

THE EFFECT OF A TRANSITION SONG ON THE LENGTH OF TRANSITIONS
AMONG CHILDREN WITH AUTISM SPECTRUM DISORDER

BY

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Abstract:

The purpose of this study was to determine the effect of a transition song on the length of transitions of children with Autism Spectrum Disorder (ASD), specifically for transitions of a longer distance from one part of a building to another. Transitions are commonly identified as a problem for children with ASD. Participants in this study ($N = 3$) were recruited from an educational center for children with special needs in a large Midwestern city, and ranged in age from 4 to 8 years old at the time of the study. A single subject reversal (ABAB) design was used, with the researcher meeting each child individually during a daily transition. During the baseline phases, the researcher measured the length of the transition without the transition song. During the intervention phases, the researcher timed the transition while singing the transition song. Graphic analysis was used to analyze the data. For all three participants, the transition song resulted in a shorter average transition time than when the transition song was not used. Limitations and implications for further research are discussed.

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Chapter 1:

Introduction

Transitions are notoriously challenging for both *neurotypical* children and children with disabilities. It is estimated that preschool students spend 20-30% of their time in school in transitions (Sainato, 1990). This statistic is based on classrooms of neurotypical children, so one might imagine that in a class of children with Autism Spectrum Disorder, who often have difficulty with transitions, this percentage might be significantly higher. It is important that people who work with children with ASD (Autism Spectrum Disorder) know how to run transitions quickly and efficiently in order to maximize learning time and decrease non-compliant behaviors.

Autism Spectrum Disorder

Autism Spectrum Disorder is becoming increasingly prevalent. According to the Center for Disease Control (CDC) (2014), approximately one in sixty-eight children is diagnosed with ASD. It occurs in all ethnic and socioeconomic groups, but it is five times more common among boys (CDC, 2014).

According to the newly revised Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013), Autism Spectrum Disorder is characterized by two main symptoms: deficits in social communication and interactions, and restricted, repetitive patterns of behavior, interests, or activities. Both symptoms must be present from an early age and cause significant impairments to the individual's functioning for a diagnosis of Autism Spectrum Disorder (APA, 2013). The symptoms generally start to become evident when the child is approximately 24 months and last throughout the child's entire life (CDC, 2014).

The first characteristic is significant deficits in social communication and interactions. People with ASD may struggle to talk to other people and participate meaningfully in conversations. Some people with ASD have trouble understanding emotions and relating to other people. Language and communication can also be challenging for some individuals with ASD (APA, 2013).

The other defining characteristic of ASD is restricted, repetitive patterns of behavior, interests or activities. This is often manifested as repetitive motor movements, such as “flapping” or jumping, repetitive manipulation of objects, or repetitive speech patterns. People with ASD often have restricted, intense interests or preoccupations with abnormal objects. Some individuals with ASD may experience sensory integration issues, which may lead to an aversion to certain textures or sounds, or seeking out certain stimuli (APA, 2013).

Transitions

Another deficit that falls under the category of “restricted, repetitive patterns of behavior” is an insistence on sameness. An individual with ASD may experience distress at small changes, or whenever his or her schedule is interrupted (APA, 2013). This inflexibility often manifests during transitions. Sterling-Turner and Jordan, (2007) define transitions as moving between tasks and activities of daily living. Transitions happen throughout the day, in all settings. Children in school transition from home to school, from class to the bathroom, from recess to class, from school back to home, from being awake to going to bed, and dozens of smaller transitions during the day, including transitioning between preferred and non-preferred activities. When children struggle with transitions, it affects their whole day.

It is unclear why transitions are challenging for children with ASD, but one well-accepted explanation is the *predictability hypothesis*. Flannery and Horner (1994) hypothesize that

children may resist transitions because they do not know what is happening next, and that may be frightening for them. It is also possible that the child needs time to process the transition before the transition takes place. Another potential explanation is that the student simply does not want to leave a preferred activity, especially if they know they are transitioning to a non-preferred activity (Sterling-Turner & Jordan, 2007).

When a child is distressed by a transition he or she may protest and exhibit non-compliant behavior, such as screaming, crying, or aggression towards adults or peers (Davis, Reichle & Southard, 2000; Sterling-Turner & Jordan, 2007). This makes the transition much more difficult for everyone involved because it often takes longer to transition when the child is non-compliant, taking up valuable time that could be spent learning. If the child is displaying aggression there is also a risk of injury for the child and the adults and peers involved.

Current Strategies

It is well known amongst people who work with children with ASD that transitions are often challenging, so researchers have developed many different strategies to deal with transitions. One of the most commonly used strategies involves giving the child an auditory cue. This can either be a verbal cue or a sound to signal an upcoming transition. A verbal cue is simply informing the child that a transition is about to take place. It is often in the form of a “two minute warning” in which the adult says, “In two minutes we’re going to go back inside for class,” or something similar (McCord, Thomson, & Iwata, 2001; Tustin, 1995; Wilder, Nicholson, & Allison, 2010). The auditory cue can also come in the form of a sound, such as a bell, that signals the upcoming transition. When the sound of the bell is consistently paired with a transition over a period of time, the child begins to associate the sound of the bell with the

transition. (Ferguson, Ashbaugh, O'Reilly & McLaughlin, 2004; Sainato, Strain, Lefebvre, & Rapp, 1987).

Visual cues and picture schedules are tools that are often used with children with ASD for a variety of reasons. In the case of transitions, a visual cue involves giving the child a visual representation of where they are going next by showing them a picture or icon of that location (Schmit, Alper, Raschke, & Ryndak, 2000). Picture or activity schedules function in a similar manner, but usually contain a series of picture symbols in a schedule format. This provides a child with a visual representations of where they are, a preview of where they are going, and everything else they are doing that day (Dettmer, Simpson, Myles, & Ganz, 2000; Dooley, Wilczenski, & Torem, 2001). Video priming also provides a visual cue for the child. In this case, a video is made of the specific route of the transition and is shown to the child before the transition, which prepares the child for the transition that is about to take place (Schreibman, Whalen, & Stahmer, 2000).

Behavior momentum is another strategy that is often used to aide in transitions. This involves the adult giving the child a series of commands that the child has already mastered immediately before the transition (Davis, Reichle, & Southard, 2000; Romano & Roll, 2000). For example, a teacher might say to the child, "Clap your hands, touch your head, give me a high five, touch your toes, walk to the bathroom." In that situation, the first four commands are all things that the child knows how to do and will likely do successfully, and the last command is the transition that the child struggles with. The idea is that the child will successfully complete the first four commands and will be distracted by the momentum of successfully completing the other commands and forget that they do not like the transition to the bathroom.

In some cases, a child's non-compliance during a transition is actually attention-seeking behavior. In these instances extinction, a behavior modification technique, may be effective (Cote, Thompson, & McKerchar, 2005; Waters, Lerman, & Hovanetz, 2009). If the adult ignores the non-compliant behavior, the child does not receive the reinforcement they are seeking (attention) and will eventually attempt to find a different way to receive that reinforcement.

Another behavior modification strategy to aide in transitions is providing the child with a preferred item during the transition (Cote, Thompson, & McKerchar, 2005; Davis, Reichle, & Southard, 2000). This can distract them from any negative connotations they may have with the transition. The preferred item could be a favorite toy or object or edible reinforcements, such as candy.

