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EMPIRICAL REPORT

Teaching Young Children with Special Needs and Their Peers to Play Board Games: Effects of a Least to Most Prompting Procedure to Increase Independent Performance

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Abstract We investigated the effects of a least to most prompting procedure on the performance of board game steps and game-related on-task behavior of young children with special needs and their typically developing peers. This study was conducted employing a concurrent multiple baseline design across participants. After teaching the board game steps using a systematic prompting strategy, the participants demonstrated increases in the performance of board game steps and game-related on-task behavior. In addition, the participants maintained high levels of performance and game-related on-task behavior during post-game training. The effects of teaching board games using prompting strategies, implications for practice, and areas for future study are presented.

Keywords Board games · Prompting strategies · Young children with special needs

Play is an integral part of the early childhood curriculum facilitating critical developmental skills (Boutot et al. 2005; Tsao 2002). The appropriate use of play materials provides young children with opportunities to engage independently in classroom activities as well as to develop social skills such as communicating, taking turns, helping each other, and sharing toys (Arntzen et al. 2003; Jung and Sainato 2013; Pierce-Jordan and Lifter 2005).

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Young children with disabilities often demonstrate less frequent and less varied play behavior compared to typically developing children (Lifter et al. 1993; Covel 1997). An unskilled play repertoire may interfere with a child's ability to interact with peers and participate in classroom activities. Children with disabilities are less likely to learn age-appropriate play skills through mere exposure to play materials and peers using those materials. Instead, intervention is often required to teach appropriate play skills directly and explicitly to these children (Lifter et al. 2012; Malone and Langone 1999.

Although research indicates that the direct and systematic play skills instruction can facilitate various play skills such as functional play, symbolic play, and sociodramatic play, little research exists on how best to teach game play to young children with developmental disabilities (Jung and Sainato 2013). Since playing games is a common activity among typically developing children, game play skills may be an important part of a child's play repertoire facilitating a wide variety of behaviors from appropriately engaging with classroom materials and peers to increasing children's appropriate classroom behaviors while following rules and taking turns. More importantly, game play such as that driven by the structure of board games may be more likely to facilitate interactive play skills and desirable behavior in classrooms.

Some studies used board games to develop young children's numerical skills (e.g., number line estimation on the game, counting, number identification, numerical magnitude comparison skills) (Ramani et al. 2012; Ramani and Siegler 2008; Siegler and Ramani 2008). However, there are few studies on teaching and assessing board game skills to young children with special needs in order to facilitate their play skills. Arntzen et al. (2003) investigated the effect of teaching games and the maintenance of game skills with a 5-year old boy with developmental disabilities. The child was taught two roles (i.e., leader and participant) in three different games. A task analysis

of three popular games among preschoolers (i.e., "Red light/green light," "Simon says," and "Spin the bottle") was created. The child was taught the steps of the games through the use of prompting strategies and a token economy. Results indicated that the participant learned the game skills including both roles in three games and that these skills were maintained after training was removed. In addition, the child was observed engaging in other games and interacting more with peers after the intervention.

In another game study, Deming (1999) examined the effect of teaching game playing skills on peer conversational interactions between children with autism or pervasive developmental disorder not otherwise specified (PDD-NOS) and their typically developing peers, aged 4 to 6 years. During the intervention, the participants were taught to engage in board games (i.e., "Candy Land Bingo™," "Hi Ho Cherry-O™," "101 Dalmatians,™" and "Clue Jr.™"). The play behaviors consisted of taking the game out of the box, setting up the board, spinning a spinner, choosing a correct piece, and so on. The participants were taught using prompting strategies with a time delay procedure. The experimenter subsequently reinforced the children's appropriate play behavior. The results of the study suggest that teaching game play skills improved the independent participation of children with disabilities and their peers and that a least to most prompting procedure was effective for teaching game/play skills.

