based on movement (Brown, 2010, p. 84.)” The British Toy and Hobby Association (2011) and Play England (Goldstein, 2011) identify active play as the most common type of physical activity children take part in.

2. Object play, allows for interaction with things or objects, whether it is a ball or paper airplane. At first, Brown notes that certain simple objects like a spoon or food become objects of play. As the infant progresses to toddler age, his/her, “toys take on highly personalized characteristics” (Brown, 2010, p. 85). The “skills in manipulating objects [start to] develop” (Brown, 2010, p. 85.) As humans grow, they find affinity toward certain objects, understanding form and function at a higher level.

3. Imagination, according to Brown (2010), is the “most powerful human ability. It allows us to create simulated realities that we can explore without giving up access to the real world” (p. 86). Imaginative play allows for creativity at its fullest; children immerse themselves in imaginary adventures with make-believe-characters. According to Shaffer (2014), “Vygotsky wrote about play as imagination in action, suggesting that children attach meaning to an object and act by that ordained meaning” (p. 60). According to Brown (2010), “as kids grow older, the line between what is pretend and what is real becomes more solid. Throughout life, imagination remains a key to emotional resilience and creativity” (p. 87).

4. Social play is critical in personal growth, but also plays a huge role in community and culture. Humans are social creatures; in play, these relationships flourish. Brown (2010) notes that first children partake in parallel play one sitting next to each other not directly playing with each other, which bridges the way for cooperative play. After this, mutual play takes shape, creating give-and-take play. Rough and tumble play is also introduced around this same time, followed by celebratory and ritual play (Brown, 2010).

5. Storytelling/narrative play allow for one to “make up stories about why things are the way they are, which becomes our understanding of the world. Stories are a way of putting disparate pieces of information into a unified context” (Brown, 2010, p. 92).

6. Finally, creative play allows “imagination to transform/transcend what is known in the current state, to create a higher state. Creative play takes our minds to places we have never been, pioneering new paths that the real world can follow” (Brown, 2010, p. 93). Objects often assist in creative play. For example, clay allows one to sculpt freely new works of art or blocks allow for original construction.

Whether it's one type of play or a combination, all play is “crucial in children’s development. Children experience their world, and the world of others through play” (Goldstein, 2012, p. 1)

Benefits and Outcomes of Play

We are designed to play (Brown, 2010) and it is an integral part of development both mentally and physically. It is “at its most basic level a very primal activity. It is preconscious and preverbal - it arises out of ancient biological structures that existed before our consciousness or our ability to speak” (Brown, 2010, p. 15). Play originates “during gestation, the embryo and developing fetus are subject to strong prenatal influences from the nutrition to the stress levels of the mother. Even in utero, neural circuits are taking shape, circuits that will set brain patterns for the rest of our lives” (p. 80). The brain and play have a synergetic relationship; while our brain can affect our play patterns and affinity towards play, play itself will continue to shape the brain’s development throughout our lives.

The majority of research focusing on the benefits of play only examines it in relation to children. There are a spattering of instances where adults are mentioned but they are few and far between. Rachel White’s (2012) *The Power of Play* best introduces the benefits and outcomes of play in children, which can lead to future research in the understanding of how play can benefit adults. *The Power of Play* report summarizes the effects specific types of play have on the development of cognitive skills like knowledge development, problem-solving, divergent/convergent thinking, higher order thinking, creativity, language, and executive function.

Exploratory, body/movement, and object play are often catalysts for conceptual knowledge. White notes that “studies have demonstrated that when children are presented with a puzzling new toy their first instinct is to engage in exploratory play, touching and manipulating parts of the toy to figure out how it works” (p. 12). While play may teach about particular objects, exploratory play will assist individuals in understanding how to categorize them in the future. This is best illustrated in a 1994 study by Baldwin, Markman, and Melartin. The researchers gave nine-16 month-old babies “new toys such as horns or castanets; that had non-obvious properties (i.e., honking, clanking)” (White, 2012, p.12). After a short period with the toy, the researchers gave the subjects a similar toy. Once each child received the new toy, they quickly tried to reproduce the property; “they had learned not only about the toys they played with but also about a category of objects” (White, 2012, p. 12).

Perhaps the best thing about play is the freedom it extolls. Play allows for trial-and-error and experimentation, not just through the utilization of objects like blocks or paints, but also through testing out behaviors in varying situations. These skills allow individuals to take what they have previously learned and use the strategies to navigate new problems that may come their way. What is so fascinating is that these types of play allow for both convergent and divergent problem solving, something White extensively talks about in her report.

Convergent problem solving will have one correct answer, much like a standardized test. Researchers asked children to retrieve an object that was placed out of their reach using only two short sticks, which if connected would reach the object. Those children who had an opportunity to play with the sticks before the task were more successful at finding the solution to retrieve the object than those who had not previously seen the sticks. This study also contained a third group, in which children watched an adult model the solution. However while those children did find

the solution, they were less motivated or persistent to solve the problem. In fact, they often gave up if they failed to solve the problem immediately, whereas children in the playgroup were more likely to keep trying new ideas until they were successful.

Divergent problem solving primarily relies on creative play for multiple solutions. According to White, “play has been described as practice in divergent thinking, because in play, children are always coming up with new ideas and recombining them to create novel scenarios” (White, 2012, p.13). When researchers Pepler and Ross “assigned preschoolers to play with a single-solution puzzle or a multiple-option block set” they discovered that those children with the block set “were more innovative and flexible in their approaches to solving problems” than the children with the single solution puzzle. Even more, those children with the block set were more likely to solve both divergent and convergent problems, “suggesting that engaging in divergent playful activities might instill the idea that there can be numerous creative solutions to a problem” (White, 2012, p. 13). These skills also assist in higher order thinking, which supports children in Science, Technology, Engineering, and Math (STEM) based learning.

Higher order thinking takes facts and brings them to another level, one in which connections must be made from these facts and used to solve problems. Many look to Blooms Taxonomy or hierarchy to illustrate this idea (White, 2012). It is broken into three domains: cognitive, affective, and psychomotor. Cognitive domain consists of remembering, understanding, applying, analyzing, synthesizing and evaluating, keys to understanding science, mathematics, technology, and engineering (White, 2012). White notes that object play (blocks, balls, paints, clay) assist children’s understanding in logical scientific thinking. It also helps in math skills like “measures, quantification, classification, counting, ordering and part-whole relations” (White, 2012, p.14). White identified a study conducted by Ginsburg, Pappas, and Seo,

who looked at preschoolers who participated in mathematical activities during free play. They found

“...children spent 25% of their time exploring patterns and shapes, 13% comparing the magnitude of objects, 12% on enumeration, 6% exploring transitions, 5% on spatial relations such as direction and distance, and finally 2% on the classifications of objects into groups” (White, 2012, p. 14).

Object play best influences higher order thinking in individuals' longer term. A 1996 study showed that after 16 years of following a group of children from 4 years of age who played with blocks “significantly and positively related to their level of achievement” (p. 14) in STEM subjects through high school.

Creativity is needed for problem-solving skills, objects, and pretend play. In *The Power of Play*, White (2012) describes a “meta-analysis of play studies [which] found that one of the strongest links among a long list of correlates of pretend play was divergent thinking, a key component of creativity” (p. 16). A study conducted in 1980 gave children “one of three conditions (1) free play, (2) imitation of an adult's actions, or (3) problem-solving experience” (p. 16). What they found was that those who “engaged in free play increased performance on a following divergent problem-solving tasks” (p. 16). They also found that the

“...relationship only held true for children who had been observed to display high levels of pretense in their play, suggesting that there might be something special about the nature of pretend play, over and above other forms of play, for promoting flexible and creative problem solving” (p. 16).

Both creativity and pretend play influence each other, as well as influence language skills.