Music as a Transition Tool

Music is often recommended as a transition tool in early childhood publications, which provide anecdotal evidence of the efficacy of using music during transitions. In a study by Buck in 1999, teachers reported playing pre-recorded music to provide a calming effect during transitions. In many cases, the teachers found that the music ended up functioning as a cue for the transition. When students heard the music they understood that it was time to clean up and move to the next activity. This effect is why many educators recommend using music during transitions to help children shift their attention away from one activity and to the next (Vaiouli & Ogle, 2014). This recommendation is echoed in Autism Spectrum Disorder and Music Therapy literature (Humpal & Kern, 2013).

Many children with ASD demonstrate a heightened interest in music and respond positively to music (AMTA, 2012). Since music is so motivating and engaging for children with ASD, music therapists have had a great deal of success using musical strategies to teach children

with ASD new information. A study by Pasioli (2004) provided evidence that children with ASD followed directions about social skills that were embedded in music. When directions are embedded in songs, it makes it easy for the children to remember and recall later. Similarly, Kern, Wakeford, and Aldridge (2007) embedded directions for daily living activities in a song, and helped a child with ASD learn important daily living activities in an engaging way. Other researchers have found success teaching neurotypical children math concepts through music (Geist, Geist, & Kuznick, 2012). When the math concepts were embedded in a song or chant, the students were able to recall it more easily.

Music strategies can also be used to increase attention, because many children find music very engaging. Robb (2003) found that music therapy strategies significantly increased the attention of children with vision impairments and helped them remain with the group and engage in the activity. This evidence suggests that music can hold children's attention, which is something important to reflect on when considering transition strategies.

There are several studies that address using musical transition strategies. In these cases music often functions as a distractor that engages the child, and as a source of information through the lyrics of the song. For example, Kern, Wolery, and Aldridge (2007) used an original song to assist in the morning transition routine of two children with ASD. The song not only contained directions for the morning arrival routine but was also engaging for the children and held their attention.

A series of case studies by Register and Humpal (2007) studied the use of transition songs in a variety of settings: an inclusion toddler class, a low SES kindergarten class, and an inclusive pre-K early intervention class. In all three cases the transition song decreased the amount of time it took for the students to transition. Similarly, Gadberry (2011) found that a

transition song resulted in the shortest transition time between a preferred and non-preferred activity.

These studies provide strong evidence that using a transition song to aid in transitions may be an effective strategy for children with ASD, who are often very motivated by music. Researchers have had success with embedding important information in songs, and increasing attention and providing distraction through music, so we might conclude that a transition song that contains information about the transition and engages the child could be an effective transition strategy.

Rationale

It is imperative that teachers and other adults interacting regularly with children with ASD have effective transition strategies. Transitions that do not run smoothly take up valuable learning time and can be dangerous if the child is engaging in aggressive behavior. A good transition strategy will minimize transition time and maximize learning time. Not only are smooth transitions important during school, but in all aspects of life. The main goal for any child, with a disability or without, is to have the highest quality of life possible and achieve a certain amount of independence. Children with ASD need to learn to transition smoothly and be able to adapt to all the changes in an unpredictable world.

The purpose of this study is to determine the effect of a live transition song on the length of transitions among children with Autism Spectrum Disorder. Specifically, the researcher is interested in using transition songs for long transitions from one part of the building to another.

Chapter II:

Review of Literature

Population of Interest: Children with Autism Spectrum Disorder

Autism Spectrum Disorder (ASD) is becoming increasingly prevalent in the U.S. with approximately 1 in 68 children diagnosed with ASD (CDC, 2014). It is five times more likely in boys (1 in 42) than in girls (1 in 189) (CDC, 2014). It occurs in all ethnic and socioeconomic groups and affects 1% of the population (APA, 2013).

The prevalence of ASD is undeniably increasing, but the cause of the increase is unknown. It is unclear whether the increase is due to changes in diagnostic criteria and diagnostic tools, greater awareness of the disorder, differences in study methodologies, or an actual increase of ASD in the population. In actuality, it is likely a combination of all of these factors (APA, 2013; CDC, 2014).

The newly revised Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5) (APA, 2013) defines Autism Spectrum Disorders as a neurodevelopmental disorder. It is characterized by persistent deficits in social communication and social interaction across multiple contexts and restricted, repetitive patterns of behavior, interests, or activities. Both categories of symptoms must be present in the early developmental period. Generally, symptoms show up around 24 months, but can appear earlier. Symptoms will be present by age 3 and last throughout life, although some of the deficits may improve (CDC, 2014). These symptoms must cause significant impairments in social, occupational, or other important areas of the individual's current functioning to receive a diagnosis of ASD. It should also be clear that these disturbances are not due to an intellectual disability, although ASD and intellectual disability frequently co-occur (APA, 2013).

With the latest version of the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5) (APA, 2013), the diagnosis of ASD now includes several disorders that were formerly separate diagnoses. Autistic disorder, Asperger syndrome, and pervasive developmental disorder not otherwise specified (PDD-NOS) are now all under the umbrella of Autism Spectrum Disorder. The term *spectrum* encompasses all the manifestations and severity levels of the disorder, of which there are many (APA, 2013).

The cause of ASD is still unknown, but it is believed that multiple factors play a part in different types of ASD. It is widely believed that a combination of environmental, genetic, and biological factors are responsible for ASD (APA, 2013). There is currently no cure for ASD, but early intervention can greatly improve a child's development (CDC, 2014).

Dependent Variable- Length of Transitions

One common deficit of autism spectrum disorder is difficulty with transitions. Under Diagnostic Criterion B in the DSM-5, one of the symptoms is:

Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior (e.g., extreme distress at small changes, *difficulties with transitions*, rigid thinking patterns, greeting rituals, need to take same route or eat same food every day)" (emphasis added) (APA, 2013).

For the purpose of this study, transition is defined as moving between tasks and activities of daily living (Sterling-Turner & Jordan, 2007). This can often be problematic in school settings, where students need to move through the school building many times during the day. For example, students transition from home to school, from the classroom to the lunchroom, from the classroom to the bathroom, from the classroom to recess, to the gymnasium, and to any

other activities they might have during the day. For some students, it can be especially challenging to transition from a preferred activity to a non-preferred activity.

When a student is struggling to transition it can be extremely time-consuming for everyone involved. The student may resist transitions by exhibiting non-compliant behavior, such as refusing to transition, throwing a tantrum, or displaying aggression towards staff or other students, which further slows down the entire transition period. If the student becomes aggressive, transitions may also be a time of potential harm to staff or other students. Non-compliant behavior makes transitions extremely difficult for the entire class because the staff is attempting to deal with the student's non-compliant behavior while still moving the whole class through the hallway. One staff member may need to stay with the non-compliant student while the rest of the class transitions to the next location. The student who is struggling with the transition then loses out on valuable time that could be spent in meaningful learning experiences (Sterling-Turner & Jordan, 2007).

Transitions and ASD

It is unclear why transitions are so challenging for children with autism spectrum disorder. The most widely accepted explanation is the predictability hypothesis. Flannery and Horner (1994) proposed that the student may be resistant to transitioning because he or she does not know what is going to happen next, or needs more time to process what is happening next. Predictability is defined as the accurate description of future events. If the student is unsure of what the future holds, they may resist transitions. Flannery and Horner's study shows that for some, predictability signals may play an important role in their ability to deal with the natural variability in their environment.

