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Descriptive Analysis of Activity Transition Data in an Intensive Autism Treatment Center

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DESCRIPTIVE ANALYSIS OF ACTIVITY TRANSITION DATA IN AN INTENSIVE

AUTISM TREATMENT CENTER

by

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Children with autism often display challenging behaviors (e.g., tantrums, aggression, etc.) when transitioning between activities. Most of the current literature focuses on antecedent interventions for increasing compliance during transitions (e.g., visual schedules, two minute transition warnings, etc.). There is a minimal number of studies examining how environmental variables may affect transitions. This study was a descriptive analysis that examined different environmental variables and their effects on transitions. Observations were conducted with four children diagnosed with autism. A transition-tracking sheet was used to gather specific descriptive data during transitions. Results suggest that two-minute warnings were not correlated with more successful transitions, and that other variables besides a structured environment potentially impact the success of transitions.

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INTRODUCTION

Overview

Children diagnosed with autism, and other intellectual or developmental disabilities, often have difficulty transitioning between activities. Examples of some typically challenging behaviors encountered during transitions include, but are not limited to, physical aggression, tantrums, flopping (i.e. dropping to the floor), non-compliance, inappropriate vocalizations, and stereotypy (Sterling-Turner and Jordan, 2007; Davis, Reichle & Southard, 2000; Tustin, 1995).

Despite these challenging behaviors, transitions remain a necessary element in daily routines, whether transitioning in daily living or in educational settings (e.g., transitions between classes or between various learning activities within a class.) In primary and preschool settings roughly 18-25% of the time is spent in transitions (Carta, Greenwood, & Robinson, 1987). Therefore, it is imperative that transitions are completed promptly, and with minimal problem behaviors, so as not to restrict the child's potential academic learning. However, it is unclear as to why children with autism often resist transitions between activities (Sterling-Turner & Jordan, 2007).

Several methods have been examined to decrease non-compliance and problem behaviors during transitions. For example, behavior momentum theory suggests that presenting a sequence of requests with a high probability of compliance, followed by a request with a low probability of compliance, can be effective in increasing compliance in transitions (Mace et al., 1988; Banda et al., 2006; Singer et al., 1987; Dais et al., 2000). However, behavior momentum procedures can

be time consuming, and there is limited research examining maintenance of such procedures for severe target behavior.

Additionally, Flannery and Horner (1994) hypothesized that children diagnosed with autism experience greater difficulties with transitions partially because they require more predictability in their environment than typically functioning children. In order to provide a more structured and predictable environment, several antecedent interventions have been examined to increase compliance during transitions, including: verbal and auditory cues (Tustin, 1995; Ferguson, Ashbaugh, O'Reilly, & McLaughlin 2004; Sainato, Strain, Lefebvre, & Rapp, 1987) and visual schedules (Dettmer, Simpson, Myles, & Ganz, 2000; Dooley Wilczenski, & Torem, 2001; Schmidt, Alper, Raschke, & Ryndak, 2000).

There are, however, disadvantages in using antecedent interventions to increase compliance during transitions. For example, a child may become dependent on the visual or auditory prompt, making it difficult for prompt fading and subsequent generalization of the appropriate behavior to different settings that do not contain the prompts (Sterling-Turner, 2007). Additionally, not all research supports using antecedent interventions in isolation with other strategies as an effective method for increasing compliance. In the study conducted by Cote and colleagues (2005), two common antecedent interventions were compared (two-minute transition warnings versus access to a preferred item during the transition) to increase compliance across three typically developing children in an early education classroom. The transition warning alone and preferred item alone were both unsuccessful in increasing compliance. However, extinction paired with the aforementioned antecedent interventions, as well as extinction alone, were successful in increasing compliance.

Furthermore, even when structured routine transitions and consistent and predictable schedules are employed, some children still engage in challenging behaviors (Sterling-Turner, 2007). Certainly, there are other variables outside of providing a structured environment and transition warnings that could influence the occurrence of challenging behaviors; however, there exists little research on these possible variables.

Further, in the study conducted by Schmidt, Alper, Raschke, and Ryndak (2000), a six year old boy diagnosed with autism would tantrum and aggress, when prompted to transition to another setting. In a multiple baseline design across settings, the experimenters presented a picture card to the boy prior to each transition. The picture card was effective in decreasing the target behaviors during transitions. However, it is important to note that treatment gains took longer from the playground to the classroom than the transitions from the classroom to the playground. This finding suggests that environmental contexts, such as an enriched destination setting, may have influenced the boy's level of compliance during transition periods.

Although not directly related to transitions, there is research assessing how cessation of preferred activities may influence problem behavior. Fritz and colleagues (2004) assessed whether disruptive behaviors of two individuals with disabilities were due to the introduction of demands or the termination of a preferred activity. The researchers conducted a functional analysis, which indicated that problem behavior was maintained by negative reinforcement in the form of instructional demands. In subsequent analyses, it was determined that problem behavior was maintained by positive reinforcement in the form of access to preferred items. That is, problem behaviors continued when individuals were asked to cease engaging in the preferred activities, even when demands were not presented. This research underscores the importance of

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assessing variables influencing problem behaviors not otherwise detected by a functional analysis. Additional naturalistic observations may be necessary to determine appropriate interventions for decreasing problem behavior (Fritz et al., 2004).

