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An Observational Study of Children Playing on an Inclusive Playground and on an Universal Playground

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Abstract

The current study explored the number of children who played on a universally designed playground and the amount of time they played on this playground and compared it to similar outcomes of children playing on an inclusive playground. Direct observations of children playing at both playgrounds were conducted over a six-month time period. Observations were conducted on weekdays and weekends during morning, afternoon, and evenings and were counterbalanced. Playground A had 15 boys and eight girls playing over 6-months. The children spent an average of 15-minutes playing. Playground B had 10,534 boys and 11,229 girls playing over 6-months. The children spent an average of 1-hour, 15-minutes playing. Given the low numbers of children playing at Playground A, direct comparisons cannot be made between the two playgrounds. The findings suggest that children prefer universal playgrounds over inclusive playgrounds.

Introduction

UNICEF (2013) and the World Health Organization (WHO, 2008) have identified children with disabilities as one of the most marginalized and excluded groups globally. Consequently, many international advocacy groups have incorporated the human rights of individuals with disabilities standards in their international policy

initiatives (United Nations Convention on the Rights of Persons with Disabilities, CRPD; United Nations, 2006; the Convention on the Rights of the Child, United Nations 1989; the World Health Report, World Health Organization, 2008). With these frameworks in mind, the United States developed and passed the Americans with Disabilities Act (ADA) in 1990. The ADA is a comprehensive civil rights law that prohibits discrimination on the basis of disability. Specifically, the ADA prohibits discrimination by all public entities (e.g., school districts, municipalities, cities) in public places such as buildings and parks.

In order to ensure access design criteria for the construction and alteration of public playgrounds, accessibility guidelines were developed by the U.S. Architectural and Transportation Barriers Compliance Board (Accessibility Guidelines for Play Areas, 2004), the U.S. Consumer Product Safety Commission (Public Playground Safety Commission (Public Playground Safety Handbook, 2015), and the American Society for Testing of Materials [ASTM] (ASTM, Standard Consumer Safety Specification for Playground Equipment for Public Use, 2017). Together, these organizations provide guidelines that (a) provide children who require the use of mobility devices (e.g., wheelchairs, walkers) access to the playground equipment and (b) reduce life-threatening and debilitating injuries across children (Stanton-Chapman & Schmidt, 2019[a]). These guidelines are the minimum standards to follow.

Playgrounds which meet ADA regulations are typically (a) accessible by ramps and/or paved, barrier-free travel routes, (b) include a range of accessible play options, and (c) provide an appropriate surface beneath all accessible equipment (Stanton-Chapman & Schmidt, 2019[a]). Play components are described and counted based on the experiences they provide such as sliding, swinging, and climbing and are differentiated as ground level or elevated (U.S. Access Board, 2010). Ground-level play components are defined as a single-play experience and are accessed and exited at the ground level (i.e., swing set, stand-alone slide) (U.S. Access Board, 2010). Elevated play components are accessed or exited above or below ground level and are part of a larger play structure which has multiple linking components (U.S. Access Board, 2010). Examples of elevated play components include slides which are part of a large structure, a climber, monkey bars, and swinging bridges. In their Accessibility Guidelines for Play Areas guidebook, the U.S. Architectural and Transportation Barriers Compliance Board (2004) state that at least half of all elevated components must be accessible via barrier-free travel paths, ramps, and/or transfer systems.

Research on Currently Available Playgrounds

The legal frameworks' (e.g., ADA Act of 1990, Accessibility Guidelines for Play Areas, 2004) basic assumption is that children with disabilities, especially those with physical impairments, will be able to build their social skills once they are granted access to the upper levels of play structures and are in close proximity to their peers. However, despite the laws and regulations granting better access to the play equipment, many children with disabilities miss out on the benefits of playground play (Yantzi et al., 2010) and continue to face barriers on playgrounds (i.e., narrow gateways, loose or sandy terrain, uneven surfacing) (Prellwitzet al., 2001). Exclusion from playground environments can lead to stigmatization, social isolation, and the hamper of social development (Burke, 2013; Prellwitz&Skar, 2007; Yantzi et al., 2010).