A simpler explanation for an aversion to transitions is that the student may be reluctant to leave a preferred activity for a non-preferred activity (Sterling-Turner & Jordan, 2007). If a student is engaged in one of their favorites tasks or behaviors, they will likely be reluctant to stop to do something they do not like to do. This is very common when students have to transition from preferred activities like recess or free play to teacher directed activities or schoolwork.

Current Transition Strategies

There are a variety of strategies currently recorded in research literature to aid in transitions. Many of the following methods, such as advance warning, visual cues and picture schedules, and video priming, take Flannery and Horner's (1994) predictability hypothesis into consideration and offer prompts that provide an accurate description of future events.

One of the most commonly used and least invasive transition strategies is providing an advance warning (Sterling-Turner & Jordan, 2007). This involves giving either a verbal or other auditory cue before a transition is about to take place. In the case of a verbal cue, it is usually a "two minute warning" where the teacher says, "In two minutes we are going to go back inside to the classroom." This provides information to the student about what is going to happen so they have time to mentally prepare for the transition. Although this method is often used, the results in empirical studies are inconsistent. In a study by Tustin (1995) this method was used with an adult with autism and it worked very well in decreasing his stereotypical behaviors (rocking and hand flapping) during transitions, which in turn made his transitions happen more quickly.

However, several researchers have not had success with this method. A study with three preschool students who exhibited non-compliant behaviors during transitions found that a verbal warning alone was not effective in increasing compliance. Physical prompts were also required in addition to the verbal warning to increase compliance (Wilder, Nicholson, & Allison, 2010).

The researchers hypothesized that verbal warnings may be more effective with older children and adults with more advanced verbal processing skills. Another study focused on two adults with developmental disabilities who engaged in self-injurious behavior (SIB) during transitions. A functional analysis revealed that both adults engaged in SIB in order to avoid having to change locations and initiate a new task. The researchers also found that advance warning had little to no effect on the subjects' SIB during transitions (McCord, Thomson, & Iwata, 2001).

It is also possible to provide an auditory cue other than a verbal warning. Some researchers have had success using a bell to signal a transition. Ferguson, Ashbaugh, O'Reilly and McLaughlin (2004) studied the use of an auditory cue with kindergarteners with behavior disorders. The time it took for the students to transition decreased after training the students to respond to an auditory cue (a bell) by freezing when they heard it and then proceeding to transition. The students were reinforced for transitioning properly with a piece of candy, which may have also contributed to the success of this method. A study by Sainato, Strain, Lefebvre, and Rapp (1987) also used a bell, but in a different way. The participants, three preschool children with ASD and intellectual disabilities, were instructed to transition to a different area and ring the bell when they got there. This was very effective in reducing the time of the transitions. The researchers hypothesized that the act of ringing the bell was reinforcing for the children, and it functioned not only as an antecedent (a cue that a new activity was going to begin) but also as a consequent (a reward for transitioning to the new activity quickly).

Visual cues and picture schedules are often used for children with autism and other disabilities, because it is frequently easier for them to process visual information than it is to process and organize verbal information (Dettmer, Simpson, Myles, & Ganz, 2000). Visual cues and picture schedules can be effective in increasing compliance during transitions. A visual cue

is often a picture of the location to where the child is transitioning that is presented to the child immediately before the transition. Schmit, Alper, Raschke, and Ryndak (2000) used a visual cue paired with a verbal cue to help a child with ASD increase his successful transitions. They found that the visual cue paired with the verbal cue decreased the amount of tantrums during transitions, decreasing the length of the transition.

Picture schedules function in much the same way as visual cues, except they generally consist of more than one picture. Usually schedules depict the schedule for the entire day or for a period of time in pictures. These are frequently used for children with ASD in order to increase independence. Dettmer, Simpson, Myles, and Ganz (2000) found picture schedules to be very effective for reducing the amount of time spent in transitions for two boys with ASD. In fact, the picture schedules were so effective that after the initial introduction to the picture schedules during the intervention period of the study, both boys continued to request the picture schedules during the second baseline. A similar study with a young boy with ASD found that a picture schedule was very effective in reducing disruptive behaviors and increasing compliance during transitions, which led to less time spent in transitions (Dooley, Wilczenski, & Torem, 2001).

Similar to visual cues and picture schedules, video priming offers a visual cue for the transition that is about to happen. Video priming involves showing the student a video of the transition route. This was found to be effective in reducing or eliminating problem behaviors associated with transitions for three children with ASD (Shreibman, Whalen, & Stahmer, 2000). With modern technology such as tablets and smartphones, this method is much easier to implement than it once was. Additionally, the use of those devices is often rewarding for children, so this method can be very reinforcing for children with ASD. However, without videos for every situation, this strategy might not generalize to other transition situations very well.

Another strategy that has been shown to be effective for reducing non-compliant behaviors and reducing the time of transitions is behavior momentum. Behavior momentum consists of giving a series of random, high-probability requests before telling the student to transition. A high-probability request is a request that produces a compliance rate of 80% or more (Romano & Roll, 2000). These are generally very simple commands that the student has already mastered. An example of a series of high-probability requests followed by the command to line up is: “Give me a high five, say your name, touch your nose, clap your hands, line up.” This example only works if the student has already demonstrated that they can do the first four commands successfully.

This method was tested on two young boys with developmental disabilities who exhibited non-compliance during transitions. Behavior momentum was successful in decreasing the amount of non-compliant behavior, which in turn decreased the amount of time it took to transition (Davis, Reichle, & Southard, 2000). Behavior momentum has also effectively been used to increase compliance in children with ASD (Romano & Roll, 2000). Non-compliance is often the cause of lengthy transitions, so increasing compliance often helps to reduce the amount of time it takes to transition.

Some children may demonstrate non-compliant behavior during transitions to gain attention from adults and peers. In these cases, extinction, or the complete withdrawal of all positive reinforcement, can be effective in reducing or eliminating these behaviors (Madsen & Madsen, 1981). This strategy is often paired with other strategies. Such is the case in a study by Waters, Lerman, and Hovanetz (2009) where they paired extinction with picture schedules and differential reinforcement of other behavior (DRO) to decrease the problem behavior of two children with ASD during transitions from preferred to non-preferred activities. In this particular

study, picture schedules alone were not effective in reducing problem behavior. However, the picture schedule paired with extinction and DRO (providing praise for engaging in behavior other than the problem behavior) was effective in reducing problem behaviors for both participants. Similarly, a study by Cote, Thompson, and McKerchar (2005) with three typically developing preschool children focused on using extinction paired with other strategies during transitions from preferred to non-preferred activities. In this instance, a verbal cue (a two minute warning) alone was ineffective in increasing compliance, as was access to a preferred item during the transition (discussed more in depth below). However, when these strategies were paired with extinction, compliance increased in all children. While extinction can be effective, it may not always be practical when a student is transitioning with a group of students, or if the student is at risk for injury (i.e. transitioning from the parking lot to the school building, with cars driving through the parking lot).