Creativity and pretend play allow for personal symbol and meaning making which allow one to better understand language. White refers to a 2010 study by Hanline, Milton, and Phelps, who “found that preschoolers who had high levels of representation in their block constructions had higher reading abilities and a faster rate of growth in reading in early elementary school” (p.

16). Children are also able to practice language more when they can play and pretend with other kids. A 2011 study showed that “children may be more prepared to understand narratives when they have experienced similar concepts through play” (White, 2012, p. 17). Children are also better able to comprehend what they read and communicate more clearly through speech and writing if they have engaged in pretend reading to stuffed animals or perhaps to an imaginary friend.

Pretend play has also been shown to influence one’s executive function, which “develops rapidly in childhood, concurrent with the maturation of the prefrontal brain region” (White, 2012, p. 17). The Power of Play report describes a study by Bodrova & Long who looked at the Tools of the Mind Preschool Program; “through the training of mature pretend play, children learned to use toys and props symbolically, developing consistent and extensive narratives, they maintained rules and roles, and planned play scenarios from beginning to end” (White, 2012, p. 17). Pretend play is critical for development. It has been shown that “even in a small dose- 10-minutes- improves children’s performance on a subsequent executive function task” (White, 2012, p. 17).

While physical play is perhaps the most beneficial type of play for overall health, it is also the most under-researched. In 2011, the American Heart Association found that one-third of American children between ages of 2-19 are obese. Institutions promoting physical play are more important today than ever in history (British Toy and Hobby Association, Play England, 2011; Goldstein, 2012; Greiner, 2010; Henricks, 2007; Milteer, Ginsburg, Council on Communications and Media Committee on Psychosocial Aspects of Child and Family Health & Mulligan, 2012; Yarnell & Qian, 2012). Active play benefits cardiovascular fitness, “improves muscle control and co-ordination, strength and endurance, and may promote fat reduction and body temperature

regulation” (Goldstein, 2012). The Centers for Disease Control and Prevention identified that children (6-17) need to play for at least 60 minutes per day (White, 2012, p.24). Also, that type of “play can help alleviate or even prevent some health issues such as obesity, mental health, and hyperkinetic disorders” (British Toy and Hobby Association and Play England, 2011, p. 5).

White notes in *The Power of Play* that about 20% of children’s free play behaviors can be classified as a vigorous physical activity. Physical play not only keeps the body healthy but also the mind. School-aged children who were assigned five more hours a week of physical activity scored higher on standardized tests than those children who played less (White, 2012).

Play also provides a coping mechanism that allows for individuals to navigate cultural norms. It may help them regulate emotions by creating outlets to deal with stress and obstacles. Children can use play to revisit and understand disturbing experiences after the fact and give them the tools to cope with distress in the future. White (2012) identifies several studies that looked to pretend play as a positive outlook for coping and emotion regulation. In a 1981 study by Barnett and Storm, preschoolers were randomly assigned to watch a movie clip with a stressful ending or one with a positive ending. The children who watched the stressful ending were more anxious and unhappy than those who watched the happy ending. Researchers gave the participants the opportunity to play following the movies. Children in the negative group ended up spending more time enacting the events related to the movie than the children in the happy ending group, and they were able to attenuate their anxiety and negative emotions. Another study that looked at 7-9 year-olds going through an invasive dental procedure showed that fantasy play allowed the implementation of numerous coping strategies.

Play is often social, contributing a role in small groups, to affecting the culture we find to be a part of. The *Power of Play* report says that parents’ early involvement as playmates for

children served to scaffold young children's abilities for future play with peers. Current researchers like Brown and White often utilize the 1932 Rubric on social play created by famed sociologist Mildred Parten. Parten's framework is broken into four categories; solitary play (ages 2-2.5 years), parallel play (2.5-3.5) associative play (3.5-4.5) and cooperative play (4.5). Parten found that children followed a developmental process increasing social play with age. Whites study also uses recent research by Brenner and Mueller in 1982, which has provided revised accounts, noting children are more social when playing with familiar groups and more likely to show cooperative play in these situations at much younger ages than 4. Schott & Kambouri (2005) note that "research on the development of play has shown that, by adolescence the majority of recreational activities revolve around a strong need for self-awareness, socialization, and communication" (p.131). Social play is encouraged through communities by

"...providing a relatively safe environment of the exploration of social and cultural themes. Play displays inherent tensions in society and provides pathways (including times and places) for working these out. Play offers alternative statuses to actors in ways that deepen public knowledge of social order and social hierarchy" (Henricks, 2007, p. 41).

As a result, society becomes more self-aware bringing the "community together to participate and to observe" (Henricks, 2007, p. 41) and also contributes to creating a culture within the community.

It was "John Huizinga [who] first to assert[ed] the link between play and culture. Culture itself, he maintained, was born in and through playing" (Masters, 2008, p. 857). White (2012) further states that it is socialization that allows individuals to learn about the realities and expectations of culture. She draws upon the 2003 study conducted by Hirsch-Pasek and Golinkoff at the *Please Touch Museum* in Philadelphia. They illustrated using socialization through dramatic play aids in the mastering of cultural expectations. The study observed children

playing in a market; they shopped for goods and placed products into small carts and wheeled them up to a register, where they check out. This allowed a socialization activity that mimics the rules of the culture they live in. What many researchers and theorist agree on is that “diverse skills that children gain through social play help them feel competent and contribute to cognitive and emotional growth” (White, 2012, p.11).

Play as a Human Right

Play has been a staple of civilization. It was “over 2000 years ago when Plato warned ‘do not keep...children to their studies by compulsion but by play’” (Sigman, 2015, p. 3). It is something that almost every child does. Play is perhaps the best part of childhood, the freedom to adventure out into make-believe worlds, games played with friends, the overall fun and excitement that accompanies playing; for children, play is as natural as eating or sleeping (British Toy & Hobby Association & Play England &, 2011). At the turn of the 20th century leading educational reformers like Henry Curtis, Luther Gulick, Joseph Lee, and Jane Adams looked for a healthy way to occupy the time of children (Frost, 2007). They found the solution through public playgrounds. This influenced the 1921 formation of the “the International Association for the Child’s Right to Play in Denmark. More than forty nations, including the United States, became affiliates. The IPA and the American Association of IPA have the primary aim of advocating and protecting the child’s right to play” (Frost, 2007, p.10).

White (2012) notes, “the drive to play is so intense that children will do so when they have no real toys, when parents do not actively encourage the behavior, and even in the middle of a war zone” (p. 5). In 1989, the United Nations High Commission on Human Rights recognized play as a fundamental right of every child (Curtis, 1994; Milteer, Ginsburg, Council

on Communications and Media Committee on Psychosocial Aspects of Child and Family Health & Mulligan, 2012; U.N. General Assembly 1989; White, 2012).

Children's Play in Children's Museums

The majority of studies and literature on children's play have come from children's museums, which makes sense since roughly 30 million children and families visit children's museums annually (The Association of Children's Museums, 2015). According to Shaffer (2014), "experimentation in traditional museums brought early childhood concepts such as play, to the public"(p.). The Institute of Museums and Library Science published a report in 2013 "linking early learning to museums and libraries. The report was a call to action for policymakers and practitioners to become more intentional in pursuing the rich resources of museums and libraries to give all children a strong state in learning" (Shaffer, 2014, p. 25). Linda Edeiken (1992) notes,

children's museums recognize the value of play in learning, both as a context and as a process. The playful spaces, atmosphere, and nature of exhibits and activities in a children's museum, while contributing to its popularity among its audience, are essential to "stimulate curiosity and motivate learning." This is something to be valued, not belittled, as playfulness does not detract from the substance of an exhibit and is as desirable and difficult to achieve as intellectually "elegant" exhibit solutions (p.23).