Although there is limited applied research examining the reinforcing value of transitional settings, there are some experimental non-human studies that can potentially be analogously related to antecedent interventions (i.e., two-minute warnings). These studies examine responding in pigeons under rich and lean schedules of reinforcement (Perone & Courtney, 1992; Perone & Baron, 1980; Everly, Holtyn, and Perone, 2014). Perone and Courtney (1992) examined responding with four pigeons under a fixed ratio multiple schedule of reinforcement and fixed ratio mixed schedule of reinforcement (i.e., rich or lean). In the mixed schedule component there was not a stimulus that signaled the upcoming schedule of reinforcement. In the multiple schedule component, there was a stimulus that signaled the upcoming schedule of reinforcement. Under the mixed schedule of reinforcement, responding was related to the previous reinforcement, and under the multiple schedule of reinforcement, responding was related to the upcoming reinforcer as well as the previous reinforcer. Results indicated that there was a longer post-reinforcement pause (PRP) before a smaller reinforcer and after a larger reinforcer. The post-reinforcement pause has been analogously compared with the occurrence of challenging behaviors. The results indicate that PRP is jointly controlled by previous reinforcers, as well as stimuli that signal impending reinforcement (Perone & Courtney, 1992). Further research can utilize these research findings with children with autism to assess the implications of transition warnings that signal an upcoming activity that is reinforcing or aversive.

In synopsis, transitions are an essential part of daily routines and academic tasks. Taking this into consideration, it is crucial that children are able to transition without problem behaviors or long delays. Past research emphasized antecedent-based interventions; however, there is a need for further research that examines additional variables that take place in one's environment and how these affect transitions. Additional information is needed on how the presence or absence of environmental events may influence transitions. The identification of predictors of successful and unsuccessful transitions should indicate which variable are candidates for experimental evaluation in future research. For example; if a child is transitioning from a location containing a preferred activity, such as the playground, to an impoverished environment, one would assume that there could be more problem behaviors during the transition. Similarly, if a child transitions from an impoverished environment to an enriched environment, one would presume the transition would have only minimal disruptions. However, there currently is a paucity of research on this topic. The present study attempted to answer some of the questions listed above by utilizing a transition-tracking form to identify possible variables that affect transitions.

More specifically, the following three main research questions were the focus of the research:

1. Given a transition from a more preferred setting to a less preferred setting, what are the relative levels of problem behavior?

2. Given a transition from a less preferred setting to a more preferred setting, what are the relative levels of problem behavior?

3. Is the presence or absence of a transition warning associated with the level of problem

    behaviors during transitions?

METHODOLOGY

Participants

Observations were conducted across 4 children. Two had been receiving services at the center for over 6 months, and two had been receiving services for approximately a month. The children were selected based on informal interviews with the clinical director who identified children who had difficulty transitioning. Subjects were not be directly recruited for the study because programmatic observations and clinical interventions based on observations are an ongoing process at the center as a means of taking clinical data, and ensuring staff fidelity (staff comply with best practices). Treatment integrity observations are part of each client's behavioral treatment plan, and have been approved as standard operation procedures through the Behavioral Treatment Committee (BTC) review process. All clients received and signed a generic consent to treatment statement prior to receiving services at the center. This consent was not specific to the present study. No additional informed consent was requested by the HSIRB or the center, as all data that are being tracked would be available to the clinicians during their routine observations.

Setting and Materials

The study was conducted at in intensive residential center for children diagnosed with autism. The center is comprised of an outpatient clinic and an inpatient (intensive) clinic. The center serves children with severe problem behaviors who require residential placement in the center for six to eighteen months. The age of the children at the center ranges from 8-17. Common problem of the children include severe or dangerous levels of physical aggression, elopement, self-injury, and property destruction.

Some children at the center remain there throughout the day. The residential living area is comprised of a shared living room area (hearth Room), twelve bedrooms, a cafeteria, a kitchen, an inside gymnasium (motor room), an outside play area, a classroom, four bathrooms, three treatment rooms, two staff offices, a medical room, and a meeting room for family visits (Den Room).

And some children attend school outside of the center and leave in the morning and return later in the afternoon. Children residing at the center have a consistent schedule each day and transition between activities throughout the day. Common transitions include transitioning from the gymnasium to the cafeteria, the cafeteria to the classroom, the classroom to the cafeteria, and the living area to the classroom. Several of the children at the center have difficulty transitioning between activities throughout the day. Transition warnings, typically stipulated as a verbal announcement at least 2:30 minutes prior to a scheduled transition are written into the behavior plan of all the children who engage in problem behavior during transitions. Behavior momentum strategies and high quality praise for transitions are additional interventions written into some of the children's behavior plans to address problem behaviors during transitions.

Observations took place in the inpatient clinic only. Materials that were used for the study included the transition-tracking form (Appendix A), task analysis (Appendix B), definition sheet (Appendix C), stopwatches/timers, clipboards, and pens and pencils.

Data Collection and Training

All data collectors were trained on how to use the transition-tracking form by the primary investigator. Practicum students and the primary investigator collected the relevant data for analysis. A task analysis on filling out the transition-tracking form (Appendix B) and a definition sheet (Appendix C) were used in the training .The task analysis form specified the exact steps of filling out the transition-tracking form. Observers reviewed and studied both forms prior to conducting observations. Practice observations were conducted until each observer reached 80% inter-observer agreement with the student investigator for at least two observations. The practice observations were not used in the data analysis.

Behavioral Measures and Observation Protocol

The presence or absence of certain environmental events were recorded in the setting before the transition (previous setting), during the transition, and after the transition had been completed (destination setting). Some of the variables and definitions that were tracked in the previous setting and destination setting are listed in Table 1.