When the student is transitioning from a preferred activity to a non-preferred activity, it is sometimes effective to provide a preferred item (i.e. a toy or candy) during the transition. Another component of the study by Davis, Reichle and Southard (2000) mentioned above was using a preferred item as a distractor. In addition to finding the behavior momentum intervention effective, they also found the preferred item as a distractor intervention to be effective in decreasing problem behaviors during transitions from preferred to non-preferred activities. Providing a preferred item as a distractor was also part of the study by Cote, Thompson, and McKerchar (2005) mentioned above (in the extinction section). When they paired extinction with a preferred item as a distractor compliance increased in all children during transitions from a preferred to a non-preferred activity. This strategy can be effective for some children, but may be

challenging to implement if the child's preferred item is something that is hard to physically carry during a transition.

Independent Variable-Transition Songs

Current literature for teachers of young children with and without disabilities often recommends using musical transitions to aid the students during transitions. Transition songs can be used to engage the children and shift their focus during transitions from preferred activities to non-preferred activities (Vaiouli & Ogle, 2014). Teachers frequently report using pre-recorded music during transitions for a calming effect. Some teachers then find that the music begins to function as a cue for the students to transition to the next activity (Buck, 1999). Students often become familiar with the transition music and begin to associate it with cleaning up and moving to the next activity.

Individuals with ASD frequently demonstrate a heightened interest in music and respond positively to music (AMTA, 2012), therefore it would be reasonable to conclude that transition songs would be an effective tool for helping children with ASD transition between activities (Snell, 2002). Not only would the transition song function as a cue for the transition (Humpal & Kern, 2013), but it might also function as a distractor, since it is a preferred activity. Additionally, after the transition has begun, the transition song shifts from functioning as a cue to functioning as a structure in which to complete the transition (Walworth, 2013).

Humpal and Kern (2013) have offered suggestions for how to create effective transition songs:

1. Write songs that address a target situation that can be sung by a variety of different individuals in a variety of settings
2. Use original music or familiar melody

3. Lyrics that repeat the important message
4. Sing directly and repeatedly to the child
5. Use the same transition song across different environments and situations
6. All individuals who transition with the child should sing the transition song.

Music Therapy and ASD

Historically, music therapists have been working with individuals with ASD since the formal beginning of the profession in the 1950's. Research since then has shown that music therapy has had a positive impact on children with ASD (Reschke-Hernández, 2011). It is currently used for a variety of goals, such as communication, social skills, emotional skills, academic skills, and motor skills (Kern, Rivera, Chandler, & Humpal, 2013).

Music therapy interventions can be used to decrease negative behaviors in children. For example, three young children with challenging behaviors and variety of diagnoses (Asperger's, ADHD, developmental delay) received music therapy interventions that addressed their challenging behaviors through sung social stories. The music therapy intervention was effective in increasing positive behaviors and decreasing negative behaviors (De Mers, Tincani, Van Norman & Higgins, 2009).

Music therapy interventions have also been used to teach children with ASD new, important information. Embedding the new information in a song often facilitates this transmission of information. Pasiali (2004) studied the effect of prescriptive therapeutic songs on the social skills of children with ASD. The researcher created individualized songs for each child that targeted a specific behavior. While the study was inconclusive due to a number of factors, it provides anecdotal evidence that children with ASD tend to follow directions embedded in songs. This was also true in a case study by Kern, Wakeford, and Aldridge (2007) where they

found that the participant, a three-year-old boy with ASD, performed tasks nearly independently when the directions were in a song. The participant had the most success with the “Clean Up” song, which is a well-known song that is used in many preschool classrooms. The participant’s familiarity with that song may have led to his success during that intervention.

Embedding information in songs is not only effective for children with ASD, but also for typically developing children. Preschool students who were taught math concepts using a song or a chant with a steady beat were able to recall the math concepts more easily (Geist, Geist, & Kuznick, 2012). The researchers found that the students would sing the song to themselves in order to recall the concepts.

Embedding information about a transition into a transition song can be an effective way to let a student with ASD know what is happening during the transition. Once the student begins to become more familiar with the song, they will be able to anticipate what is going to happen during the transition. Humpal and Kern (2013) recommend embedding information about the target transition into the transition song and using the song regularly and in a variety of settings.

It is also important that the transition song holds the attention of the student. Music has been used to increase attention of both typically developing children and children with disabilities. A study by Robb (2003) demonstrated that music therapy significantly increased the attention of a group of children with vision impairments. The students demonstrated impulse control by remaining in the group and engaging in the intervention. An effective transition song will hold the attention of the student and keep them engaged during the transition, and in doing so may also function as a distractor.

Music Therapy and Transition Songs

There have been a few studies demonstrating the effectiveness of using transition songs to aid in transitions. A study by Kern, Wolery, and Aldridge (2007) studied the efficacy of a transition song during the morning arrival routine of two children with ASD. An original song that contained directions for the morning arrival routine was used to assist the children in transitioning from home to school, and into the classroom. When the song was used, both children performed most of the morning routine independently and their challenging behaviors decreased.

A series of three case studies by Register and Humpal (2007) looked at the effects of transition songs in three different settings. The first setting was an inclusion toddler classroom that consisted of three children with ASD, three children with other disabilities, and six typically developing children. In this setting they found that the students began to put away the toys and come to the circle faster during the music condition. The teachers in the classroom commented that the children with special needs seemed to benefit most from the transition song. The second setting was a kindergarten class that consisted primarily of children from a low socioeconomic background. A transition song was used to instruct the students to put away their materials upon arrival in the classroom and find a place in the circle. The entire group responded more quickly to directions in a song than they did to verbal directions. The third case study took place in an inclusive early intervention classroom for pre-kindergarten students. The class consisted of 17 kids, of which, one had ASD and three had other disabilities. In this case, the transition song was more of a listening activity at the end of a group music therapy session, where the music therapist played finger cymbals one time for each child in order to gain their attention and keep everyone quiet before transitioning back to school work. This intervention worked to decrease

the amount of time it took to provide closure for the music therapy sessions. It also seemed to prepare the students to receive instruction from their teacher to transition back to schoolwork. In all three of these instances, the entire group transitioned more quickly during the transition song condition.

Gadberry (2011) studied the effects of using a transition song with preschoolers during a transition from a preferred to a non-preferred activity. Additionally, he compared the effects of using a live transition song to the use of pre-recorded music. The live music condition resulted in the shortest amount of time spent transitioning for two of the three classes participating in the study. The live music condition also resulted in the fewest verbal redirections from the teachers. In this particular study, the classroom teachers were the ones singing the transition song, which demonstrates that teachers do not have to be trained musicians to implement transition songs. The use of live music also makes it much easier to facilitate the transition song in multiple settings, and adapt the song as necessary.

The use of transition songs appears to be effective in the few settings in which they have been tested. Due to the fact that so many children with ASD respond positively to music, and the fact that music is naturally rewarding, using transition songs to aid in the transitions of students with ASD would appear to be an effective strategy. Indeed, the use of transition songs is frequently recommended in the literature for children with ASD, yet there is little to no research studying the effects of transition songs on the transitions of children with ASD, and if using transition songs actually reduces the length of time it takes to transition.

The purpose of this study is to determine the effect of a transition song on the length of transitions of children with Autism Spectrum Disorder, specifically for transitions of a longer distance from one part of the building to another. This study aims to answer the following

question: Will a transition song decrease the amount of time it takes for children to transition more significantly than a verbal cue alone?