In the study of Oppenheim-Leaf et al. (2012), two young children with autism spectrum disorders aged 5 and 7 years old were taught three board and card games ("Go Fish®," "Uno®," and "Yahtzee Junior®"). The children were taught the rules of the games and each step of the game play using modeling, role-play, and a token system. The results indicated that the participants were able to learn all three games and maintained the correct performance of game steps when they played with adults after the game instructions.

As studies on play skills instruction document task-analyzed play skills, modeling, prompting strategies, and reinforcement contingencies may be critical elements of effective strategies (Jung and Sainato 2013), research on teaching games/board games also indicates that those strategies are essential for effective game skill instruction. Playing games may be one of several favorite play activities among young children in classrooms. Teaching game skills may facilitate the engagement in classroom activities with peers for young children who have limited communication skills and a limited play repertoire (Arntzen et al. 2003; Baker 2000; Oppenheim-Leaf et al. 2012). Augmenting play skills may encourage children to share common activities and develop comparable play behaviors (Baker 2000; Jung and Sainato 2013; Oppenheim-Leaf et al. 2012). It may facilitate engagement in appropriate behavior and cooperative play while decreasing inappropriate behavior (Baker 2000; MacDonald et al. 2009; Machalicek et al. 2009; Koegel et al. 1992). Strain and Schwartz (2001) suggest play with peers is related to context. Teaching and assessing play/game skills in the context of ongoing activities and routines with peers may facilitate the functional use of play skills in classrooms (Jung and Sainato 2013; Malone and Langone 1999; Mastrangelo 2009).

The purpose of this study was to examine the effects of a least to most prompting hierarchy on independent board game play and game-related on-task behavior for children with special needs and their peers in the preschool classrooms. The research questions were as follows: (a) What is the effect of the use of a least to most prompting procedure on the independent performance of the game steps, (b) What is the effect of the use of a least to most prompting procedure on the game-related on-task behavior, and (c) What are the responses of the classroom teacher and the children to the social validity interview with a regard to intervention strategies and games?

Method

Participants

This study was conducted in a prekindergarten inclusion classroom located in an elementary school in a large midwestern metropolitan area. The classroom teachers were asked to identify the children who have deficits or delays in social development or language skills and who might thus benefit from learning game skills with typically developing peers. All children in the classroom had typical vision and hearing, thus all of the students were considered as possible participants. The participants' cognitive and communication skills were assessed using the Infant/Preschool Play Assessment Scale (I-PAS) (Flagler 1996) and Preschool Language Scale-3 (PLS-3) (Zimmerman et al. 1992) (See Table 1).

Table 1 Child demographic information

Characteristics	Billy	William	Matt
Age in months	65	62	75
Years in early intervention	1	4	4
Cognitive[a]	48–60 months	60 months	24–30 months
Communication[a]	48–60 months	60 months	36 months
Auditory language[b]			
Standard score	80	121	66
Standard deviation	−1.33	+1.40	−2.27
Expressive language[b]			
Standard score	83	123	56
Standard deviation	−1.13	+1.53	−2.60

[a] I-PAS (Infant/Preschool Play Assessment Scale) (Flagler 1996)

[b] PLS-3 (Preschool Language Scale-3) (Zimmerman et al. 1992)

Billy (dyad 1) was a 65-month-old boy who qualified for the program due to social-emotional and behavioral delays. He spoke in three- to four-word sentences but often failed to reciprocate peers' play initiations. Billy attended special needs preschool in the morning session and had been enrolled in the early childhood special education program for 1 year.

William (dyad 2) was a 62 month-old boy who qualified for the early childhood special education program because of delayed gross motor skills and social skills. He had been in the special education for 4 years. William spoke in four- to five-word sentences.

Matt (dyad 3) was a 75 month-old boy whose primary diagnosis was anoxic brain injury. Matt spoke in two-to three-word sentences; however, he had difficulty verbally initiating and maintaining interactions. Matt attended special needs preschool in the morning session and had been enrolled in special education since 24-months of age.