Table 1. Definitions

Term	Definition
Tangible	Non-ingestible physical items i.e. tokens, toys, music. Using an object in its intended purpose.
Staff Social	Attention delivered from staff i.e. physical touch, verbal praise, eye contact. (Not including demands)
Peer Social	Attention delivered from peers i.e. physical touch, verbal praise, eye contact.
Consumable	Ingestible items i.e. carrots, pretzels, candy, drinks.
Sensory	Stereotypic behavior (i.e. rocking, hand flapping, verbalizations/vocalizations). Repeated touching of objects/walls around the room, holding on to/playing with object, looking at self in mirror, touching sand, swinging). Using an object in its non-intended purpose.
Escaped Demand	Whenever staff presents an instruction and the task was not completed within two minutes of the demand.
Completed Demand	Whenever staff presents an instruction (e.g., sit up, bring me your PECS book).

Additional variables that were tracked in the previous setting (i.e., the setting the child was in before the transition) included whether a transition warning was provided (and the time given if applicable), whether the destination-setting name was provided (either in the warning or any time before the start of the transition) and the time the transition started.

Variables that were tracked during the transition the transition period included the amount of prompts to transition, the type of prompts (e.g., verbal prompt, partial physical prompt), and problem behaviors (e.g., self-injurious behavior, physical aggression, property

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destruction, and elopement). Finally, the variables that were tracked in the destination setting included the level of response effort required to transition, if there were any problem behavior, and the aforementioned variables listed in Table 1. Observations occurred in the previous setting but only the 5 minute window prior to the transition demand were included in the data analysis. In a similar manner, observations continued in the destination setting so that 5 minutes of observational data were available after the child reached the destination setting. In contrast to the standardized 5 minute observation protocol in the previous and the destination setting, the transition interval was defined as the first prompt for the child to disengage from the activities in the previous setting and to leave to the next setting (e.g., staff prompting child to stop coloring and move to the next setting). The transition interval ended by the student's arrival at the destination setting. Therefore, the transition interval varied for each transition.

Each environmental event was marked as either present or not present during the 5 minute observation in the previous setting, destination setting, and during the transition where observation and recording times were determined by the amount of time in the transition. For example, if staff provided social attention to the child during the 5 minute observation in the previous setting, the observer circled "yes" on the transition tracking sheet under the previous setting category.

Transitions to and from a variety of different settings were sampled across the day over the course of several weeks. For example, the investigators collected data on transitions to and from activities with high amount of demands (e.g., classroom) and activities with low amount of demands (e.g., motor room, outside).

Observers checked the transition schedule to see the time the children were transitioning. Prior to the observation, observers gathered all necessary materials (i.e., transition-tracking form, a copy of the definition sheet, and a timer). Observers arrived in the previous setting ten minutes prior to the start of the transition to ensure that 5 minutes was observed before the transition due to transitions often not starting when it was scheduled. If a transition started later than when it was scheduled only events that occurred 5 minutes prior to the transition were recorded. Observers scored continuously throughout the observation and made notes of when events occurred on the transition-tracking form. Best efforts were made to only record events that occurred 5 minutes prior to the start of the transition.

Only one child was observed at a time. Once a transition to a new setting began, the observers followed the child throughout the transition and continued to record information on the transition-tracking form. The child was followed to the destination excluding instances when the child went to his/her bedroom or the bathroom. Observations continued until 5 minutes elapsed in the destination setting.

Independent Variables

Because of restrictions on the conduct of research at the center, independent variables were not systematically manipulated by the experimenter. Instead, naturally occurring variability in the presence or absence of staff delivered programming features for transitions were noted and correlated with child behavior during transitions. Thus, this was a descriptive study that focused on the predictors of child behavior during transitions

Interobserver Agreement

Inter-observer agreement was collected on 34% of the observations (scores ranging from 83% to 100% with an average of 96% across sessions). Inter-observer agreement was computed by calculating agreements (correct, incorrect, or not applicable) divided by total opportunities multiplied by 100%. An interval was scored as an agreement if both observers recorded an occurrence or both observers recorded a non-occurrence for a given event during the 5 minute observation period. For example, if a transition warning was not provided prior to the transition, the observers should have circled "no" on the transition-tracking form. If both observers recorded "no" it was counted as a non-occurrence agreement. An interval was scored as a disagreement if one observer scored an occurrence and the other observer scored a non-occurrence.

Data Analysis

Conditional probabilities were calculated to identify any correlations between problem behavior during transitions and other environmental events (e.g., transition warnings) in order to identify predictive variables of poor transitions. The conditional probabilities were analyzed for both group data and individual data. As suggested by Martens, Digennero, Reed, Szczech & Rosenthal (2008), the conditional probability was calculated by dividing the number of transitions with the event of interest (e.g., transition warnings) that were associated with problem behavior by the total number of transitions with the event of interest. For example, if there were no transition warnings in a total of 10 transitions and problem behavior occurred in 6 transitions with no transition warning, the conditional probability of problem behavior given no transition warning would be .6. This resulting probability would then be compared to the probability of

problem behavior given the presence of the event (transition warning was given). For example, if 10 transitions were observed that contained a transition warning, and only 3 of these transitions contained problem behaviors, then the probability of a problem behavior given a transition warning would be .3.

Comparing the probability of a problem behavior for trials with and without a warning, provides some suggestion (not proof; this would require systematic manipulation of the transition warning as an independent variable and an experimental design that allowed for the isolation of the effect of the warning stimulus) of the role of that stimulus event (warning) as a controlling variable for the behavior of interest (problem behavior).

The environmental events that were compared with problem behavior in the transition (using the analyses described above) included whether a transition warning was given, if the destination setting name was provided in the warning, response effort, the transition settings (i.e., classroom to motor room) and the environmental events present in the previous setting and destination setting (e.g., transition from a setting with demands to a setting with no demands).