Chapter III:

Method

Participants

Participants in this study were three children ($N = 3$) diagnosed with Autism Spectrum Disorder enrolled in a private educational center for children with special needs in a large Midwestern city. The participants were identified by their teachers as students for whom transitions are challenging and who would have consistent attendance during the time of the study. The participants have been given pseudonyms to protect their confidentiality. The students were from three different classrooms, to allow for the researcher to transition with each student individually without scheduling conflicts. “Susan” was a student in a 2nd grade class, “Peter” was a student in a Kindergarten class, and “Brad” was a student in a preschool class.

The author of this study, a Board Certified Music Therapist employed at the educational center, delivered the intervention. Two of the participants were already familiar with the researcher, as she had been working as a board certified music therapist at the school for several months before the study took place, and for eight months before that as a music therapy intern. Susan was the researcher’s client, and had been for 12 months, and therefore already had a strong therapeutic relationship with the researcher. The other participant that was already familiar with the researcher, Brad, participated in a music therapy group with the researcher over the course of 8 weeks, several months before the study. The final participant, Peter, was a new student and had no interactions with the researcher prior to the study. It is possible that the researcher’s pre-existing rapport with two of the participants may have introduced bias into the study. However, most transitions that children undergo during their day are with people with whom they are

familiar (teachers, therapists, caregivers, etc.) so the researcher found it unnecessary to control for this bias.

Setting

This study took place in an educational and therapy center for children with special needs located in a large Midwestern city. At the time of the study, the educational center served approximately 120 children. The majority of the students at the school had a primary diagnosis of Autism Spectrum Disorder.

The educational center is located in a large, old building that formerly served as a middle school. There are three floors with large staircases and no elevators. There are classrooms on all three floors. The speech, occupational, physical, and music therapy treatment rooms are also located on different floors. The bathrooms are located on the first floor. Students frequently have to transition up and down one or two flights of stairs to get to the bathroom, recess, and to their various therapies. The building also has large hallways that get very noisy when multiple classes are transitioning at the same time.

The students attended the educational center Monday through Friday from 8:45 to 3:15. The educational center functions much in the same way as a public school, with time spent in the classroom in group and individual learning times, recess, lunch time, and weekly group activities such as choir, physical therapy, occupational therapy, and speech therapy groups.

Consent

The researcher obtained permission from the directors of the educational center to run the study at the facility. After obtaining permission from the directors of the educational center, the researcher obtained permission from the University of Kansas Human Subjects Committee to conduct the study. The researcher then solicited advice from the teachers and therapists at the

educational center to determine which students would be appropriate participants for the study.

The researcher contacted the parents of the recommended students and provided them with information on the study and obtained signed parental informed consent forms for each participant. A minor assent script was prepared and read to each of the participants.

Design

The researcher consulted teachers and therapists within the educational center to determine which transitions are the most challenging for the students. After taking this information and scheduling issues into consideration, the researcher chose to focus on the transition from recess to class, which is a time-consuming transition due to the distance from the gym to the classrooms. It is also challenging because it is a transition from a preferred activity to a non-preferred activity for most students. It was important to the researcher to choose a transition that happened at least one time each day. The recess to class transition happened twice daily, so it met the frequency requirement. Two of the participants were in classes that transitioned from recess to the bathroom before going to the classroom, which is also a challenging transition for many children, as it is also a transition from a preferred activity to a non-preferred activity.

The researcher worked with each student individually and used a single subject reversal design (ABAB) for this study. The baseline (A) was supposed take place across one week (five days) of school. The first phase of the intervention (B) was supposed to take place over the course of the following week (five days) of school. This was going to be repeated for the second baseline and intervention phase. The entire process was intended to last four weeks, however, due to time constraints the study took place over seventeen days instead of twenty. Due to participant absences and changes in the location of recess due to weather, each participant ended

up with either eleven or twelve days of data that could be analyzed. This will be discussed more in depth in the Discussion section.

Independent Variable (Intervention B phase)

The independent variable in this study was a live transition song composed by the researcher for the purpose of this study. It was performed live and unaccompanied to allow the researcher to use the stopwatch and effectively navigate through the hallways with the participant. The use of live music versus pre-recorded music allowed the researcher to adapt the song as necessary throughout the transition (i.e. adjust the tempo to match the participant's pace, adjust the words to reflect location, etc.) and is recommended whenever possible with children with ASD (Walworth, 2013). The transition song was used during the Intervention segments of the design and was compared to Baseline segments when the participant was transitioning without any music-based intervention.

The researcher followed the suggested guidelines set forth by Humpal and Kern (2013) to create a transition song that a) addresses a specific target situation, b) uses original music, c) has lyrics that repeat the central message several times, d) is simple enough for the participant to learn quickly and sing along to, e) is easily adaptable so it can be used in a variety of settings, and f) is simple enough to be used by other individuals who frequently transition with the participant (although that was not be a component of this study).

Dependent Variable

The dependent variable was the length of the transition, which was measured by the researcher with a stopwatch. For both the baseline and intervention phases, the researcher delivered one verbal prompt to transition and began the stopwatch when the student crossed a

specified point at the door of the gym and stopped the stopwatch when the student crossed through the doorway into their final destination.

Materials

The researcher used a stopwatch (Sportline 240 Sport Timer) to time the transitions. The researcher used an original transition song composed following the guidelines listed above. The song was short and repetitive so the students would be able to learn it quickly and sing along. It was in a key that is easy for children to sing, and had a small range, so it fit within the typical range of children's voices. The tempo was modified as necessary to match the pace of the participants.

Transition Song

Alyssa Graber Juhnke

Voice



We're wal-kin' we're wal-kin', wal-kin' through the hall. We're wal-kin' we're wal-kin', wal-kin' through the hall. We're wal-kin' through the hall to get back to class, - and we're sing-ing a song as we walk through the hall.

Figure 1: Transition Song

Procedure

The researcher met each participant individually in the gym at recess immediately before the transition was about to take place. During Baseline 1 condition, the researcher delivered a verbal prompt, “It’s time to go inside,” started the stopwatch at the specified point, and walked with the participant, matching the individual’s pace, until he or she arrived at his or her final destination (either the classroom or bathroom, depending on the participant). The researcher did not provide any additional verbal prompts during the transition. No physical prompts were provided, although the researcher was holding the hand of the participant to prevent the participants from “darting.” The researcher stopped the stopwatch as soon as the participant crossed through the doorway of his or her final destination, and recorded the time of the transition. This was repeated for four consecutive days.

Following the four days of baseline, the researcher implemented the Intervention phase. After meeting the participant in the gym at the end of recess, the researcher delivered one verbal prompt, started the stopwatch at the specified point, and immediately began singing the transition song. The researcher continued singing the transition song throughout the entire transition and stopped the stopwatch when the participant crossed through the doorway of his or her final destination. The time was recorded. This phase took either two or three days depending on the participant.

After Intervention 1, the baseline was recorded again for either two or three consecutive days, and then the intervention again for three or four days. Graphic analysis was used to analyze the data after completion of the study.

Chapter IV

Results

The purpose of this study was to determine the effect of a transition song on the length of transitions of children with Autism Spectrum Disorder, specifically for transitions of a longer distance from one part of the building to another. This study aimed to answer the following question: Will a transition song decrease the amount of time it takes for children to transition more significantly than a verbal cue alone?