In a study which asked special education professionals why children with disabilities could not fully participate in play on playgrounds, Stanton-Chapman and Schmidt (2016) reported that teachers believed playgrounds were developmentally inappropriate, unsafe, offered uninteresting play equipment, and did not offer activities that children with disabilities enjoy. From this mixed-methods study, three themes emerged from the findings: (a) the need for a playground to meet the needs of all children, (b) the segregation that takes place on the playground between children with disabilities and children who are typical, and (c) accessible playgrounds are not working for children. Similar studies (e.g., Stanton-Chapman & Schmidt, 2016; 2017[ab], 2018, 2019[bc], In Press; Perry & Rouse, 2018) found that currently available playgrounds do not provide enough sensory stimulation for children who need it. Together, these findings suggest that the playground industry, as a whole, is not providing the best playground equipment for children with and without disabilities additionally, playground equipment that minimally meets the ADA law (1990) and other guidelines and regulations may not build social skills in children.

Categories of Playgrounds for Children

The playground industry has made a conscious effort to go beyond the ADA law (1990) and other regulations and guidelines when developing new playground equipment (Stanton-Chapman & Schmidt, 2019[b]). They've

developed inclusion guides which assist park and recreation directors, preschool directors, and school principals in selecting playground equipment that meets the needs of children with disabilities. However, these inclusion guides often result in the creation of playgrounds that continue to be similar to those children, caregivers, and special education professionals criticize (Stanton-Chapman & Schmidt, 2016, 2017[a], 2019[bc]).

In 2019[a], Stanton-Chapman and Schmidt provided a three-tier classification of playground types with universal playgrounds serving as the ideal (Refer to Stanton-Chapman & Schmidt, 2019[a] for a thorough description of each playground type). Accessible playgrounds are playgrounds which minimally meet the ADA Act of 1990, the Accessibility Guidelines for Play Areas (U.S. Architectural and Transportation Barriers Compliance Board, 2004), the Public Playground Safety Handbook (U.S. Consumer Product Safety Specification for Playground Equipment for Public Use (ASTM, 2017). Accessible playgrounds have ramps leading to upper decks and/or transfer stations and provide no barriers to the entrance or along pathways of the play structure.

Inclusive playgrounds were developed in 1995 and provide the same features as accessible playgrounds, but include play equipment challenges at various ability levels, provide extra-wide travel routes, and provide safety surfacing that allows children with mobility devices access to visit all areas of the playground. Inclusive playgrounds allow children with disabilities to be in close proximity to their peers. They have also been criticized for their limitations. These limitations include (a) the playground is built and designed around the needs of a specific child with a disability who lives within a given community, (b) inclusive playgrounds are expensive and many communities do not have the funds to build the playground without extensive fundraising efforts, and (c) many children who are typically developing find inclusive playgrounds to be boring (Stanton-Chapman & Schmidt, 2016, 2017[ab], 2018, 2019[abc]). Consequently, caregivers and special education professionals advocate for a playground where they can take all children and be assured that every child will have fun playing.

Universally Designed Playgrounds

In the Higher Education Opportunity Act of 2008, the term Universal Design for Learning (UDL) is defined as "a scientifically valid framework for guiding educational practice that provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged and reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient." In other words, "UDL provides a blueprint for creating instructional goals, methods, material, and assessments that work for everyone—not a single, one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs" (National Center on Universal Design for Learning, 2013). UDL and the Principles of Universal Design (Center for Universal Design, 1997) can be applied to playgrounds in that every individual, regardless of age, gender, race/ethnicity, or ability, can be welcomed and benefit physically, developmentally, and socially. Given that development occurs on a continuum, playgrounds can address this continuum in the equipment and the design (Stanton-Chapman & Schmidt, 2019[b], In Press). UD principles are consistent with the DEC Recommended Practices (2014) and the DEC/NAEYC (2009) position on inclusion. Specifically, they address DEC Environment Practice E2, which is professionals should consider UD to create accessible, inclusive environments. By incorporating UD into all playground designs, the individual needs of each child, especially those with disabilities, will already be incorporated into the playground design.