Two definitions were used to define problem behavior during a transition. The restricted definition of problem behavior during the transition was defined as problem behavior occurring between the time the staff provided the prompt to disengage the activity and move to the next setting and the time the child entered the destination setting. The broader definition for problem behavior during the transition definition was defined as problem behavior occurring between the time the staff provided the prompt to disengage the activity and move to the next setting and the end of the 5 minute observation in the destination setting. A broader definition was used for two reasons. The first reason was because there were many instances when the destination setting

was not provided in the transition warning and even if the destination setting was provided the child may have not understood the prompt (most children were nonverbal). The second reason is that most of the children often did not experience the events in the destination until a few minutes after arriving to the setting. The broader definition may provide more information about difficult transitions, especially if the child did not engage in target behavior until they were in the destination setting.

Additionally, another variable commonly associated with non-compliance is the amount of prompts required for the child to transition. Conditional probabilities were calculated for transitions that required several verbal prompts or partial physical prompts to transition using the same analysis described above. For example, if transition warnings were provided on ten occasions, and 3 or more verbal prompts were given for 6 transitions when a transition warning was provided, the conditional probability would be .6.

RESULTS

A total of sixty-nine observations were conducted across four children (a range of sixteen to twenty-one observations were conducted with each child. Each observation lasted approximately 19 minutes. The results are shown and described in Figures 1 through 5 and Tables 1 through 6. Transitions that occurred very infrequently (e.g., transitions to the bathroom or bedroom) were excluded from the tables and graphs. We will first report on the results of the group data before discussing the individual data.

Of the total of sixty-nine transitions observed, 9 transitions included problem behavior in the transition period only (restricted definition). There were twenty-eight observations of problem behavior between the start of the transition and the end of the 5 minute observation in the destination setting (broad definition). The types of problem behaviors included: verbal aggression, self-injurious behavior, property destruction, elopement, and physical aggression. Table 2 shows the group conditional probabilities of problem behavior with both the restricted and broad definitions.

Table 2. Group Conditional Probabilities of Problem Behavior in Transition

Event	Total Event	Conditional Probability of Problem Behavior	
		Restricted Definition	Broad Definition
Transition Warning	28	.11	.46
No Transition Warning	41	.15	.37
Destination Setting Provided	51	.18	.41
No Destination Setting Provided	18	.22	.39
High Response Effort	24	.08	.38
Low Response Effort	45	.15	.42

The *total event* category in the table is the number of observations that included that specific events. Thus, there were twenty-eight observations of a transition warning and forty-one observation of no transition warning. Focusing on the restricted definition, there is a slightly higher probability for problem behavior when a transition warning is not provided compared to when a transition warning is provided. There is also a slightly higher probability for problem behavior during the transition when the destination setting is not provided and the response effort is low. There is a higher probability for problem behavior when the transition warning is provided compared to when the transition warning is not provided using the broad definition for problem behavior. Also, there is a slightly higher probability for problem behavior when the destination setting is provided and the response effort is low. However, the differences between the probabilities are very small due to the small amount of observations that were conducted. Thus, none of the differences between probabilities are statistically significant.

Figure 1 depicts the conditional probabilities of problem behavior during the transition (restricted definition) to and from different locations in the center.

Figure 1. Group Problem Behavior Associated with Locations (Restricted Definition)
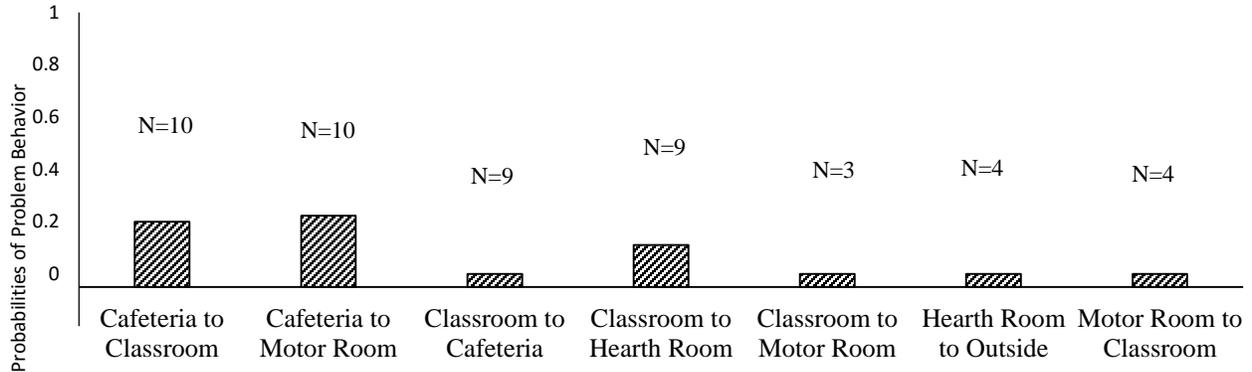
The transitions that produced the most problem behavior were from the cafeteria to the classroom, the cafeteria to the motor room, and the classroom to the hearth room. However, none of the differences between the probabilities are statistically significant. The remaining transitions produced no problem behaviors. Figure 2 shows the probabilities of problem behavior using the broad definition.