The data from the study were analyzed using graphic analysis. Due to several issues with data collection, which will be discussed more in depth in the Discussion section, all three participants ended up with fewer data points than originally intended. Peter and Brad both had twelve data points, while Susan had eleven, instead of twenty, the intended amount.

According to the graphic analysis, the transition song decreased the amount of time participants spent in transitions as compared to transitions with the verbal prompt only. Visual analysis of each participant's data and comparison of means indicated that the transition song helped the participants transition to their final destination in a shorter amount of time than the verbal prompt alone.

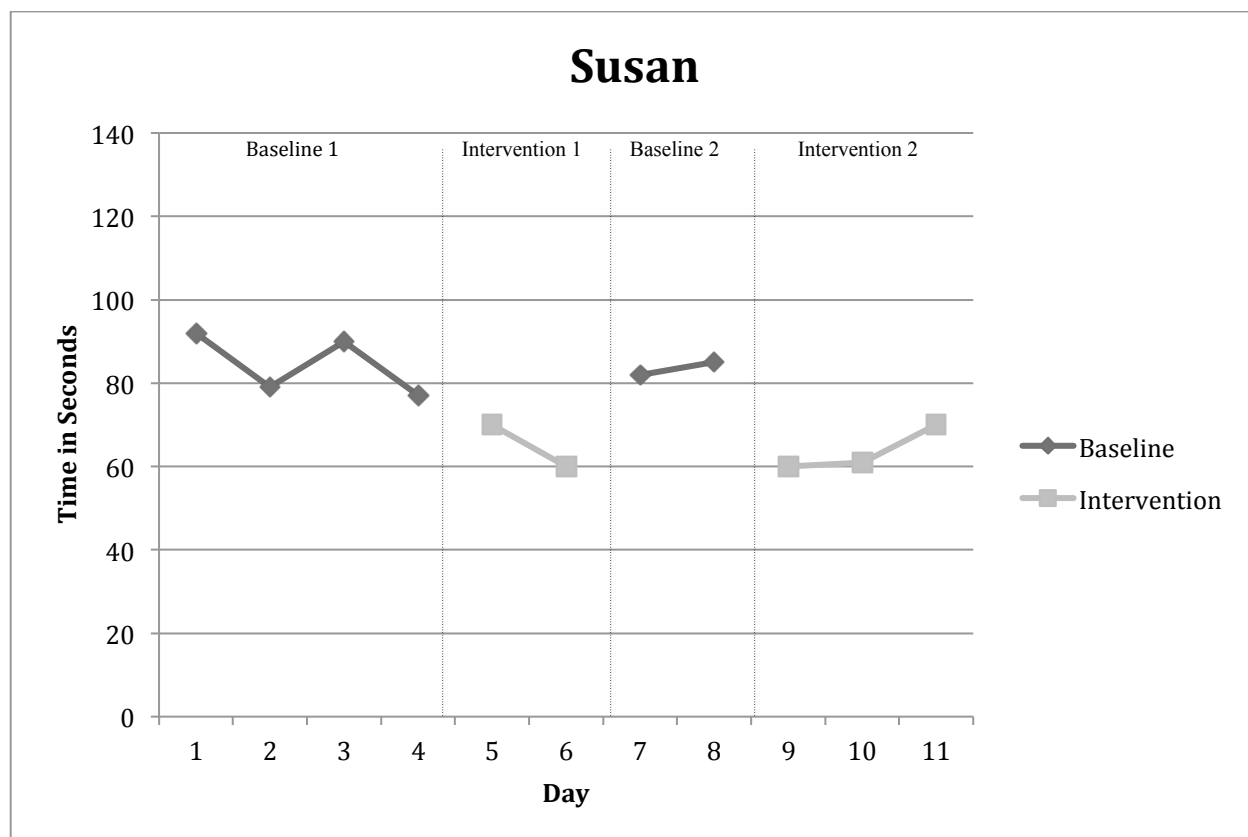


Figure 2: Susan's Results

Susan's results were most clearly illustrated, as each transition with the transition song was shorter than transitions with the verbal prompt only (Figure 1). Therefore, the means of her times also reflect this difference (see Table 1). The average of the combined baselines (verbal prompt only) was 84.17 seconds, while the average of the combined interventions (with the transition song) was 64.20 seconds. The average of the baselines in the first phase were 84.50 seconds and 83.50 seconds for the second phase of baseline. The average of the first phase for intervention was 65.00 seconds, and the average of the second phase of intervention was 63.67 seconds.