Children's museums have greatly influenced the way in which other institutions cater to the young visitor. What was once a collections-centered institution has evolved into "hands-on, multi-sensory learning environments" (Munley, 2012, p.3). These types of museums excel at creating environments for play and touch, and today more traditional museums are following suit. Studies conducted at the- Please Touch Museum, EatSleepPlay exhibit at the Children's Museum of Manhattan, CyberChase exhibit at Children's Museum of Houston, and an exhibit on

fire safety at the Chicago Children's Museum (Luke & Windleharth)-concluded that visitors "were most attracted to exhibits where there was something physical to do, where they could exercise large motor skills" (Luke & Windleharth, 2013, p. 17). According to Bourque, Houseal, and Welsh (2014) "museums that use play as a mechanism for children's learning can use their position to inform and educate parents or caregivers about the learning benefits of play, and also, help them to play alongside their children" (p. 32).

Today there are "fewer opportunities for active play than in the past – fewer urban play spaces, less school time devoted to play and sport, fewer playmates at home to play with" (Goldstein, 2012, p. 1). Competition and achievement are starting to take precedence over fun play. Today more parents are pushing their children "to adapt into adult roles and prepare for their future at earlier ages" (Milteer, Ginsburg, Council on Communications and Media Committee on Psychosocial Aspects of Child and Family Health & Mulligan, 2012, p. 184). Kids are devoting more time to studies and highly competitive activities in hopes of getting into the best colleges and universities. Sadly, this disappearance of genuine play time is not just at home; but at schools where "schoolchildren are given less free time and fewer physical outlets at school; many school districts responded to the No Child Left Behind Act, by reducing time committed to recess, the creative arts, and even physical education in an effort to focus on reading and mathematics" (Milteer, Ginsburg, Council on Communications and Media Committee on Psychosocial Aspects of Child and Family Health & Mulligan, 2012, p. 183).

It is now up to museums to provide these genuine play spaces and to show how critical play is for children, allowing for the practice of all types of play. According to Shaffer (2014) "play in museums, whether children's museums or more traditional galleries is becoming more

accepted as a strategy for learning and is seen not simply as frivolous activity but the way that children construct meaning about their world” (p. 141).

Museums and Play

According to Deborah Perry “play, along with curiosity, confidence, challenge, control, and communication, is one of six components of an intrinsically motivated museum experience” (Grenier, 2010, p. 77). Grenier (2010) adds that “the potential of play in museums is centered in its ability to promote situations where a person is not only motivated to learn but is propelled into the learning process, and finds the process as satisfying and rewarding as the outcome” (p. 78). A motivational factor in the learning process is collaboration, and museums can facilitate these needed social interactions. These sites are seen as places to be entertained while having fun with family-and friends.

The trend of creating spaces that allow for play are now emerging in almost every type of institution, from history centers to art museums. For example, *The Andy Warhol Art Museum* created a play opportunity for kindergarteners allowing them to transform into superheroes. Cape making and role-play became “an interpretive stage for connecting to Warhol’s works of art” (Shaffer, 2014, p. 123). It was found that “long after the [visit], the children were able to recall easily details of the day of play at the Warhol museum and the paintings they saw” (p. 123). Art museums, a genre of museums that have historically been a place for passive visits, are just some of the institutions trying to change how their guests can actively interact with exhibits. Museums are, more than ever, encouraging visitors to “do things,” whether it is manipulating an exhibit component or climbing on an indoor play area. What children’s museums have demonstrated is that “museums are essentially experimental places” (Kelly, 2002, p. 3), and the environments

encourage visitors to physically interact with things inside the museum in different ways (e.g. visual, perceptual, kinesthetic).

Adults and Play in Museums

According to an IMLS study “in 2006, there were about 223 million adults aged 18 and over in the U.S.” (Griffiths & King, 2008, p. 14). In addition, “a national household survey revealed about 70 percent or 156 million adults visited museums in the previous 12 months” (Griffiths & King, 2008, p. 14). The same study showed, “adults spent 3.8 billion hours of their time traveling to and visiting museums, and spent \$29 billion in travel costs and entrance fees” (p. 28). Adults are investing a lot of time and money into museums visits; it seems only fair that they reap the benefits institutions afford to children. It is rare for adults to be the ones playing in the exhibits, building with blocks or participating in an interactive exhibit. There is a common idea that play is reserved for childhood, and when adults do play, they often feel obligated to provide a reason for it. With all the benefits of play and having fun, it seems that museums should be pushing this opportunity for their paying audience.

John Cross (2002) points out that the “typical museum is not offering the full range of learning activities to its adult audiences. Most of the activities that adults undertake in museums are passive: looking, listening, reading, watching, walking along a predetermined path” (p. 5). There is an unfortunate assumption that adults enjoy this kind of museum visit and that they learn best as these passive recipients. While this may be the case for some, it is not for the majority. These programs allow little in the way for a genuine learning experience, “learner-driven learning is rarely encouraged among adults in museum settings” (Cross, 2002, p. 6). Museums rarely encourage adults “to create, dispute, perform, play, experiment or construct”

(Cross, 2002, p. 6). Yet, play and what accompanies play- the hands-on, exploration, fun, excitement-is the driving force behind how museums entice children.

Another problem is the “facilitation and provision of adult learning experience[s] [do] not fall within the museum education division- but occurs mainly in the area of public programming which has more to do with marketing, revenue-raising than with the development of quality learning experiences” (Cross, 2002, p. 5). These lectures, classes, workshops, and gallery tours, are organized by program planners who are not typically creating curriculum. The public programming departments depend on adults to financially support the department, as well as other areas of the museum (Cross, 2002; Monk, 2013).

How can Play Benefit Adults?

Historically, “the majority of research on Americans’ health is negative or disease oriented, particularly in studies of older adults” (Yarnal & Qian, 2012, p. 52). However, with new research in adult development, the notion of the aging adult and the developing child is starting to overturn. Instead, learning and development is viewed as a continuous process throughout life (Yahya, 1996). This is good since older adults are a large segment of America’s population and are living longer and becoming more active than previous generations (Federal Interagency Forum on Aging- Related Statistics 2008; U.S. Bureau of the Census 2005).

It has been established that playfulness and having fun, benefits good health and development in childhood, but it also is a major factor in healthy aging for adults consisting of cognitive function, emotional growth, and overall better health (Brown, 2010; Goldstein, 2012; Grenier, 2010; Yarnal & Qian, 2012). Yarnal and Qian (2012) noted that “studies of playful women aged fifty and over have documented numerous benefits of playfulness including

fostering positive emotions, facilitating positive coping, enhancing personal growth and development, and strengthening social bonds” (p. 60).

By the time people reach their 70's executive function starts to decline, however, people who have been “athlete[s] all their lives have much better executive function than sedentary people of the same age” (Goldstein, 2012, p. 7). Even the physical activities engaged in for “pleasure- from gardening to hiking can positively impact the ageing adult” (Goldstein, 2012, p. 18). Goldstein (2012) also notes “exercise is also associated with a reduced risk of dementia late in life. People who exercise regularly in middle age are one-third less likely to get Alzheimer's disease in their 70's, as those who did not exercise” (Goldstein, 2012, p. 7). It is not just physical exercise but also mentally challenging work, like puzzles and games that can be beneficial. Albert Einstein and Syracuse Universities showed that people who had the most cognitive activity were 63% less likely to get Alzheimer's disease than the general population (Brown, 2010).

Play is also beneficial in lifelong learning. Learning throughout life is a part of human nature, in other primate species play continues well through adulthood (Goldstein, 2012).

According to Goldstein (2012), it may be more important now than ever because,

“play helps to develop and hone those skills most necessary for successful adaptation to a changing world: language, communication, planning and strategy, abstract thinking, creative problem solving, handling emotions, cooperation” (p. 17).