Figure 2. Group Problem Behavior Associated with Locations (Broad Definition)
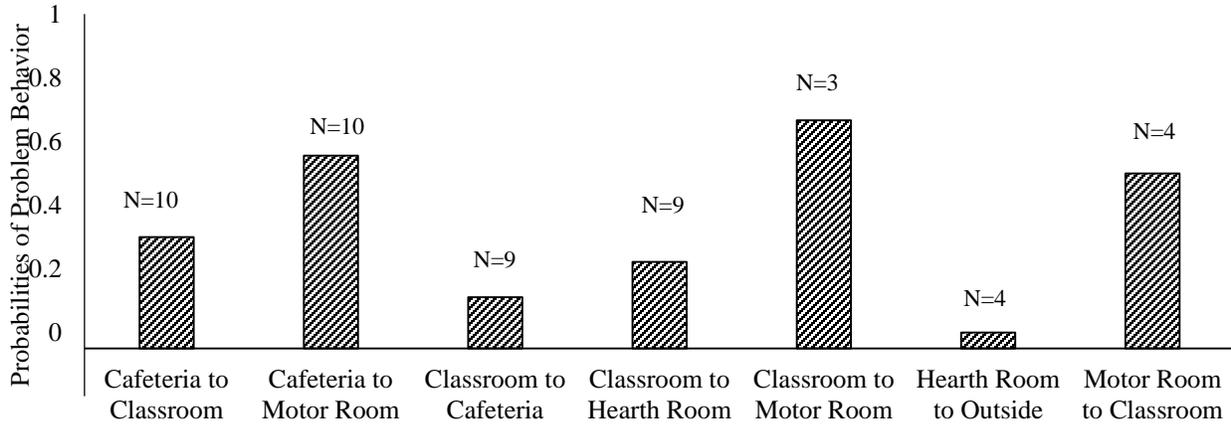
The highest probabilities of problem behavior occurred during transitions to the hearth room, motor room, and classroom. There were no problem behaviors during transitions from the hearth room to outside, and relatively small probability of problem behaviors from the classroom to the cafeteria. Similar to the results reported for the restricted definition, there were no statistically significant differences between probabilities.

The conditional probabilities of prompting given each event is shown in Table 3.

Table 3. Group Conditional Probabilities of Prompting (Restricted Definition).

Event	Total Event	Probability
Transition Warning	28	.17
No Transition Warning	41	.14
Destination Setting Provided	51	.19
No Destination Setting Provided	18	.05
High Response Effort	24	.33
Low Response Effort	45	.07

Only observations that included 3 or more verbal prompts (3 verbal prompts as the cutoff was arbitrarily chosen) or one or more partial physical prompts were included in this analysis. There were no observations where a full physical prompt was required. There were a total of 7 observations that only included 3 or more verbal prompts, 3 observations included three or more verbal prompts and a partial physical prompt, and one observation included a partial physical prompt (with less than three verbal prompts). Thus, there were eleven observations included in the analysis. Only the probabilities based on the restricted definition are shown because prompts were only recorded until the child reached the destination setting.

There was a much higher probability for increased prompting when the destination setting was provided and the response effort to transition was high. However, due to the small amount of transition observations with problem behavior, the probabilities are not statistically significant. There was not a large difference on the amount of prompting whether there was a transition warning or not. The probabilities on prompting given different transition settings (Similar to Figure 1 and 2) will not be discussed because increased prompting was evenly distributed across the different transitions.

A total of fifteen observations were conducted with participant 1. There were 4 transitions with problem behavior using the restricted definition, and 8 transitions with problem behavior using the broad definition. Table 3 shows the conditional probabilities for participant 1.

Table 4. Participant 1: Conditional Probabilities of Target Behavior During Transition

Event	Total Event	Conditional Probability of Problem Behavior	
		Restricted Definition	Broad Definition
Transition Warning	5	.2	.6
No Transition Warning	10	.3	.5
Destination Setting Provided	12	.08	.5
No Destination Setting Provided	3	.67	.67
High Response Effort	4	0	0
Low Response Effort	11	.36	.72

There were no significant differences between the probabilities between the presence and absence of a transition warning. Additionally, low response effort transitions had a higher probability for problem behavior when compared to high response effort transitions. The probability of problem behavior during the transition was higher when the destination setting was not provided. The difference between the probabilities of providing the destination setting was higher using the restricted definition. However, it is important to note that there was not enough observations of problem behavior during a transition for any of the differences between probabilities to be statistically significant.

Figure 3 and Figure 4 depict the problem behaviors during transition by different settings for participant 1.

Figure 3. Participant 1: Problem Behavior Associated with Locations (Restricted Definition)
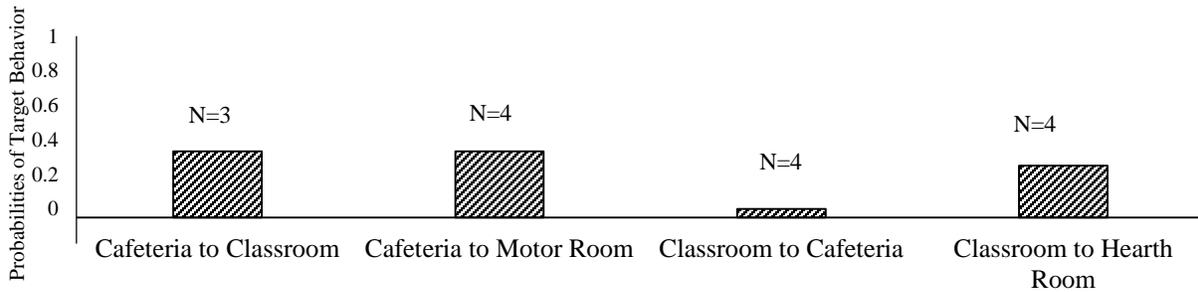
Figure 4. Participant 1: Problem Behavior Associated with Locations (Broad Definition)
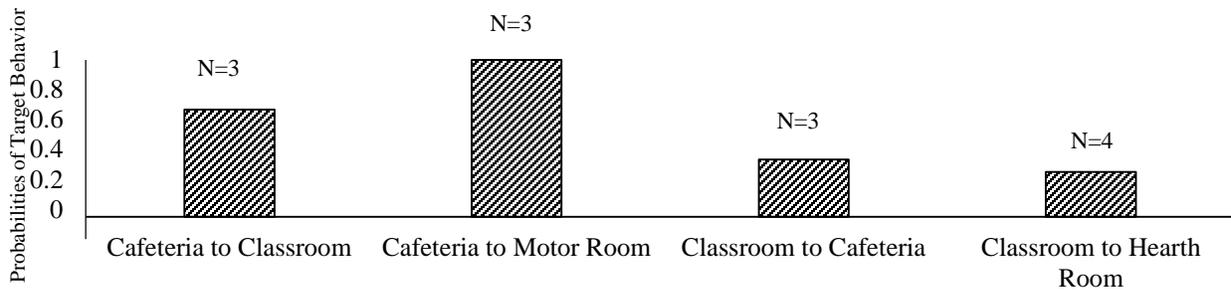
The probabilities of target behavior during the transition (restricted definition) are fairly equal in all the transitions except the transition from the classroom to the cafeteria. Examining the probabilities of target behavior during the transition using the broad definition, the highest probability for problem behavior when transitioning from the cafeteria to the motor room. Problem behavior occurred every time when transitioning from the cafeteria to the motor room. However, there are only three observations from the cafeteria to the motor room, so the probability is not statistically significant.