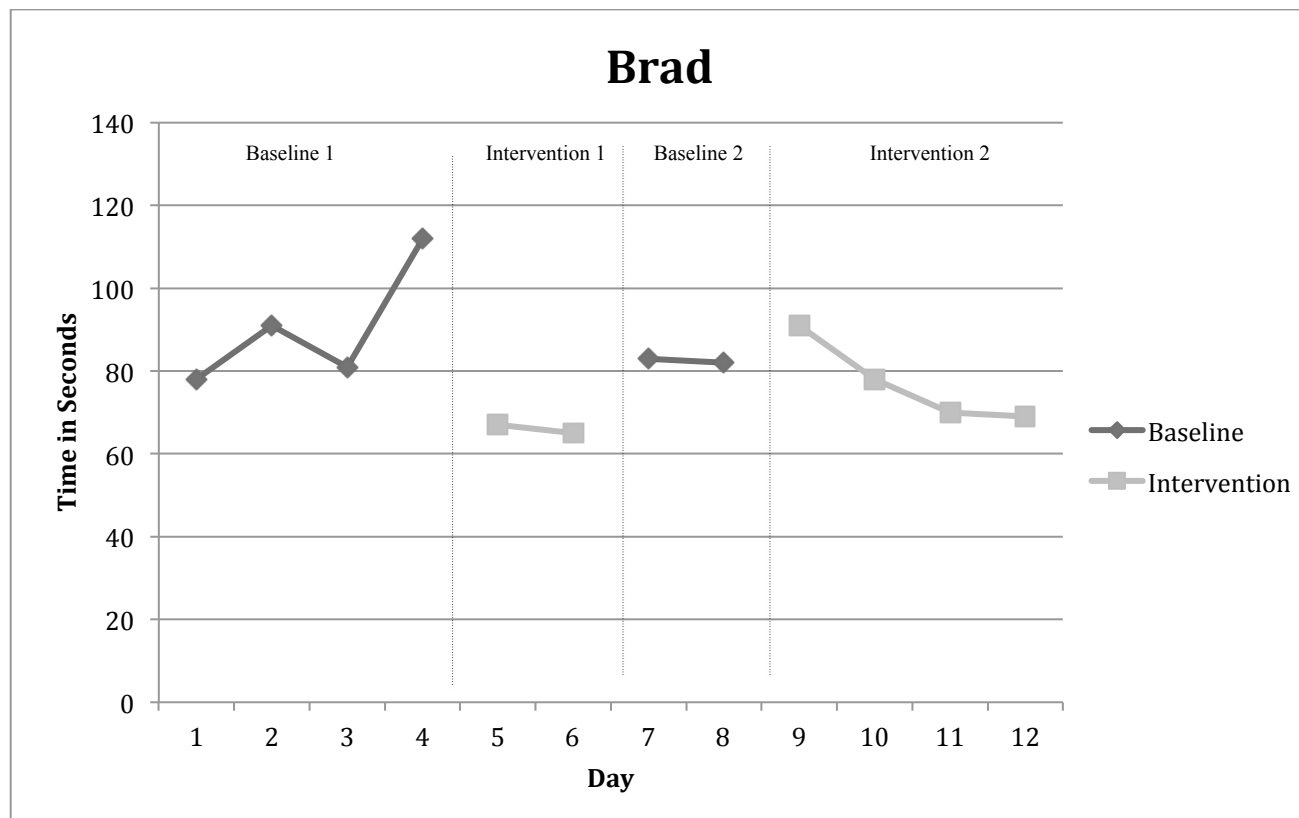


Figure 3: Brad's Results

Brad's results were less consistent visually (Figure 2), but the means indicated shorter transition times during the intervention phases when the transition song was used. His combined baseline mean was 87.83 seconds, while his combined intervention mean was 73.33. His individual baseline means were 90.50 seconds for the first baseline and 82.50 seconds for the second baseline. The mean of the times from the first intervention phase was 66.00 seconds and the mean of the second intervention phase was 77.00 seconds.

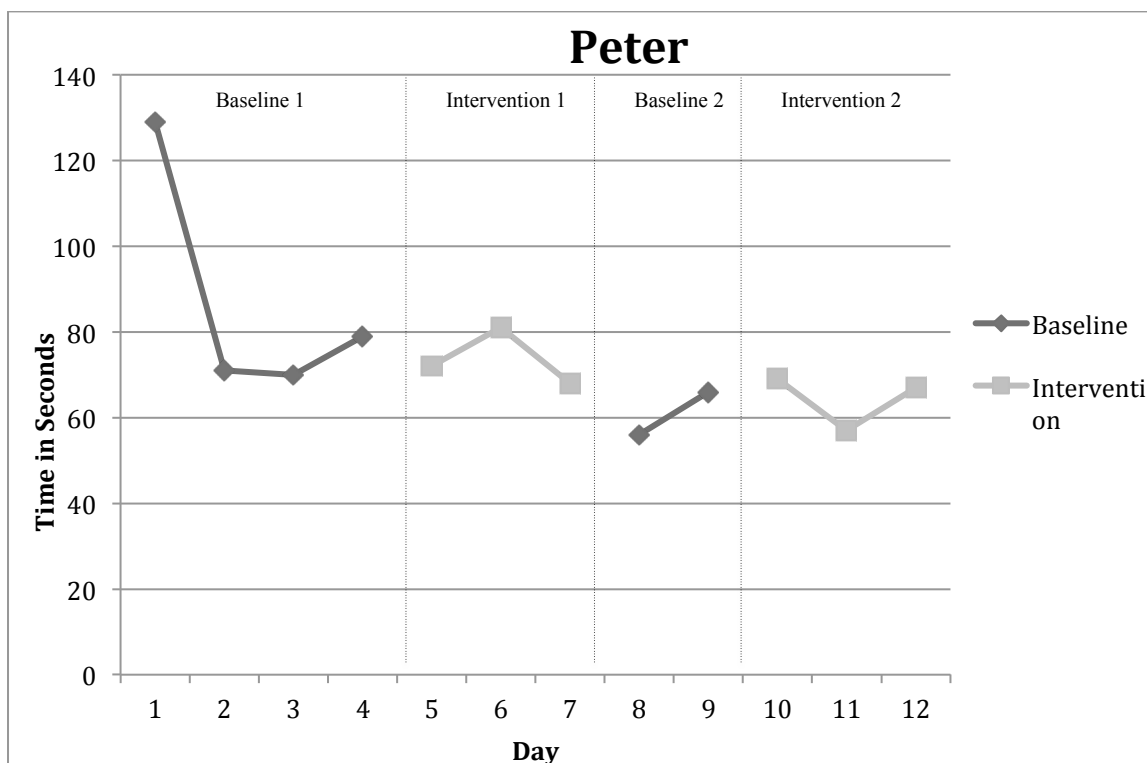


Figure 4: Peter's Results

Peter's results (Figure 3) were the least consistent of the three participants. His durations during the second baseline phase were some of his lowest during the study, which resulted in a mean of 61.00 seconds, his lowest phase mean. His first baseline average was 87.25 seconds. His intervention averages were 73.67 for the first intervention phase and 64.33 seconds for the second intervention phase. However, when the two baselines and two interventions phases were combined, the mean baseline time was 78.50 seconds and the mean intervention time was 69.00 seconds, indicating that his times were, on average, shorter when the transition song was used.

Table 1

Means Comparison for Length of Transitions Across Baseline, Intervention, and Combined Baseline and Intervention Phases.

	Baseline 1	Intervention 1	Baseline 2	Intervention 2	Combined Baselines	Combined Interventions
Susan	84.50	65.00	83.50	63.67	84.17	64.20
Brad	90.50	66.00	82.50	77.00	87.83	73.33
Peter	87.25	73.67	61.00	64.33	78.50	69.00

Figure 5: Means Table

Chapter V

Discussion

Conclusion

The results of this study seem to confirm what many music educators, music therapists, and teachers of young children have recommended in early childhood and Autism Spectrum Disorder literature: transition songs can help reduce the amount of time spent in transitions for children with Autism Spectrum Disorders (Buck, 1999; Gadberry, 2011; Humpal & Kern, 2013; Kern, Wolery, & Aldridge, 2007; Register & Humpal, 2007; Snell, 2002; Vaiouli & Ogle, 2014; Walworth, 2013). The use of a transition song reduced the amount of time spent in transitions for all three participants in this study, compared to the use of a verbal prompt alone. While this was a set of case studies conducted over a short period of time, the results are promising and indicate that further research should be done with a larger population sample. These results are consistent with the results of other studies that have found that transition songs help reduce the amount of time spent in transition for children with Autism Spectrum Disorders during the morning arrival routine (Kern, Wolery, & Aldridge, 2007), in an inclusion toddler classroom, a low socioeconomic status kindergarten classroom, and an early intervention classroom (Register & Humpal, 2007), and with typically developing preschoolers (Gadberry, 2011).

Observations

Susan's results were the most consistent and clear among the three participants. All of her transitions during the intervention phases were shorter than her transitions during the baseline phases. This resulted in a very clear graph and means that reflect shorter transition times when the transition song was used.

Music was highly reinforcing for Susan, and she tended to sing throughout the day in a variety of situations, so it was not surprising to the researcher when Susan began to sing along to the transition song (which she had never heard before the study) after only hearing it a few times. She also appeared to be walking to the beat of the music, which helped her to walk at a more consistent pace during the transition. When she arrived at the final destination, the researcher would stop singing, and Susan would often continue singing and change the lyrics to be about whatever she was doing at that time. There were also several times when the researcher heard Susan singing the transition song during other transitions throughout her day indicating an independent transfer of the skill to other settings. This also indicates that the song was simple and repetitive enough that Susan was able to learn it over the course of the study and remember it without prompting from the researcher as well as generalize it to other settings, which aligns with recommendations from Humpal and Kern (2013).