Playing is not only fun, but also approaching learning in this manner helps us “engage and connect with parts of ourselves which are usually dormant, inaccessible, or well defended. Continuous learning offers the possibility for fresh and deeper meaning to everyday activity, which in turn generates meaning and fulfillment to subsequent endeavors” (Meleamad, 1987, p.

X). For Brown (2010), “play isn’t the enemy of learning, it acts as fertilizer for brain growth” (p. 101).

Gaps in the Literature

In 2008, psychologists Lieselotte Van Leeuwen and Diane Westwood found that in the past ten years, 3,000 psychological studies focused on play. However, only 40 addressed play in adults. While play in children studied by psychology looks extensively at children’s development, those that look at adults only view it in a therapeutic context. The psychologists also echo many other theorists, researchers and “several prominent scholars of play in pointing out the lack of, and need for, studies of play in adults” (p. 153).

In 2014, Sharon Shen, Garry Chick and Harry Zinn created the Adult Playfulness Scale. This scale was designed only to measure what playfulness looked like in work settings, limiting its applicability in other contexts. For example, this application assumed that play is opposite of work, meaning play and work do not go hand in hand. In addition, the study only looked at college students, many who could not apply years of adult perspectives: “There is scattered evidence that playfulness changes of lifespans, suggesting that play looks different for the varying age groups. There is also evidence of similarities of what play may look like across the age groups” (Yarnel & Qian, 2012, p. 58). In 1998, Garry Chick addressed the Association for the Study of Play and Society for Cross-Cultural Research, expressing his worry about traditional theories of play and the failure to address playfulness in adults, something still noticeably absent in today's literature. The majority of research and the few studies come from the 1980s and prior. There is a need for new relevant studies in what adult play may look like. Yarnel and Qian note

the need for “further refinement of the existing playfulness scale (p.58),” creating a range for all aged adults. Van Leeuwen & Westwood (2008) point out the need for studies on adult play,

“Understanding why and how people engage in lifelong play would advance the understanding of human behavior, and it would provide designers with strategies to discover concrete needs for play. While both disciplines can mutually benefit from each other, it is important for psychologists, sociologists, anthropologists and historians also to study adult play conceptually, ‘for its own sake’ as a relevant form of behavior rather than limited to its role as a means to other ends” (p.160).

Museums rely on revenue brought in by adults to keep their doors open. While public lectures and docent led tours may still be valued by some visitors, a new generation of adults is about to be the primary funding source of these institutions. According to the Pew Research Center, Millennials have now overthrown the Baby Boomers as America’s largest population, and since 2015 are legally all adults (Fry, 2016). This generation, more than any previous generation, has grown up with games, technology, a plethora of entertainment sources, and instant satisfaction. This generation is more about doing something, moving and going places, than is it about being passive recipients. It is not just generation “Y” museums need to look out for, right behind them is generation “Z,” the Centennials or the iGeneration. While most of this generation can not even drive yet, they already have had years of experience with technology to play games or be entertained, they have hundreds of amusement parks to choose from and are shuttled to and from pint-size soccer and hockey almost everyday of the week. What these two generations have above any other is the value and understanding of play. Once these generations are the primary adults who visit museums, they are going to look for ways to have fun, be entertained and do things, while connecting to their childhoods.

With the cultural shift, institutions more than ever must understand how adults like to participate in museum spaces if they want to ensure the survival of the institution.

There is a continued need for advocacy and education for museum professionals, particularly those outside of education. For early learning experts, though, there is an overwhelming consensus that integrating play or playful learning into museum programs adds a dimension that is worth the investment (Shaffer, 2014).

While there is not doubt that play is enjoyable for both the young and the young-at-heart, play is crucial in the maintenance and wellbeing of ourselves, both mentally and physically. The fact is, there are benefits and costs to play (Brown, 2010). There is a strong biological and evolutionary reason for its existence. Play is incredibly powerful; it is perhaps one of the only experiences that every human and animal past, present, and future have experienced, and therefore it is something that we all share. While adults do not need to partake in play activities all-day-every-day, growing up does not mean giving up play. Any museum, whether it be a children's museum or a historic house can show that play does not trivialize work and adult responsibilities, or that play is solely reserved to childhood, but ultimately adds value to our lives.

CHAPTER THREE: METHODS

This study was designed to contribute to the field of adult education and programming in museums. The goal of this study was to identify if adults play in museum exhibits and what that play may look like. This chapter describes a) the research sites; b) sampling; c) methods and instrument used to collect and analyze data; and d) the limitations of the study.

Research Sites

Data were collected at two museums, the City Museum, St. Louis, MO, and Science World at Telus World of Science, Vancouver, BC, Canada. These sites were selected because they had permanent exhibits that were actively talked about in the literature on play.

The City Museum opened in 1997. Designed initially for adults, it is a large playground-like institution that welcomes guests of all ages. Housed in a 760,000 square foot abandoned shoe factory, all exhibits have been created from salvaged material found around the city. It is the only museum in the world that encourages visitors to touch, climb, slide down, hide and jump on and in the exhibits. It has been named one of the

“great public spaces” by the Project for Public Spaces, which is the “central hub for the global Place making movement, connecting people to ideas, expertise, and partners who share a passion for creating vital places” (Project for Public Spaces,



Image 1: Outside entrance of Monstrosity



Image 2: View of Monstrosity tunnels and plane(top right)

accessed 2016). The City Museum has no maps and due to the constant addition of new exhibits and parts to existing exhibits even staff members have a hard time figuring out how to get from point A to point B. This maze-like space encourages participants to explore and assists in visitors gaining a better understanding of how their body interacts within new and unusual space. The City Museum promotes learning through play by making every exhibit interactive throughout the entire institution.

Visitors were studied in two exhibits at the City Museum: *Monstrosity*, and the *Caves*. *Monstrosity* is an outdoor exhibit containing: two Saber 40 airplanes stories off the ground, a ball pit housed in an old 10,000-gallon tank, a ten-story slide, numerous areas to climb and multiple smaller slides. The *Caves* includes a ten-story slide; felled trees turned in ramps, tunnels, and bridges, a life-size whale to climb in and under, numerous smaller slides, tunnels in the ceilings and under the floors as well as a 20,000-gallon fish tank with live fish.



Image 3: Entrance to Caves (indoor exhibit)



Image 4: Entrance to Caves (indoor exhibit)

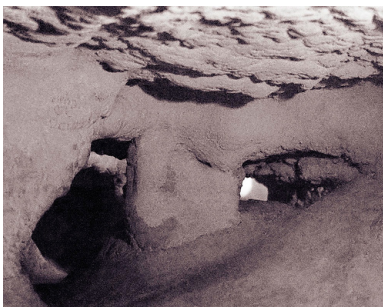


Image 5: Inside Caves

Voted one of the top ten attractions in Vancouver, BC, Canada, by *USA Today*, Science World boasts multiple families-centered interactive exhibits as well as the largest OMNIMAX dome screen in the world. At an incredible five stories high and 27 meters in diameter. The *Eureka!* Gallery opened in 2003, promotes hands-on discovery and encourages visitors to try new things and ask "What would happen if...?"

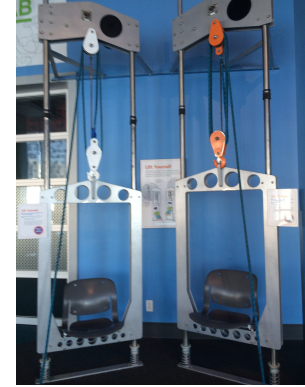


Image 6: Lift Yourself

The researcher studied visitors in three exhibits in the *Eureka!* Gallery. The *Dyson Air Flow Wall* was installed in 2011; participants use small Ping-Pong-sized balls and place them in tubes. Air flows in the tubes pushing the balls up and shoots them out onto visitors below. The exhibit has large knobs where visitors can manipulate the airflow affecting the direction of the balls. The *Lift Yourself* and *Hippo Lever* exhibits were installed in the early 2000's. *Lift Yourself* was purchased from an exhibit fabrication company called Exhibiteers. It is a typical science center exhibit involving lifts and pulleys. It allows for one or two guests to lift themselves while sitting on a chair using the pulley system. The *Hippo Lever* was originally constructed for a Simple Machines exhibition, and it is a demo of how a lever works and, depending on where guests are "pulling" it, how much force one may need.