Since there was a very small differences between all the conditional probabilities of prompting, those results will not be discussed. The probabilities of the change between stimulus events from the previous setting and the destination setting will be reported (refer back to Table 1 for the definitions of the stimulus events). Only the stimulus events with differing probabilities are reported. Figure 5 depicts the probability of problem behavior during the transition given changes between stimulus events for consumables.

Figure 5. Participant 1: Problem Behavior Associated with Consumables.
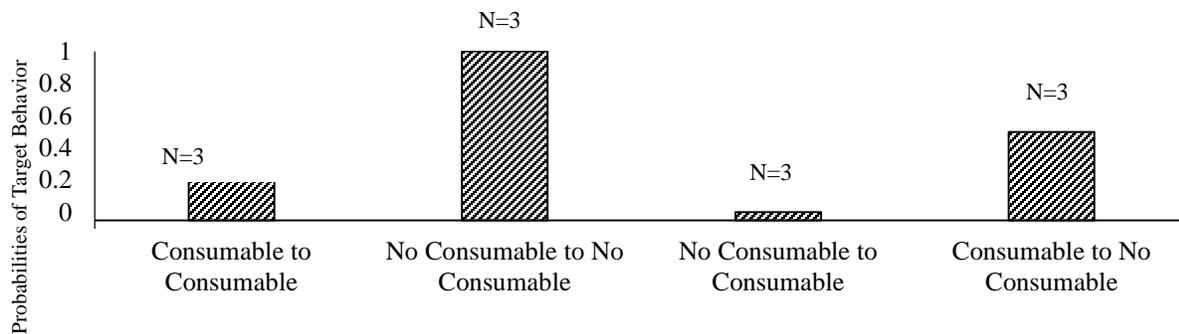
The results are shown for only the broad definition because the stimulus events often did not occur until the child was in the setting for several minutes. For participant 1, problem behaviors during the transition occurred with a greater probability (although not statistically significant) when there were no consumables available in the setting.

There were sixteen observations with participant 2. There were 3 transitions with problem behavior using the restricted definition, and 7 transitions with problem behavior using the broad definition. Since there were very little observations of problem behavior in the transition interval (restricted definition), Table 5 shows the probabilities of problem behaviors using the broad definition only.

Table 5. Participant 2: Conditional Probabilities of Target Behavior during Transition (Broad

Definition)

Event	Total Event	Probability of Problem Behavior
Transition Warning	8	.25
No Transition Warning	8	.5
Destination Setting Provided	14	.5
No Destination Setting Provided	2	0
High Response Effort	5	.6
Low Response Effort	11	.36

For participant 2, there were higher probabilities of problem behavior during the

transition when there was no transition warning, when the destination setting was provided, and

when the response effort was high. However, the differences between the probabilities should be

considered with caution due to the fact that there were a small amount of observations that were

observed to have problem behavior. There were no specific transitions that produced more

problem behavior so the probabilities given different settings are not discussed. Similarly, since

there were very small differences between prompting given different environmental events and

the change in stimulus events, those results are not discussed either.

There were seventeen observations with participant 3. There was 1 transitions with

problem behavior using the restricted definition, and 6 transitions with problem behavior using

the broad definition. Similar to participant 1, since there were very little observations of problem

behavior in the transition interval (restricted definition), Table 6 shows the probabilities of

problem behaviors using the broad definition only.

Table 6. Participant 3: Conditional Probabilities of Target Behavior during Transition (Broad Definition)

Event	Total Event	Probability of Problem Behavior
Transition Warning	6	.66
No Transition Warning	11	.27
Destination Setting Provided	11	.36
No Destination Setting Provided	6	.5
High Response Effort	3	.67
Low Response Effort	14	.36

For participant 3, there was a much higher probability of problem behavior when the transition warning is given compared to when the transition warning is not given. There was also a higher probability for target behavior during the transition when the destination setting was not provided and the response effort to transition was high. However, the differences between those probabilities are not statistically significant. Conditional probabilities on prompting, location, and stimulus change are not discussed due to very small differences between probabilities.

There were twenty-one observations with participant 4. There was 1 transitions with problem behavior using the restricted definition, and 6 transitions with problem behavior using the broad definition. Again, since there were very little observations of problem behavior in the transition interval (restricted definition), Table 7 shows the probabilities of problem behaviors using the broad definition only.