Purpose of the Study

Research has demonstrated positive outcomes of UDL in classrooms (e.g., Ok, Rao, Bryant, & McDougall, 2017), but the use of UD in playground design has not been studied. To date, there have been no empirical studies which have examined universally designed playgrounds and their impact on children's play. The current study explored the outcomes of a universally designed playground on child's play and compared these findings to an inclusive playground and its impact on children's play. The following research questions were addressed:

1. Is there a significant difference in the number of children who play on an universal playground versus an inclusive playground?
2. Is there a significant difference in the length of time children spend on an universal playground versus an inclusive playground.

Method

The current study is a comparison study of two playgrounds which were observed over a six-month period of time.

Participants

Direct observations of children playing at either playground were conducted from April 1, 2018 through October 31, 2018. Observations were conducted on weekdays and weekends during morning, afternoon, and evenings from 8:00AM to 8:00PM. Observations were counterbalanced so that there were equal numbers of morning, afternoon, and evening observations at each playground. At Playgrounds A and B, observers collected data in 10-minute increments (broken into 10-minute intervals) for a total of 12-intervals per two-hour observation. The total number of 10-minute interval observations at Playground A was 9,397 and the total number of 10-minute interval observations at Playground B was 9,397.

Children were not recruited for the current study. Rather, observations of children who were currently playing at the playground and had arrived during the two-hour observation window were conducted. All participants remained anonymous throughout the study and the study received an exempt status from the university's institutional review board (IRB). The communities, where each playground was located, did not desire any special procedures (i.e., closing of the playground, approaching of playground patrons by research staff) while observations took place.

Setting

Playground a Description. Playground A is located in the eastern suburbs of a Midwestern urban city. Playground A's community consists of 14,787 residents. Table 1 provides demographical information for this community.

Table 1 Demographic Information on the Playground Communities

Community		
	Characteristic	%
Playground A (N = 14,787 residents)		
	Gender	
	Male	52
	Female	48
	Total	100
	Race/Ethnicity	
	White	94
	Black	3
	Asian	1
	Twoor More Races	1
	Hispanic	1
	Total	100
	Age	
	Lessthan 10-years	11
	10-to-17-years	4
	18-to-24-years	11

	25-to-34-years	38
	35-to-44-years	14
	45-to-54-years	10
	55-to-64-years	7
	65-years-and-older	6
	Total	100
	Characteristic	%
Playground B (N = 11,948 residents)		
	Gender	
	Male	49
	Female	51
	Total	100
	Race/Ethnicity	
	White	90
	Black	7
	Asian	0.5
	Twoor More Races	2
	Hispanic	0.5
	Total	100
	Age	
	Lessthan 10-years	13
	10-to-17-years	11
	18-to-24-years	6
	25-to-34-years	13
	35-to-44-years	11
	45-to-54-years	13
	55-to-64-years	17
	65-years-and-older	16
	Total	100

Playground A is best described as an inclusive playground with a sensory disability and physical impairment focus. The playground is 12,465 square feet in size and cost $425,000 to design, build, and install. Sensory features include an electronic playground game (similar to Simon Says) and a sensory garden which includes musical equipment, sculptured handrails, and plants and trees which provide color, texture, and scent. To provide physical accessibility to individuals using mobility devices (i.e., wheelchairs, walkers, strollers), pour-in-place surfacing (a rubber surfacing) and double-wide ramping to the main play structure are included. The main play structure has slides, swings, climbing elements, and interactive activity panels at the ground and elevated play levels. Seating areas and a shade structure are provided for family use. Figure 1 provides a picture of Playground A.

Playground B Description. Playground B is located in the western suburbs of the same Midwestern city as Playground A. Playground B's community consists of 11 498 residents. Table 1 provides demographical information for this community.

