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Re-visiting transition-based teaching: Impact of pre-service teacher's implementation on child outcomes

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1. Introduction

Providing developmental and educational services to young children with disabilities within inclusive early childhood settings has become a recommended practice in the field of early childhood special education (Division of Early Childhood, 2014). Increase of the number of children with disabilities being served in inclusive preschool classrooms requires professionals providing instruction in these settings to learn and implement evidence-based instructional approaches with high frequency and fidelity (Rakap, 2017a). Preschool teachers and other professional working in inclusive preschool classrooms often report not having necessary skills and time to deliver systematic instruction to these children within busy preschool classrooms (Sucuoglu, Bakkaloglu, Iscen Karasu, Demir, & Akalin, 2014). Therefore, it is critical to develop and/or evaluate training programs and instructional approaches to help these professionals gain necessary skills to implement evidence-based practices (Lauderdale-Littin & Brennan, 2018). Once learned and carefully planned, implementation of such practices should not interfere with the flow of classroom activities and routines, and should require relatively low effort and time from teachers serving children with disabilities in inclusive preschool classrooms.

Thirty some years ago, Sainato and Lyon (1983) reported that preschool children spent 20%–30% of their school time in transition from one activity or setting to another activity or setting. Significant amount of time spent in transitions led researchers to conduct studies to decrease duration of transitions by promoting independence during transitions (e.g., Rosenkoetter & Fowler, 1986) or using different transition strategies (Goetz, Ayala, Hatfield, Marshall, & Etzle, 1983; Sainato, 1990; Sainato, Strain, Lefebvre, & Rapp, 1987; Wurtele & Drabman, 1984). In response to the large proportion of school time spent in transitions and research findings viewing transitions as necessary but potential times for nonproductive, disruptive behaviors (Wolery, Doyle, Gast, Ault, & Simpson, 1993), Wolery and colleagues developed and tested an instructional approach called transition-based teaching (TBT), to use these "down times" for instruction (Werts, Wolery, Holcombe-Ligon, Vassilaros, & Billings, 1992; Wolery et al., 1993).

Werts et al. (1992) described transition-based teaching as an instructional approach in which a brief instructional trial to elicit a target behavior is implemented at the beginning of a transition from one activity to another to use time spent in transitions for instruction. For example, if the target child's goal for instruction is color recognition (red), then, the teacher would show the child two colored cards (one yellow and one red), ask "show me the red card" and provide time for child to respond, as the child is in transition between circle and free play area. While the correct child response is followed by a praise or positive consequence, an incorrect child response would result in teacher delivering an error correction procedure. When the brief instructional trial is over, the child would continue with the transition (Werts, Wolery, Venn, Demblowski, & Doren, 1996). By embedding a preplanned number of trials within and across transitions per day, teachers can systematically deliver instruction during a time that is seen nonproductive (Werts et al., 1992). Previous research has shown that embedding instruction within and across transitions is a viable way of rapidly teaching pre-academic skills to young children with disabilities and brief instruction trials delivered during transitions do not increase the length of time spent in transitions or change the nature of teachers' behaviors during transitions (Rakap, 2017a; Snyder et al., 2015; Wolery, Anthony, & Heckathorn, 1998).

Four studies have investigated effects of transition-based teaching on child outcomes (Werts et al., 1992, 1996; Wolery et al., 1993, 1998). Werts et al. (1992) examined the efficacy of preschool teachers' implementation of a constant time delay (CTD) procedure (an instructional strategy in which teachers wait a fixed amount of time between an instruction and any prompts that might be used to elicit a response from the children; Neitzel & Wolery, 2009) with instructive feedback (i.e., adding extra information, i.e., nontarget stimuli to the consequent of an instructional trial on target behaviors; Werts et al., 1992) during transitions on teaching pre-academic skills to three preschool children with hearing impairments. TBT trials for teaching shape names were dispersed throughout the day with one trial per child during each transition. Instructive feedback (colors of shapes) was provided following a correct child response as part of the praise statement. Findings of the study showed that the CTD procedure implemented during transitions was effective in teaching names of the shapes. Moreover, all three children were able to generalize shape names across different materials and in most cases the addition of color name in the praise statements during TBT trials resulted in increases in color naming.

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Wolery et al. (1993) compared the effectiveness of a progressive time delay (PTD) procedure, an instructional strategy in which teachers gradually increase the waiting time between an instruction and any prompts that might be used to elicit a response from the children (Neitzel & Wolery, 2009), delivered in a massed-trial format during one-to-one teaching sessions and TBT involving implementation of PTD procedure in a distributed-trial format during transitions. Four preschool children with developmental delays and their teacher participated in the study. Children were taught to read words, name letters/numerals, and produce manual signs for photographs. Different sets of behaviors were taught using equal numbers of trials in each session across the two procedures. Findings of the study showed that the teacher could implement both procedures reliably and both procedures were equally effective in teaching targets skills to participating children.