Table 7. Participant 4: Conditional Probabilities of Target Behavior during Transition (Broad Definition)

Event	Total Event	Probability of Problem Behavior
Transition Warning	9	.33
No Transition Warning	12	.25
Destination Setting Provided	14	.29
No Destination Setting Provided	7	.29
High Response Effort	12	.33
Low Response Effort	9	.22

According to the results for participant 3, there was a small difference between whether a transition warning was provided and the type of response effort to transition. There was no difference between whether the destination setting was provided. Also, there were no significant differences between the conditional probabilities for prompting, location, and stimulus change events.

DISCUSSION

The current literature has mixed conclusions on the effectiveness of transition warnings. The results of the current study suggest that transition warnings may not always play a significant role in reducing problem behaviors during transitions. Additionally, including the destination setting name with the warning may increase the likelihood of problem behavior during the transition. A suggested explanation for this finding is that providing a prompt to transition to a non-preferred setting can be a conditioned aversive stimulus and evokes problem behaviors during the transition.

Another interesting finding is that for two of the participants a transition that involved a lower response effort resulted in more problem behaviors during the transition. The transitions that required more of a response effort (i.e., putting on coats, shoes, walking to the other side of the building) may have been more of a preferred setting. Most of the observations that required a high response effort were to the outside play area or the hearth room.

Furthermore, in the analysis of the group data, there were high probabilities of target behavior during a transition to the motor room. The motor room is unstructured time for the children to use different outdoor activities (e.g., balls, scooters). The motor room may have not been a preferred setting because the children did not have access to certain edibles that were only available in the classroom (i.e., special snacks, candy), and often did not engage in the activities that were available. Also, even though there were far more demands in the classroom, the children also received more praise and attention from the staff when in the classroom compared to the motor room. Thus, the classroom may have been a more enriched setting than the motor room.

The hearth room is another setting similar to the motor room (i.e., unstructured time, no access to candy), however there were very few observations of problem behavior during transitions to the hearth room. This may be due to the fact that the children did not often spend much time in the hearth room and from the hearth room the children quickly transitioned to outside or to the cafeteria.

Limitations

There are several limitations of the study that need to be noted. First, most of the probabilities were relatively small and could not be assumed to have occurred outside of chance.

Also, there were not any clear correlations between changes in stimulus events between settings (e.g., demand to no demand). Clearer correlations may have appeared if the observation was broken into shorter intervals or a frequency measure of the stimulus events were used instead of the 5 minute partial interval recording method used in the previous setting and destination setting.

Furthermore, the investigators did not use a structured assessment to identify potential reinforcers for each child, which would provide more insight on preferred and non-preferred settings. Each child had a preference assessments completed as part of their treatment upon arrival to the center, but the activities in the preference assessment were often not available in the settings we observed. Preference assessments would need to have been conducted on the items that the children had continued access to in the different settings.

Lastly, this was a descriptive study so no casual relations can be made. The relationships must be tested experimentally to show any causal relationships. Also, transition warnings may

have had more of a significant effect if they were provided more consistently. However, due to the descriptive nature of the study, the investigators could not control whether a transition warning was provided.

Future Directions

The nature of this study was purely descriptive, further research should consider making experimental manipulations within the context of transitions. For example, further research may involve the manipulation of variables within each setting (e.g.., experimentally manipulate variables such as providing the destination setting in the warning). Systematically manipulating different variables between settings may provide a more clear analysis of the relevant variables maintaining problem behavior during transitions.

Future research may also compare the frequencies of tangibles within each setting and examine if transitions from a setting with frequent access to tangibles to a setting with no access to tangibles produces more problem behavior during the transition.

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APPENDIX A

Transition-Tracking Form

Date: _____ **Client:** _____ **Observer:** _____ **Start Time_____** **End Time_____**

Time of start transition:	Previous Setting:	Level of Prompt Required		Level of Compliance		Time of end transition:	Problem behaviors during transition:	Destination Setting	Problem behaviors in destination setting:
_____ **Transition warning given** Yes No If yes, time_____ **Destination provided:** Yes No **Staff Change** Yes No	Location_____ Tangible: Y N S Social: Y N P Social: Y N C'sumable: Y N Sensory: Y N E Demands: Y N C Demands: y N Observation shorter than 5 minutes? Y N	**Verbal Prompt** | | | | | | | | | | | | | | | **Partial Physical** | | | | | | | | | | | | | | |	**Model Prompt** | | | | | | | | | | | | | | | | **Full Physical** | | | | | | | | | | | | | | | |	Indep. PC	FC NC	_____ **Transition Setting:** **Response effort required to transition:** 2 1 0 **Behavior carried over from previous setting?** Y N N/A	SIB Physical Aggression Verbal Aggression Prop Destruction Elopement Flopping _____ _____ _____ 2 1 0	Location_____ Tangible: Y N S Social: Y N P Social: Y N C'sumable: Y N Sensory: Y N E Demands: Y N C Demands: y N Observation shorter than 5 minutes? Y N	SIB Physical Aggression Verbal Aggression Prop Destruction Elopement Flopping _____ _____ _____ 2 1 0
Additional Notes									