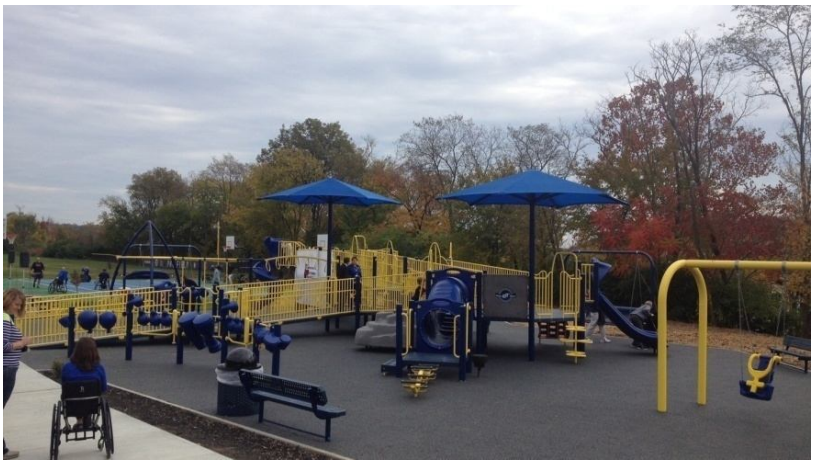

Figure 1.Picture of Playground A.

Playground B is best described as a universal playground with a focus on disabilities across the age span and sensory disabilities. The playground is 16,000 square feet in size and cost $450,000 to design, build, and install. Playground B has eight distinct play zones: (a) an infant/toddler play area with play houses; (b) a musical instrument area; (c) a sensory maze which provides tactile and visual stimulation; (d) a turf hill with metal slides and tunnels; (e) a 14-foot mega-tower with slides; (f) a zipline; (g) a traditional swing area with a toddler swing and an accessible swing; and (h) a disk swing which accommodate multiple children. Seating areas and a shade structure are provided for family use. Over 85% of the playground is ground-level and the entire playground facility is surfaced using pour-in-place surfacing or artificial turf. Both surfacing types allow mobility devices to move freely throughout the playground.

Procedures

Direct Observations of Children Playing at the Playground. The Destination Playground Frequency and Duration Observation Code (Stanton-Chapman & Rhoades, 2018) was developed specifically for observations at both playgrounds. The code measures the number of boys and girls, in a given playground zone within a specified time interval. The observation system utilizes a momentary interval coding in order to determine the number of boys and girls in each zone. In this system, the coder counts the number of boys and girls present in the specified zone at a given time. All coding sessions begin at the top of the hour and continue for two-hours. At the start of the observation, the coder begins the 10-minute interval in Zone 1 and proceeds through the zones, in order, counting the number of boys and girls in each zone. All zones were visited in the 10-minute interval. Once a 10-minute interval was completed, the next interval began and the coder proceeded through the zones again, in order, following the same procedures until the two-hours were completed. It was possible for children to be counted two or more times if they traveled from zone-to-zone during a 10-minute observational interval.

Given the size of the playgrounds and the types of playground equipment in each playground's play zones, the observational manual included a part A and part B, Part A provided the travel paths for Playground A and part B provided the travel paths for Playground B. Parts A and B included pictures of each zone at the respective playgrounds. A green X indicated where the coder enters the zone and begins counting. Red arrows indicated the expected walking path taken by the coder through the zone. A red X indicated where the coder stopped counting for the zone. Some zones at Playground A (e.g., large structure, swings) and at Playground B (e.g., infant/toddler area, zipline, traditional swing area, disk swing) had specific instructions to follow when counting the number of children. For example, for Playground B, the disk swing's specific instructions were "waiting children and/or children engaging with children on the disk swing are counted."

For duration coding, coders were asked to select a child at the beginning of the observation and start a stopwatch to record the length of time this child played at Playground A or Playground B. The duration of time was recorded until the child departed the respective playground. If the child remained on the playground for the entire two-hour

observation, then the duration was recorded as two hours for that child. If the child departed the playground before the two-hour observation was complete, then the child's departure time at the playground was recorded. After the child's departure time was recorded, the coder selected a new child to record his or her duration time at the playground. This process continued until the two-hour observation time was complete.

Description of Coders. Six individuals conducted observations at Playground A and Playground B. Coders included an Early Childhood Education and Human Development professor, a doctoral student in a Developmental Learning Sciences program, two Master's students in an Educational Studies program, and two preservice teachers in an undergraduate Early Childhood Education program. All coders had prior experience and/or current experience working with young children.