Image 7: Dyson Airflow Wall



Image 8: Hippo Lever

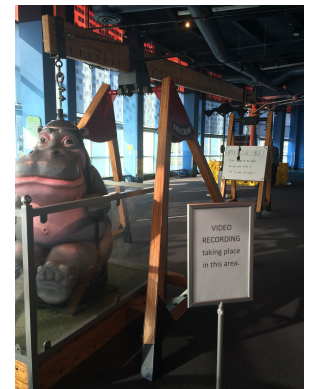


Image 9: Hippo Lever

Collection Procedures

Data were collected through video-recorded observations of adult visitors in the exhibits described above. A total of 30 visitors were observed, 15 at the City Museum between March 11-13, 2016 and 15 at Science World from April 1-2, 2016. Participants were randomly selected after they chose to enter the specified exhibit. The researcher then approached them to explain the study and ask whether the adult consented to participate. Each adult participant was read the protocol prepared by the researcher (see Appendix A). The researcher informed each participant that it was voluntary, and if they were unwilling to participate, there would be no penalty or loss of benefits, and that they may stop participation at any time. After receiving the adult's consent to take part in the study, the researcher used a handheld video camera to record the participation for the duration of his or her active engagement in space. The focus of the observation was on the participant's actions and activity, for the participants to fully engage in the exhibits and move around space, the researcher chose to use a handheld camera rather than a stationary camera.

Data Analysis

Video recordings were coded using Stuart Brown's (2010) typology of play. The framework identifies six types of play: "Body /Movement," "Object," "Imaginative/pretend," "Social," "Storytelling/Narrative," and "Creative." Indicators and descriptions of example behaviors further defined each type of play. The researcher focused on visitor's physical interaction with the exhibit, how their body interacted within the set exhibit space. Prominent movements like going down a slide, crawling or pulling on a rope were recorded. Visitor's motivations to playfully explore and experiment were also noted as well as how they interacted with others in their group. The researcher also looked at how visitors physically assisted others

or voiced their opinions where to go or what to do in the exhibit. The researcher coded the 30 observations by watching each video and noting any behavior that aligned to one of the descriptions of the framework's six types of play. Occurrences across the indicators and learning dimensions were then calculated to determine both the frequency of each evidence of play across all visitors and the frequency of all evidence across each visitor's activity. Additionally, the researcher made other observation notes while watching the videos look for qualitative patterns and trends.

Limitations

This study was limited in scope by examining types of play in only two museums. These findings cannot be generalized to represent all museum exhibits. Nor can the study alone serve to indicate Stuart Brown's theories of play. Additionally, this study was limited to a small sample size, which cannot be taken to indicate a definitive extent of what play can look like in exhibits.

As this study was specifically addressing what play looks like in adult-only audiences, demographic information about participants was not gathered so questions about who was (or was not) participating or why visitors chose to visit the exhibits were not studied.

Data collection in both institutions was limited to several consecutive days. For the City Museum, the days were Friday from 4-11pm, Saturday from 4-11pm and Sunday from 11am-3pm. Science world data was collected on a Friday from 1-5pm and Saturday 1-6pm. Weekends are generally when more adults are available. Monstrosity exhibit at the City Museum was outside, due to weather conditions it was only open Friday, March 11. Therefore, the researcher could only get a few samples from the exhibit. The majority of adults at the City Museum were gathered outside due to proximity to the outdoor bar incorporated into Monstrosity Exhibit.

When that exhibit was closed due to weather, adults dispersed into other exhibits in the museum limiting the population in the Caves exhibit.

The resulting data may not reflect a full picture of what play may look like in exhibits studied, nor can the study results be generalized to represent play occurring across all museum exhibits.

Chapter 4: Results and Discussion

This chapter will summarize the study results, following the research questions: 1) Do adults play in exhibits that encourage family learning? 2) If adults do play, what types of play do they engage in?

Research Question 1: Do adults play in exhibits that encourage family learning?

The researcher identified *Play* to be at least one observable behavior as defined by Stuart Brown's types of play (2010), including:

- **Body movement/play** – How one uses their body to interact with things or other people; movements that are not random- but intrinsic behaviors that promote exploration and learning; examples include catching, climbing, crawling, running, and sliding.
- **Object play** - Curiosity about and manipulation of “objects;” examples include pulling a rope, and turning knobs and levers.
- **Imaginative/pretend play** – Creation of simulated realities that can be explored without giving up access to the real world; examples include role-playing and pretending to be in a different environment.
- **Social play** - Involving others in activities; examples include racing, playing ball, and going down the slide with someone else.
- **Storytelling/narrative play** - Making up stories about why things are the way they are, which becomes our understanding of the world; examples include narrating what you are doing in an exhibit or explaining to someone else how an exhibit works.

- **Creative play** - Transform/transcend what is known in the current state, to create a higher state; examples include creating a game using exhibit that has not initially intended for it.

All 30 adult visitors demonstrated at least one instance of play. In total, the researcher observed 333 instances of play across the 30 visitors, which means on average, visitors demonstrated 11 instances of play.

Research Question 2: If adults do play, what types of play do they engage in?

Not only did all adult visitors play, but they demonstrated multiple types of play during their museum experiences. Figure 1 shows the distribution of instances of play across the 6 types in Stuart Brown's (2010) typology, and suggests that body/movement play was most frequent while storytelling/narrative and creative were not observed during this study.

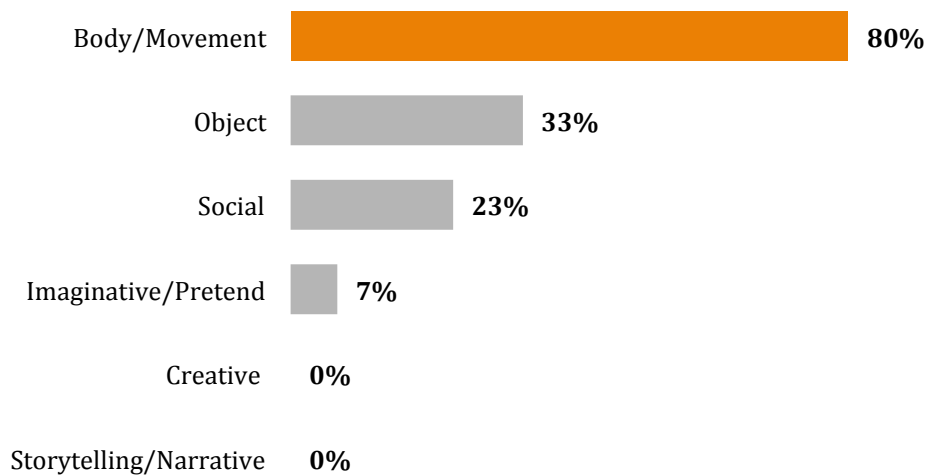


Figure 1: Percent of Visitors who Engaged in each type of Play (N=30)

Figure 2 shows how many different types of play visitors engaged in during their exhibit experiences. Sixty-three percent (n=19) participated in one type of play; thirty-six percent (n=11) participated in more than one type of play. On average, visitors participated in 1.43 different types of play.