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APPENDIX B

Task Analysis

a.	Check observation schedule for: • Time to observe • Location of observation • Client(s) to observe • If you are observing with another person
b.	Obtains materials: • Clipboard, pen, transition tracking sheets (3-5 sheets per 30 minutes). • Stop-watch, timer or phone. • Task analysis and definitions sheets.
c.	Write the following information on the transition tracking sheet before entering observation space: • Date, • Client #, • Observer name • Observation start time • Location of previous setting
d.	Sign out keys and walkie.
e.	Find and inform lead staff on duty that you are planning on taking observations.
f.	Find a discrete place to observe (e.g., corner, back of the room) • If you are observing with another person, be sure to be at a distance of at least 5 feet so that you cannot view each other's papers.
g.	Start the timer for 5 minutes and begin observation • If you are observing with another person communicate with the person that you are starting the timer (e.g. head nod)
h.	Mark *Yes* or *No* if a transition warning occurred within 2:30 minutes before the transition in the section *Transition warning given.*
i.	If a transition warning did occur: • Mark *Yes* if the destination was provided in the transition warning (e.g. "we will be leaving **to go to the gym** in a couple of minutes") OR a destination was provided without the warning (e.g., let's go to the gym now). in the section *Destination provided* • Mark *No* if the destination was not provided in the transition warning (e.g. "we will be leaving in a few minutes").
j.	Record if there was a change in staff at all during the 5 minute observation in the previous setting in the section *Staff change*
k.	Mark Yes or No if any of the categories in the previous setting occurred. If the observation was shorter than 5 minutes, mark how long it was in the notes section under the *previous setting* section. • If the transition does not occur at the time that it is scheduled (i.e., transition occurred 10 minutes after the scheduled transition), use only the last 5 minutes of observation to score each category.
l.	Record the time the transition started in the section *Transition start time.* • The previous setting observation ends and the transition setting begin when the first prompt is given to begin the transition.

m	For each prompt to transition circle a tally to indicate the type of prompt (VP, MP. PP, FP) and number of prompts. • Be sure to circle the tallies as soon as each prompt is given. • If no prompts were given or prompts were only given in one or two categories, mark an X through the box to indicate that no prompts were given in that category.
n.	Circle the level of compliance (Indep, FC, PC, NC) during the transition in the section *Level of Compliance* • Only circle one category • Mark an X through the boxes that do not apply.
o.	In the section *Transition Setting*: • Record the time the transition ended. • Record the response effort to transition (2, 1, 0). • Record if there were any behaviors that were occurring in the previous setting and continued during the transition (*Yes or No, N/A*) N/A would indicate that there were no behaviors at all in the previous setting.
	Record the location of the destination setting in the section *Location.*
p.	Observe for 5 minutes in the destination setting.
q.	Mark Yes or No if any of the categories in the previous setting occurred. •
r.	Record if any problem behaviors occur in the destination setting by circling the appropriate target behavior • If the target behavior that you observed is not listed, write it on one of the lines.
s.	Record the severity of the target behavior (2, 1, 0).

Appendix C

Definition Sheet

Transition: A change from one activity or setting to another. The transition starts when the staff provide the first prompt to disengage in the activity to leave to the next setting. The transition ends once the child is in the destination setting.

Previous setting: The setting that the client is currently in at the beginning of the observation previous to the transition.

Tangible: Non-ingestible physical items i.e. tokens, toys, music. Using an object in its intended purpose.

Staff Social: Attention delivered from staff i.e. physical touch, verbal praise, eye contact. (Not including demands)

Peer Social: Attention delivered from peers i.e. physical touch, verbal praise, eye contact.

Consumable (C'sumable): Ingestible items i.e. carrots, pretzels, candy, drinks.

Sensory: Stereotypic behavior (i.e. rocking, hand flapping, verbalizations/vocalizations). Repeated touching of objects/walls around the room, holding on to/playing with object, looking at self in mirror, touching sand, swinging). Using an object in its non-intended purpose.

Escape Demands (E Demands): Whenever staff presents an instruction and the task was not completed within two minutes of the demand.

Completed Demands (C Demands): Whenever staff presented an instruction (e.g., sit up, bring me your PECS book).

previous setting and destination setting.

Destination setting: The setting the client is in after the transition.

Transition warning: Verbal statement that a transition is about to occur.

Verbal Prompt (VP): A verbal statement with no modeling or gestures, or pointing prompts provided. Ex. "come here"

Partial physical prompt (PP): Guiding the child toward the direction of the transition. Ex. Light tap on the arm or back.

Full physical prompt (FP): Would include picking up the child and physically moving. (Should only occur in emergencies).

SIB: Any physical contact that is self-directed and causes injury or harm. Examples include biting, hitting, head banging, or scratching

Phys Aggres: Any forceful physical contact with open or closed fists that is directed towards another individual. Examples include: striking, hitting, pulling, pushing, or scratching. Non-examples include: hugging or stroking some1's arm.

Prop Destruction: Damaging objects or attempting to damage objects/items in the environment including walls, windows, doors, etc.

Elopement: Bolting out of the staff's supervision or group area without permission, or attempts at elopement.

Flopping: Client falls to the floor.

Response effort:
- Tier 2: Responses that require more than 1 minutes of work (i.e. putting on shoes, getting dressed) or a transition is across the building (i.e. from the classroom to the outside play area).
- Tier 1: Responses that require less than 1 minutes of work (i.e. putting dishes on the counter, picking up PECS book).
- Tier 0: No work needs to be completed before transition.

Appendix D

HSIRB Approval Form

Date: November 3, 2015

To: Wayne Fuqua, Principal Investigator

        Ashley Kotsiris, Student Investigator for thesis

        Neil Deochand, Student Investigator

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number 15-11-01

This letter will serve as confirmation that your research project titled "Exploratory Analysis of Transition Data in an Intensive Autism Treatment Center" has been **approved** under the **exempt** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved.

You must seek specific board approval for any changes in this project (e.g., ***you must request a post approval change to enroll subjects beyond the number stated in your application under "Number of subjects you want to complete the study***)." Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

Reapproval of the project is required if it extends beyond the termination date stated below.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: **November 2, 2016**