Description of Coder Training and Reliability Coding. Training for observational coding followed a series of procedures. First, all coders received a coding manual which discussed each playground's play zones and the travel routes to be followed during observations. Once the coders' questions and clarifications were addressed, they practiced coding together on Playground A and Playground B. On each playground, the coders counted the number of boys and girls in each play zone in 10-minute intervals for two-hours. At the conclusion of the observation at Playground A and B, the coders met to discuss their experience with the code, provide their reliability calculations, and to clarify any difficulties experienced while observing. After this meeting, three coders served as the primary coders for Playground A and three coders served as the primary coders for Playground B. The professor served as the reliability coder for Playground A and B. Twenty percent of the scheduled observations at Playgrounds A and B were randomly selected for reliability coding.

During reliability sessions at Playgrounds A and B, the primary coder and the reliability coder met at the respective playground. The primary coder announced when it was time to begin coding for 10-minutes and the child (described by what he or she was wearing) was selected for duration coding. Together, the primary coder and reliability coder traveled through each play zone at the playground, using the prescribed travel routes, and counting the number of boys and girls in each zone. While observing, the two coders did not speak to one another or check their frequency counts. This procedure continued until the two-hour time period was complete. The only exception for talking was when a new child was selected for durational recording. Observer drift did not occur at any point during coding so retraining was not needed.

Reliability was high across type of day (weekday, weekend) and time of day (morning, afternoon, evening). Reliability was also high by playground. Table 2 provides reliability calculations by playground and condition.

Table 2: Reliability Calculations by Playground and Condition

	Condition	%
Playground A		
	Weekday	
	Morning	100
	Afternoon	100
	Evening	100
	Weekend	
	Morning	100
	Afternoon	100
	Evening	100
Playground B		
	Weekday	
	Morning	92
	Afternoon	89

Evening	87
Weekend	
Morning	94
Afternoon	88
Evening	91

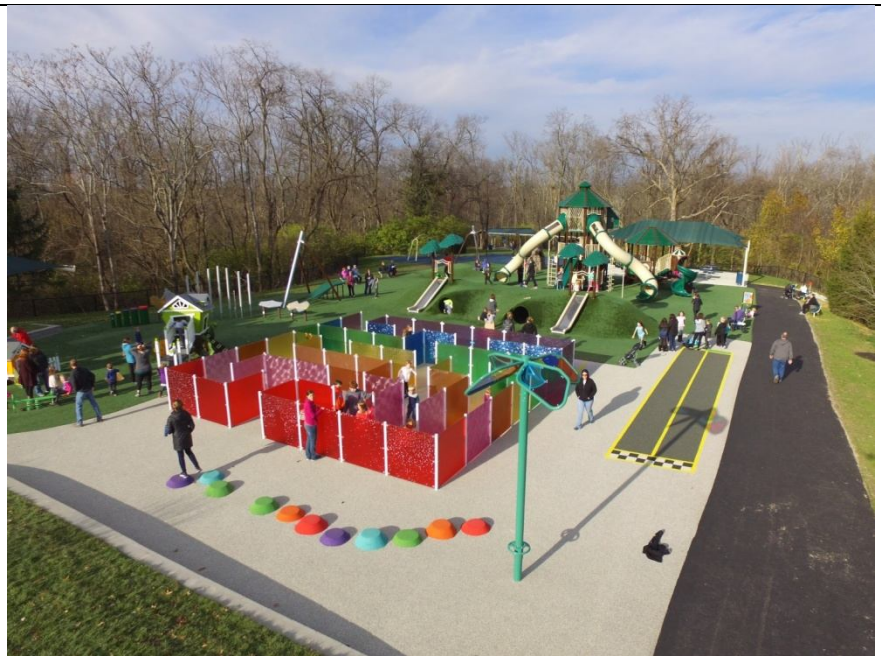

Figure 2.Picture of Playground B.

Results

The total number of 10-minute observations across the two playgrounds was 18,794. Playground A had 15 boys and eight girls playing at the facility over the 6-month time period. The average time spent on this playground was 15-minutes. While Playground A had four distinct play zones, the 23 children only played on the large play structure. Playground B had 10,534 boys and 11,229 girls playing at the facility over the 6-month time period. The average time at this facility was 1-hour, 15-minutes. On Playground B, 2,547 children played in the infant/toddler area, 766 children played in the musical instrument area, 2,884 children played in the sensory maze area, 3,771 children played in the turf hill/metal slide area, 5,185 children played in the mega-tower area, 4,657 children played in the zipline area, 1,258 children played in the traditional swing area, and 695 children played in the disk swing area.