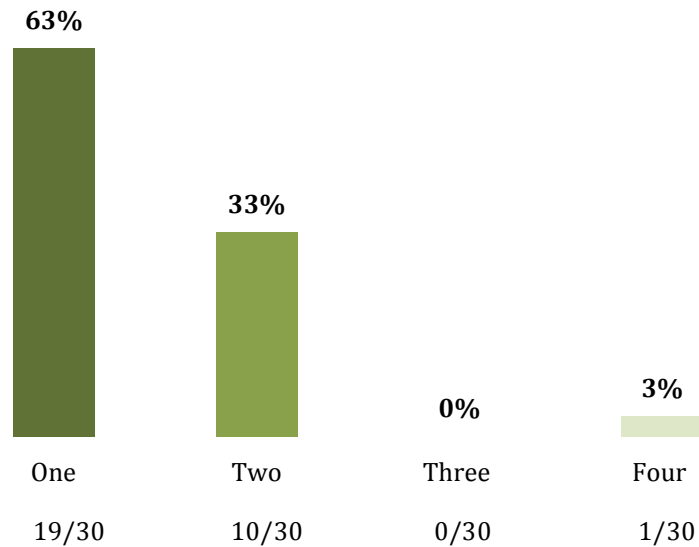


Figure 2: Frequency of Visitor Play Types (n=30)

Figure 3 shows how many instances of each play type were observed during the study.

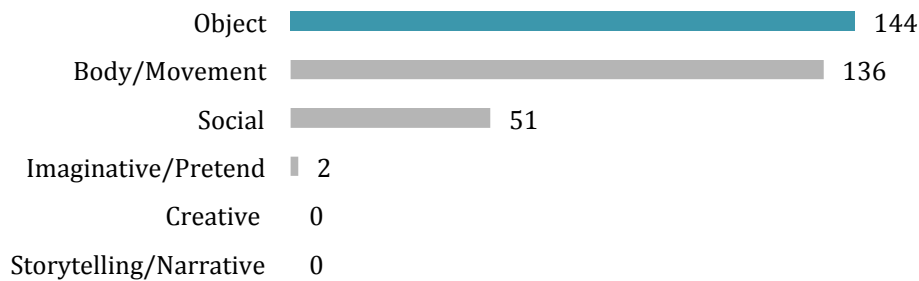


Figure 3: Number of play instances for four observed play types (N=30)

Body/movement Play

Body/Movement play examined how one used their body to interact with things or other people. According to Stuart Brown (2010), these movements are not random- but intrinsic behaviors that promote exploration and learning. In total, 80% (n=24) of all participants' play fell into the body/movement category, averaging 5.66 instances. This play was broken into smaller categories in which the participant must have: climbed (on/off/over exhibit), crawled, explored (points/ voices opinion on direction to go), jump/fall/sink, pull-up (themselves or another person), run, trial-and-error (must find a new path due to dead-end or non-conductive space).

One hundred percent (n=15) of the visitors in the City Museum were observed engaging in Body/Movement play, resulting in 105 instances. Most often, this took the forms of climbing on/off and over exhibits. The exhibit Caves consisted of many tunnels and small spaces where it was necessary for visitors to crawl through either on their knees or stomach. Because the exhibits consisted of many caves and tunnels, hidings spaces and creative nooks and crannies, trial-error and exploration were part of this category. Visitors were observed physically moving around these maze-like exhibits trying to find the way out. Often they would hit a dead end or a place where they physically would not fit and have to turn around and find a new path: "*We can't fit!*" yelled a visitor at her companion when they reached a small crawl space forcing them to turn around and find a new path. Another visitor noted, "*I don't think I'm going to fit through that hole*" as his companion who was smaller was able to lower herself down the hole in the floor. The visitor was then forced to find an alternative route.

An example of this play in the Monstrosity exhibit was a participant who spent 11minutes 30 seconds searching for the large outdoor slide in the exhibit. While the slide is

clearly visible to all visitors, finding the entrance to it requires time, patience and energy.

Initially, she and her companion started from one end of the exhibit, and she was seen pointing to the slide and asking her partner, "*How do I get there?*" She started to adventure out making a few steps to point in the direction she wanted to go, and finally, after making a few wrong turns and climbing some stairs, she pointed again and said, "*That's how I get to the slide.*" From a distance, she saw the entrance but could not figure out the maze to get there. Her companion told her he would meet her at the end of the exhibit, and she carried on. To get to the slide, she had to climb a tunnel and use her entire body to pull herself up to the five-story slide which consisted of a very small hole that she had squirm around and adjust her body to fit through. She finally reached the slide, and gleefully went down over 11 minutes after she started.

Sixty percent (n=9) of Science World visitors also favored Body/Movement play, with 31 observed instances. While the exhibits were not intended to be as physically interactive as the City Museum, the visitors were often observed using their bodies to interact with the exhibits. One example was the Hippo Lever, designed for the visitor to understand how a fulcrum works. The visitor's goal was to lift a hippo up; that was attached to a large beam. Visitors must move the rope on the beam to find the best spot to pull the bar successfully down to lift up the hippo. While the exhibit encourages people to use their body weight, many visitors were observed pulling themselves completely off the ground (much like a pull-up) and swung on the rope Tarzan style, often repeating the behavior. Three of the four visitors observed on this exhibit repeated the pulling up and swinging action on the exhibit.

While some may see body/movement as a physical activity rather than physical play, there is a difference. Going down a slide, climbing, crawling, jumping and swinging in these instances is great for a healthy body, but it is in the purest sense play. While Stuart Brown does

not define play, he notes it must be voluntary, there must be some attraction, diminished consciousness of self and a continued desire. Those observed participating in this play often repeated their behavior, 83% of those who demonstrated body/movement had more than two instances of that play. Visitors were excited about the thought of going down a slide or figuring out where the tunnels lead too; they were also engaged in the process of how to reach that goal. Visitors continued to climb or distort their body to get to the slide; they took their time to find another route if the first one didn't work to reach the end of the tunnel. According to Brown (2010) "the play-driven pleasures associated with [body/movement play] are done for their sake; they are pleasurable and intrinsically playful" (p. 85).

Object Play

Object play is ways in which the visitor physically manipulates the exhibit or exhibit components/objects (Stuart Brown, 2010). For Stuart Brown, it is "finding pleasure in the physical part of object play, in putting together a puzzle, kicking a ball through a goal, or simply tossing a paper wad into the trash" (p. 86). Object play is about the joy in manipulating the object and desire to repeat the behavior. This was often seen as moving/manipulating the rope to a point of the beam to make beam easier/hard to pull down, placing a ball in the air tunnel (Dyson Wall), tossing/kicking a ball at something in/on the exhibit, or catching/attempting to catch the ball shooting out of the exhibit. Thirty-three percent (n=10) of visitors engaged in object play, resulting in 144 instances.

Due to the City Museum's design and exhibit structures, there was little in the way of movable parts in which visitors had to manipulate. Only one visitor engaged with object play, which occurred in the Monstrosity's ball pit. However, the visitor demonstrated 38 instances of

object play. This engagement included the visitor picking up plastic dodge ball sized balls and throwing them at a basketball hoop attached high above the pit, and repeating this behavior.

Sixty percent of all Science World participants (n=9) engaged in object play, and of those all engaged at least three or more times, resulting in a total of 106 instances of object play. The Dyson Wall produced 59 instances of object play. It required participants to place a ball in an air tunnel and turn a lever to regulate airflow and direct the ball in a direction participants choose. While some may argue that this is not playing but just the purpose of the exhibit, the repeated behavior is one of Brown's indicators of play. Stuart Brown (2010) also notes "object play with hands creates a brain that is better suited for understanding and solving problems of all sorts" (p. 86). By turning the knobs and experimenting with the airflow, visitors were able to figure out how to shoot the ball out of a chosen tube. All participants tried multiple times to figure out where their placed ball would emerge on top, one of the visitors noted while running to try and figure out where her ball would emerge, "*We're highly motivated to see where it comes out!*"

Social Play

Social play involves others in activities, according to Stuart Brown (2010). It is defined as a type of play that requires another participant. During this study this was seen as: play fighting, burying someone in the ball pit, racing, kicking or throwing a ball at/ to someone in a fighting like manner. Twenty-three percent of visitors (n=7) demonstrated this type of play, resulting in a total of 51 instances.