Brad's results were less consistent, but still indicated that the transition song resulted in shorter transitions. All of his transitions during the two intervention phases, except for one instance (during Intervention 2) were shorter than his transitions during the two baseline phases. The combined mean of the two intervention phases was less than the combined mean of the baseline phases, which also indicated that the transition song helped reduce the amount of time it took to transition.

In his case, the transition song seemed to help him focus on the transition, as he tended to get very distracted in the hallways during the baseline phases. He occasionally got distracted during the intervention phase, but seemed to fixate on whatever was distracting him for less time when the researcher was singing the transition song. Brad never sang along with the researcher, but he seemed to be paying attention to her and occasionally looked up at her as she was singing.

Peter's results were the least consistent of the three participants, but still indicated that the transition song resulted in shorter transitions, compared to the verbal cue alone.

Peter's graph shows a slight downward slope. This may have been because Peter had never had any interactions with the researcher prior to the study, so as he became more familiar with the researcher throughout the study he began to transition more efficiently. As the study progressed he began to walk up to the researcher when she came to meet him. On one occasion, on the first data day of Baseline phase 2, he walked over to the researcher when she entered the gym and took her hand and began singing the transition song. This was after he had only transitioned with the transition song three times, so it was apparent that he picked up on the song and its function very quickly.

One thing that is important to note is that the researcher did not begin timing the transitions until the participant crossed through the door, but it may have been beneficial to start timing at the moment they were told to line up by their classroom teachers. This transition (from playing to lining up) seemed to be particularly difficult for all three participants, with some occasional behaviors from all three when they had to quit whichever activity they were engaged in and line up. However, this is problematic for timing purposes, as the participants first needed to line up with their classes before they began the transition to their classroom or the bathroom. Depending on how long it takes the rest of the class to line up, the time spent "lining up" could vary greatly between data days, therefore the researcher made the choice to begin timing after the whole class had begun the transition, when the participant walked through the doorway.

The use of live music as opposed to recorded music was consistent with recommendations from Humpal and Kern (2013) and the results of the study by Gadberry (2011) that found that the live music condition resulted in the shortest amount of time spent

transitioning. The researcher found the use of live music to be effective in that she was able to adapt the lyrics to give the participants either general information about the transition (“We’re walking to the bathroom”) or specific information (“We’re walking down the stairs”). She was also able to adapt the tempo to match the child’s walking pattern. The use of live music also allows for the transition song to be easily learned and used by other professionals without having to worry about carrying around equipment to play a recording of the transition song.

Limitations

There were several limitations to this study, one of which was the short duration of the study. The study was originally intended to take place over twenty days, but was shortened to seventeen days due to time constraints and scheduling issues. Over the course of those seventeen days there were other issues that prevented data collection for several days. Each of the participants was absent from school due to illness for at least one day. One participant was absent three days. Additionally there were two incidents of stopwatch error that resulted in a loss of data.

Another factor that prevented data collection was the weather. The study took place in November and December, with varying weather conditions. Recess most commonly took place in the gym during the study, due to it being too cold outside for the students to be able to go out, as mandated by state law. However, there were several warmer days where the students had outdoor recess. These transitions were not included in the study due to the difference in distance from the playground to the bathroom or classroom.

Since this study took place in a school setting, the participants’ needs took precedence over the researcher’s need to collect data. While it would have been possible for the researcher to pull the participant from his or her classroom to collect data on the transition, the participant

would be losing valuable learning time and the transition would be an unnatural transition, not one that typically occurs during the school day.

The participants' level of familiarity with the researcher was very likely a factor in their results. Whereas Susan and Brad were already familiar with the researcher, Peter had had no prior experiences with the researcher before the study began. Peter's lack of familiarity with the researcher may have been a contributing factor in his first baseline transition, which was significantly longer than the rest of his transitions.

Small sample size was another limitation of this study. While the data supported the claim that transition songs can reduce the amount of time spent in transitions for the three participants in this study, it may be that these three students were volunteered by their teachers because of how well they respond to music (in addition to struggling with transitions), and the teachers knew that the study was to test the efficacy of a transition song.

Implications for Further Research

There are many ways in which this study could be expanded upon. One important step to take would be having the teachers or therapists sing the song to the participants, instead of the researcher, such as in the studies by Gadberry (2011), Kern, Wolery and Aldridge (2007) and Register and Humpal (2007). The goal is for the transition song to be used across a variety of settings, by a variety of people, but many people are not confident in their singing abilities and are intimidated by singing in public. A study in which the teachers and therapists were singing would demonstrate that transition songs work even when sung by people with little or no vocal background, as they did in the studies listed above. This could also help increase the sample size, as the researcher would not have to be the one singing and timing all of the participants.

Another possibility would be to time the transition of the entire class, which would also increase the sample size. However, that adds a lot more variability to the study. If one student were to stop in the middle of the transition and begin engaging in a behavior that required the support of several staff, the data for the entire class would be skewed because of the one student that took longer to transition than the rest of the class. Both Register and Humpal (2007) and Gadberry (2011) timed the transitions of entire classrooms, but Register and Humpal ran into some issues with some students taking longer to transition than the rest of the class.

Something else that could be beneficial would be to count the number of off-task behaviors during the transition, and measure the efficacy of the transition song in that way. Some children may take a long time to transition because they are distracted by their surroundings: other people in the hallway, something on the floor that is not usually there, something out of place, or something that may be a current fixation. It is possible that a transition song could help keep the child's focus on the transition so they do not get distracted and subsequently engage in off-task behaviors. Another way to measure this would be to count the number of verbal redirections given by whoever is transitioning with the student, as in one of the case studies by Register and Humpal (2007) and the study by Gadberry (2011).

In addition, one of the primary ways to improve this study would be increasing the length of the study. This study should take place over a longer period of time to get a better representation of the effects of the transition song. The first intervention phase ended up being so short in this study that the participants had very little time to become familiar with the transition song. Lengthening each of the phases would help get a more accurate picture of the baseline, help the participants become more familiar with the transition song, and better examine the efficacy of the transition song.

One of the limitations of this study was that Peter was unfamiliar with the researcher before the study began, and it may have had an impact on the length of his transitions. Future research on this topic needs to consider familiarity as an important factor and make sure that the participants are familiar with whoever is leading the transition. If the researcher is leading the transitions, it may be beneficial to have a few music therapy sessions with the participants before the study begins so they can become familiar with the researcher prior to beginning the study.

It would also be beneficial for this study to be conducted in a variety of settings, by a variety of people to get a more multifaceted view of if the transition song works for all challenging transitions throughout the day, instead of just using it for the same transition every day. This would require a lot of instruction and observation to ensure that everyone is using the correct transition songs and is not singing it too fast or too slow or in a key that is too low for the participants to sing along to, but it would give a better picture of the way transition songs should be used.

While the small amount of quantitative data garnered from this study seems to demonstrate the effectiveness of using a transition song, more quantitative data is needed to provide clear documented evidence of this strategy that is often anecdotally recommended. Qualitative data can also help parents, teachers, therapists, and others understand the impact that a simple transition song can make in the daily routine of a child with Autism Spectrum Disorders. More research and advocacy in this area will lead to more people understanding how to use transition songs and can encourage professionals and parents to use transition songs to help their students and children with Autism Spectrum Disorders navigate their world more effectively and efficiently.

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