Given that so few children played on Playground A, direct comparisons between Playground A and Playground B cannot be made. On Playground B, boys preferred the following zones in order: mega-tower (N = 2,904), turf hill/metal slides (N= 2,078), zipline (N = 1,827), sensory maze (N = 1,337), infant/toddler area (N = 1,231), traditional swings (N = 514), musical instruments (N = 366), and the disk swing (N = 277). On Playground B, girls preferred the following zones in order: zipline (N = 2,830), mega-tower (N = 1,693), the turf hill/metal slides (N = 1,693), the sensory maze (N= 1,547), the infant/toddler area (N = 1,316), the traditional swing area (N = 744), the disk swing (N = 418), and the musical instruments (N = 400).

Discussion

The current study aimed to investigate the number of children who played on an inclusive playground and the number of children who played on an universal playground. Duration of play on each playground was also studied. The small number of children playing on Playground A was unexpected. While the number was anticipated to be low, 23 children over a 6-month timeframe was far less than what was hypothesized. This is one of the first studies examining frequency patterns on inclusive and universal playgrounds using direct observation

techniques. Consistent with the existing literature (e.g., Stanton-Chapman & Schmidt, 2016, 2017[a], 2018, 2019[abc]), the results obtained from this study continue to emphasize what caregivers, teachers, and children have already told us—accessible and inclusive playgrounds are boring, uninteresting, and have limited play and social value for the majority of young children. Twenty-three children playing an average of 15-minutes versus 21,773 children playing an average of 1-hour, 15-minutes is a significant finding even if comparison analyses could not be done. This is an important finding in regards to policy considerations.

Playground A cost $25,000 less than Playground B. However, families were not observed taking their children to Playground A, and those that did, stayed approximately 15-minutes. Loukaitou-Siderio and Sideris (2010), when observing the number of children playing on playgrounds, discovered that eight playgrounds contained zero children during all observations while 10-parks had less than 10-children at a given time. Playground A's community spent a considerable amount of money on its design and build for it to remain relatively empty even during summer months, a time when children are not in school and are typically outdoors. Playground designers and playground manufacturers should seek to address why playgrounds are unoccupied. Prior work has determined that the design of the playground equipment has been standardized, unimaginative, and does not excite children (Loukaitou-Sideris, 1995) and is designed off of faulty child developmental knowledge (Stanton-Chapman & Schmidt, 2019[a]). Children are not a homogeneous group with similar needs. Rather, they are heterogeneous, in nature, and have varying interests, abilities, and needs. Given that many communities have limited public funding for playgrounds, parks and recreation directors should consider designing and building universal playgrounds in their community. Universally designed playgrounds tend to be more developmentally appropriate across the age-span and ability-span and are utilized more. This larger focus makes the playground more appealing to a wider range of families and a wiser community investment. Spending a great deal of money on a playground that is not utilized and not played on is wasteful spending.

Strengths and Limitations

The strength of the current study is the investigation of inclusive and universal playgrounds in terms of frequency of use and duration in play. This focus makes the study unique since it is the first study to explore this topic. Nevertheless, this study is not without limitations. First, only two playgrounds were assessed—one inclusive playground and one universal playground. Observations were counterbalanced by weekday, weekend, and time of day (morning, afternoon, evening). While different results may occur on different playgrounds in other geographic regions, rigorous control was conducted in this study. Second, playground patrons did not offer feedback. Only frequency counts by gender in a given play zone and duration of play were calculated. Playground perceptions would have added value to the study, but were not permitted by the IRB or by the respective communities. Finally, since so few children played at Playground A, few conclusions could be made. However, this finding also confirms findings from prior work which indicated that inclusive playgrounds were boring, uninteresting, and lacked ample play value.

Conclusion

The current study showed that more children play on and play longer when visiting universal playgrounds. It is recommended that communities build universal playgrounds over inclusive playgrounds to better respond to children's abilities and preferences.

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