At the City Museum, only one visitor engaged in social play, however, it amounted to 42 instances. This visitor was in Monstrosity's ball pit. She intentionally threw or kicked the

balls at her companions trying to hit them 35 times. She also showed six instances of play fighting with them.

At Science World, 40% of visitors (n=6) showed at least one instance of social play. Four out of the six visitors observed on Lift Yourself exhibit came up with the idea to race against someone else. One example was a conversation between the observed visitor and his companion; his companion sat on the chair holding the rope, but she did not pull the rope, "*Are we just suppose to pull up?*" The observed visitor grabbed the rope and started to pull "*Yeah, and we're in a race, ready, set, ... go!*" The observed visitors reached the top long before his directions registered with his companion; however both had big grins on their face.

Two visitors were observed using the Dyson Wall Exhibit to engage in social play. One participant played a small game of catch with their companion with the small balls meant for the air tunnels. The other visitor gathered up numerous balls and divided them between her and the other two people with her. She then instructed her companions to race her with the balls; whoever's ball shoots out first wins, they all count down to race "*ready, set ...go!*" The same visitor also tossed the ball to another person and caught it from the same person.

Imaginative/pretend Play

According to Stuart Brown (2010) this "type of play is the most powerful human ability allowing for one to create simulated realities that can be explored without giving up access to the real world" (p. 86). This is often seen as pretending to be in a different environment or role-playing. Because this play is often internalized, less verbal or action orientated than the other types of play. Stuart Brown notes, "A close examination of the adult stream of consciousness demonstrates that the pretend-real process is a lifelong aspect of human, though. We continually

make up storylines in our heads to keep the past, present, and future in context” (p. 87). Only two visitors displayed one instance each of imaginative/pretend play. However, it is possible that more visitors engaged in this type of play and the researcher did not observe it happening, given that much of imaginative/pretend play is an inward activity, difficult to document without interviewing participants or requiring them to narrate their actions.

At the City Museum, the instance of imaginative/pretends play came when the visitor briefly buried herself in balls and starting to move as if she was swimming or burrowing in them. At Science World, the instance came when the visitor was on Lift Yourself exhibit where visitors are on a chair and must use lifts and pulleys to pull themselves in the chair up a few feet to the top of the exhibit. The visitor had pulled himself up and upon reaching the top noted to his companion “*It's like a little Tower of Terror!*”

CHAPTER FIVE: CONCLUSIONS & IMPLICATIONS

As museums are looking for ways to entice adult visitors to engage with exhibits, the idea of *Play* is one such possible strategy. With very little in the way of studies about adult play, and limited resources on what play looks like for adults in museums, this study contributes to the emerging dialogue surrounding play. By conducting observations of visitors playing in exhibits at the City Museum and Science World; and Stuart Brown's (2010) typology of play to frame the results, this study offers insight into what play looks like for adults in these types of exhibits.

Conclusions

Adults do play in exhibits, both designed for them and those for children. Visitors voluntary engaged in multiple types of play. While not all of Stuart Brown's types were observed during this study, four of the six were. The data suggests that adults enjoyed spending time in the exhibits and playing. On average, visitors demonstrated 11 instances of play.

The study revealed that physical and movement play was most common. The British Toy and Hobby Association (2011), Play England (Goldstein, 2011) Rachel White (2012), and Stuart Brown are a few sources that identified this type of play to be the most common among children. Brown discusses that body/moment play "accompanies all elements of play" (Brown, 2010, p. 84). He sees this type of play as the first type humans engage in; it starts during gestation with slight kicking and punching. For infants, it progresses to squirming and arm waving (2010). As we grow older, these movements become more complex and are accompanied by other types of play (Brown, 2010). White understands body/movement play as a catalyst for conceptual knowledge, but also is the most beneficial type of play for both healthy body and mind. Studies have shown that children need 60 minutes of play per day (White, 2012. p. 24) this can help

“prevent health issues such as obesity, mental health, and hyperkinetic disorders”(British Toy and Hobby Association and Play England, 2011, p. 5). Adults too can reap the benefits of this body/movement play, including prevention of Alzheimer's and Dementia. Executive function for those over 70 years of age starts to decline, however, research suggests that physical activity can help reduce this (Goldstein, 2012). Physical play also promotes endorphins, which influence mental health, including fostering positive emotions, positive coping strategies and overall happiness (Yarnel & Qian, 2012).

Object play, according to Brown is the next form of play humans engage in. This study revealed that this was the second most popular type of play. Once an infant can grasp body/movement play, they are more apt to incorporate objects/tools into their activities. Brown notes that initially these objects or tools are simple, like a spoon. The child begins to master the skill of manipulating simple objects, and move towards more complex ones. This allows for a higher understanding of object's form and function (Brown, 2010). White also agrees object play is the best influence for higher order thinking in individuals-long term. Object play is also seen as a catalyst for conceptual knowledge (White, 2012). Through touching and manipulating objects, children can figure out how it works. In addition, can begin to further their knowledge about categorizing the toy and understanding similarities and differences between that particular object and new ones. For adults, using objects can help keep the brain sharp, and retain higher order thinking and problem-solving skills much longer. Mentally challenging play: like puzzles, games or constructing with varying materials are beneficial. With the influx of new technology or changing environments, keeping the brain sharp and honing new skills is critical to navigating life. John Cross noted that object play allows guests to “create, construct, [and] and experiment” (Cross, 2002, p.6); this is crucial in any museum visit for adults.

The third most popular type of play found in this study was social play. Social play becomes more complex as one develops. Initially, it is seen in young children as parallel play. This may look something like children sitting side-by-side playing with something, but not directly depending on or interacting with each other. As children age, more people become integrated into activities (Brown, 2010). For children, a main benefit of social play teaches about cooperation with others (White, 2012). Social play is also important in communities and cultures. It allows individuals to learn about the realities and expectations of culture and practice these behaviors out with peers. White stated that individuals gain diverse skills through social play, which can lead to a better feeling of competence and contribute to both emotional and cognitive growth (White, 2012).

The last type of play seen in this study was imaginative/pretend. For White, this play also influences executive function, primarily in the beginning stages of childhood. Children can practice language through pretend play with others; they can use their toys more symbolically, creating narratives, making rules and roles they can act out (White, 2012). For Brown (2010), imagination allows for individuals to create “simulated realities that [they] can explore without giving up access to the real world” (p. 86). An example of this play for children, could be dressing up as knights. They use sticks as swords and cardboard cutout shields. They can transport themselves into medieval times, where everything they see or touch belongs in this world. Children need to physically engage in the play; it is something that can be seen from outside observers. One of the reasons why not many instances of this play were recorded is because adults not necessarily need to voice their thoughts out loud or act them out. Often adults will daydream or create alternative realities in their heads, which is an example of imaginative/pretend.

Storytelling/narrative and creative play were not observed in this study. This does not mean that adults do not participate in this play. What it could tell us is that these exhibits were not designed for this type of play. Storytelling/narrative play, like pretend/imaginative often happened inside one's mind, it is not often visible or voiced. For Brown (2010), it is making up stories for why things are the way they are. White notes for children storytelling/narrative often comes in joint endeavors. An example of this is when parents read or make up stories for their children, and explain real life comparisons. Children could also later act out these stories with parents or peers, applying what they learned in future scenarios. White (2012) finds when children “jointly [create] a story with a partner or group, children must communicate their ideas in ways that others can understand and integrate each partner’s ideas into a single coherent narrative” (p.17). Another reason why this may not have been observed in adults is that the exhibits had very little in the way of needing to be discussed, and there was nothing to interpret.