Werts et al. (1996) investigated effects of TBT with instructive feedback on naming values of coin combinations and number words corresponding to the values. Three kindergarten children with disabilities (two with developmental delays and one with Down syndrome) and six typically developing children participated in the study. Using a CTD procedure, four trials were delivered in each school day during transitions and instructive feedback (number words corresponding to the values) was provided following a correct child response as part of the praise statement. Results of the study showed that the CTD procedure used within TBT framework was effective for five children without disabilities and three children with disabilities (following modifications). Children who learned coin values also learned the number words (instructive feedback).

Wolery et al. (1998) examined the effects of TBT on child outcomes, teacher behaviors, and duration of in-class transitions. Four children with disabilities (two with developmental delay and 2 with attention deficit/hyperactivity disorder) and their teachers participated in the study. A CTD procedure was used to teach children names of dinosaurs, colors, shapes, and letters. Findings showed that all four children increased their correct responding on target behaviors during TBT; teaching during transitions did not interfere with other teacher responsibilities, and delivering instruction during transitions did not change the duration of transitions.

Since the studies conducted by Wolery and colleagues, transitions have been used as instructional context within other naturalistic instructional approaches such as embedded instruction or activity-based intervention (Snyder et al., 2015; Rakap, 2017a). Recent studies have shown that children with disabilities still spend a large proportion of their school time, 20%–35%, in transitions (Ergin & Bakkaloglu, 2015; Gulboy & Yucesoy-Ozkan, 2016) and these times can be used for instruction. Therefore, purpose of the present study is to investigate the effects of pre-service teachers' implementation of a CTD procedure within the TBT framework on the acquisition, generalization and maintenance of pre-academic skills by three preschool children with developmental disabilities. The present study contributes to the literature in three ways. First, the present study is the first study in the literature in which the TBT is implemented by pre-service special education teachers within and across the transitions of inclusive preschool classrooms. In the era of evidence-based practices, it is important for preservice teachers to learn about evidence-based practices and obtain necessary skills to implement these in practice while working with children with disabilities. Second, the present study provides additional evidence for the effectiveness of TBT for skill generalization and maintenance as it is the second study in which effects of TBT on skill generalization is investigated. When children with disabilities learn new skills, it is not necessarily that they will generalize the newly leaned skills to new settings, people, or materials or maintain the skills over time (Peterson, 2009). Therefore, instruction provided to children with disabilities should focus on acquisition, generalization, and maintenance. Third, the present study is among the initial studies investigating social validity of TBT procedures.

Following research questions were addressed in this study:

1. Is there a functional relation between preservice teachers' implementation of a CTD procedure within TBT framework during transitions of inclusive preschool classrooms and acquisition of pre-academic skills by preschool children with developmental delays?
2. To what extent do children with disabilities generalize pre-academic skills they learned through TBT to other teachers, settings and materials?
3. To what extent do children with disabilities maintain pre-academic skills during follow-up sessions conducted 1, 3, or 5 weeks after skill acquisition?
4. How will pre-service teachers and preschool teachers rate the acceptability and effectiveness of TBT?

2. Method

2.1. Participants

2.1.1. Children

Three children, 2 boys and 1 girl, with developmental delays, enrolled in a public preschool program, participated in the study. The children ranged 4–5 years in age (M_{age} = 58.3 months). Following inclusion criteria were used to select children for participation: (a) having an Individualized Education Program indicating eligibility for special education services, (b) parental consent to participate in the study, (c) regular attendance to preschool program (on average, 4 days/week) within the last 30 days prior to the study, (d) ability to attend to an instructor when his/her name is called, (e) ability to wait 4 s for a prompt when he/she was asked to name unknown stimuli, and (f) ability to imitate verbal model presented by an instructor within 4 s. Three instructional targets not in his/her repertoire were identified for each child based on the interviews with classroom teachers. Classroom teachers considered target behaviors important to learn and they were unlikely to be learned during regular classroom activities without systematic instruction. Table 1 presents characteristics of child participants.

Table 1
Characteristics of child participants.

Demographic information	Child 1	Child 2	Child 3
Age (in months)	59	56	61
Gender	Male	Male	Female
Ethnicity	Turkish	Turkish	Turkish
Diagnosis	Developmental delay	Developmental delay	Developmental delay
Services currently being received	Special education, speech and language therapy	Special education, speech and language therapy, occupational therapy	Special education, speech and language therapy
Developmental status			
Communication	40[a]	40[a]	40[a]
Gross motor	45	40	40
Fine motor	40	35[a]	40
Problem-solving	30[a]	35[a]	35[a]
Personal-social	30[a]	35[a]	30[a]
Instructional targets	Expressive identification of colors (pink, brown, and purple)	Expressive identification of colors (rectangle, triangle, and oval)	Sight word reading (spoon, phone, and chair)

Note. Ages & Stages Questionnaire- Turkish Version (Kapci, Kucuker, & Uslu, 2015) was used to determine developmental status of children at the onset of the study.

[a] Indicates scores below the cutoff points.