Objects like blocks or materials like clay, often aid in creative play. Creative play allows for imagination to run rampant. It allows for an individual to change an ordinary object into something else or have another purpose. Creativity assists in problem-solving, divergent and convergent thinking (White, 2012). Both exhibits had very little in the way of movable parts; when they did, the parts/objects had a single purpose. There is little allowance for creative rope pulling or tunnel crawling. The exhibits did not allow for participants to construct, sculpt, draw or paint, which often produces a visibly creative product. With more movable parts, or objects that can be manipulated in numerous ways, there could be more observable instances of this play.

Looking at two very different museum exhibits; adults showed that they favored using their bodies to interact with the exhibits, and utilizing objects whenever possible. These findings

go against the common idea in museums, which promote passive museum visits. Museums create exhibits for children, often encouraging exploration with their body and movable components to experiment with. This study has shown when given the chance, adults want to do the same and will repeat their playful behavior. They will do this whether they are by themselves, or in a group. This study revealed that adults are not afraid of physically engaging in an exhibit. Adults actively searched out things like slides that, which are so often associated with child's play. In fact, according to one visitor exploring the *Caves*, the thing she was afraid of was kids. She told her partner "I feel like something is going to jump out & scare me...see like kids." Adults showed they were more than willing to crawl on their stomachs, or show their competitive nature playing when given the space to do so. One male visitor noted to his wife while crawling through a small tunnel, "*we never get to do this!*" After talking to the couple afterward, the visitors noted they had purposely left their children at home. That was a similar trend in many of the observed visitors. Another couple pointed out that the first thing they did when they landed in St. Louis was to drop-off their kids at relatives, so that they could have "fun" at the City Museum.

Stuart Brown's (2010) typology of play often used when describing children's play, can provide a basic understanding of what play may look like in exhibits for adults. By utilizing the established types of play, the researcher was able to code the behaviors seen at the two institutions, to expand on examples of what those types look like in a museum setting for adults.

Implications

While Stuart Brown's (2010) typology contains six types of play, during this research only four were observed. In this study, the types of play often mirrored what the exhibit was

designed for. The City Museum was created for visitors to climb, crawl, slide, and explore; and that was observed most often in the study. Science World was designed for manipulating exhibit components; which also most frequently observed. What this study shows is that adults participated to the fullest extent to the design of the exhibit. Future researchers could take this rubric and use it to study other exhibits. For example: looking at exhibits that contain costumes to see if there is any imaginative/play occurring, or an exhibit that involves construction to see the extent of creativity. This study revealed that to engage adults to the fullest, institutions must design exhibits to create opportunities to fulfill all types of play, not just one or two.

While all the visitors played and most stuck to body/movement and object play, due to the small sample size, these results cannot make claims across the board. Further research using larger audiences, in multiple exhibits could expand on what adult play looks like. Also, looking at other types of institutions, like Children's Museums would be beneficial in the future. Children's museums especially, are spaces often designed for many varying types of play. This could further explore if adults are willing to play in environments not meant for them, and examine what types of play they will feel the most comfortable participating in. Because this study only looked at adults who had no children with them during their visit, future study might examine how their play behaviors change when children are with them. Both Brown and White suggest that children partake in storytelling/narrative play most often with adults. While adults did not partake in this type of play during this study, it may reveal itself more when children are present.

Further study could also reveal what play adults **do not** like partaking in. This study only looked at those who initially approached the exhibit and demonstrated an initial move to play; it did not look at those who either declined to participate or who avoided it all together. By

examining a broader range of exhibits in more institutions, further research may reveal more about adult play preferences.

Final Thoughts

What this study shows is that adults like to play, and will do so if the environment allows. Museums have historically put time and money into creating adult only programs, which usually includes speakers and docent lead tours. However, adults would be just fine if they were able to play and enjoy exhibits that museums already have, but are reserved for kids. To entice the traditionally hard-to-get-adult visitor, museums have the opportunity to create fun, interactive exhibits. Exhibits that encourage all participants no matter what age- to slide, crawl, jump or swing. Children's museums especially have the potential to grow their audience, by simply building a larger slide next to a small one for the adults, or perhaps make crawl spaces where adults could fit. By creating adult conducive exhibits, in addition to children sized ones, museums are welcoming and encouraging engagement for all visitors.

Museums' goals are often to entice visitors of all ages. The majority of adults going to museums are going because they want to escape the mundane daily activities like work, or chores. Museums must realize that adults are not afraid to play, that adult visitors don't necessarily want a passive visit. Many want to engage and interact with the exhibits; they want to be a part of something fun, exciting, and adventurous. Adults are looking for an outlet to let loose, have fun, and often forget about the responsibilities of adulthood. Museums have the potential to transport adults back to feeling like a kid again, and they can do that through the power of play.

My hope is that this study will contribute to continued dialogue about the power of play for adults in museums. There is hope for continued research on what adult play looks like in a variety of spaces, potentially leading museums to design exhibits that encourage play for this demographic. In the future, I would like to see the stigma of play being solely reserved for children, especially in public to disappear. My ultimate hope is, that adults won't forget to play.

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Museum _____

Observation ID _____

Participant Info

Date	Time spent (in seconds)	Exhibit	Group Composition
			<input type="checkbox"/> Alone _____ adults

Video Observation Sheet

Type of Play	Description
Body/ Movement	<p>How one uses their body to interact with things or other people. It creates a structure for an individuals knowledge of the world- it is a way of knowing. It is movements that are not random- but intrinsic behaviors that promote exploration and learning.</p> <p>Participant:</p> <ul style="list-style-type: none"> • Climb <ul style="list-style-type: none"> ○ On/off/over exhibit • Crawl <ul style="list-style-type: none"> ○ Through exhibit • Exploration <ul style="list-style-type: none"> ○ Participant points to direction they want to go or voices opinion to person they are with ○ Ducks/looks in space but does not enter • Jump/falls/sinks <ul style="list-style-type: none"> ○ On/off/into exhibit • Pull <ul style="list-style-type: none"> ○ Themselves up/onto/over/in exhibit ○ Someone else up/onto/over/in exhibit • Run <ul style="list-style-type: none"> ○ To/from exhibits, in exhibit • Slide • Trial/error <ul style="list-style-type: none"> ○ Participant hits a dead end and must turn around and find a new route
Object	<p>Curiosity about and manipulation of “objects”</p> <p>Participant: Moves exhibit component</p> <ul style="list-style-type: none"> • Move rope • Places ball in air tunnel • Pull rope • Tosses/kick ball in/at exhibit • Turns knob/lever

<p>Imaginative/ pretend</p>	<p>Perhaps the most powerful human ability, allows for one to create simulated realities that can be explored without giving up access to the real world.</p> <p>Participant:</p> <ul style="list-style-type: none"> • Pretend to be in a different environment <ul style="list-style-type: none"> ○ On a ride, swimming in water, exploring a new environment
<p>Social</p>	<p>Involving others in activities. It allows society to function and individual relationships, among many to flourish.</p> <p>Participant:</p> <ul style="list-style-type: none"> • Play-fighting/ rough and tumble <ul style="list-style-type: none"> ○ Buries other person using balls • Pulls/pushes other person <ul style="list-style-type: none"> ○ To/in/through/off exhibit • Race <ul style="list-style-type: none"> ○ Using exhibit to race another person physically or with an object • Kick/Throw ball(s) to/at another person <ul style="list-style-type: none"> ○ Playing catch • Go down slide with some one else
<p>Storytelling- narrative</p>	<p>Critical aspect of learning and development about the world, oneself and ones place in it. A function of the brain is to continually make up stories about why things are the way they are, which becomes our understanding of the world. Stories are a way of putting disparate pieces of information in to a unified context.</p>
<p>Creative</p>	<p>Plays with imagination to transform/transcend what is known in the current state, to create a higher state. Creative play takes our minds to places we have never been, pioneering new paths that the real world can follow.</p>