In addition, three typically developing children enrolled in the same preschool program also participated in the study. Peers, who were able to follow directions, play simple board games, and who had social skills that were appropriate for their age, were nominated by their teacher as possible play partners. The classroom teacher reported these peers had some prior experiences with board games. Karl (dyad 1), a 62-month-old boy, Andrew (dyad 2), a 50-month-old boy, and Paul (dyad 3), a 49-month-old boy were randomly assigned as play partners for Billy, William, and Matt, respectively. These play dyads remained the same throughout the study.

Settings and Materials

The children's inclusive preschool classroom was comprised of 12 children including seven children with special needs. The classroom consisted of defined play and work areas such as dramatic play, books, blocks, sensory table, an art area, manipulatives, a group area, and a study area. The study was conducted in a quiet area of the classroom during free play. A table with child-sized chairs was arranged to play the games.

The experimenter selected three board games matching the developmental skills of the participants. Game 1, "Snail's Pace Race" required putting colored snails on the board, rolling two dice, matching colors, and moving the snail or snails. Game 2, "Spot's Play Day" required players to spin a spinner, match colors, and move a playing piece. Game 3, "Richard Scarry: The Busy town Board Game" required players to roll a pair of dice, match colors, and move a piece.

Behavioral Measurement

In order to examine the effects of a least to most prompting hierarchy on independent performance on board game and game-related on-task behavior, two dependent variables were measured: independent performance of board game steps and game-related on-task behavior.

Performance of Board Game Steps The three games chosen for this study had similar attributes and involved matching colors and moving playing pieces from space to space. Each game was broken down into seven or eight steps for correct game play. The total number of steps completed and the level of independent performance were observed. The level of performance was coded as (a) *Independent performance*, the completion of a step in the absence of experimenter prompts, (b) *Performance with* v*erbal prompt*, the completion of a step following a verbal prompt by the experimenter (for example, "what color did you spin?"), (c) *Performance with gestural prompt/model*, the experimenter models the step and then gives the child an opportunity to imitate the same behavior (for example, the experimenter picks up the playing piece and moves it to the colored space and then lets the child move the playing piece), (d) *Performance with physical prompt*, the experimenter assists the child in completing the step (for example, the experimenter places her hand on the child's and together they pick up the playing piece and move it to the colored space), or (e) *Incomplete or no response*, the child fails to complete the step or does not respond to prompts and does not complete the step.

Game-Related On-Task Behavior The participants' on-task behavior was defined as children actively engaged in touching or moving the game materials, visually attending to the game, interacting in a nonverbal or verbal manner with other children by sharing, taking turns, initiating and responding, waiting for other children to finish taking their turns, and/or attending to the experimenter's instructions. Non-examples included situations in which children were not engaged in game play, the children's eyes were not directed at the board game, the children used the game materials in an inappropriate manner, or they engaged in disruptive behavior such as throwing materials, hitting, pushing, or shouting.

Data Collection

Children were videotaped during a 10-min game playing session. The experimenter, a preschool special education teacher, also served as the primary observer. The primary observer watched the videotaped sessions and recorded the occurrences of the target behaviors and the experimenter's behavior. The children's total number of board game steps and the total number of steps completed independently were counted and converted to the percentage of independent steps performed. Children's game-related on-task behaviors were observed using a partial interval recording system (10 s to observe, followed by 5 s to record). The secondary observer was a doctoral student in special education. The primary and

secondary observers were trained using a coding manual, videotapes, and through practicing observations until obtaining at least 90 % agreement between two observers for a minimum of two consecutive sessions.

Interobserver Agreement

Interobserver agreement was measured to ensure the measurement reliability. While viewing the videotaped sessions, the experimenter and second observer independently recorded the dependent variables and experimenter behaviors. Interobserver agreement was measured for the dependent variables for an average of 39 % of the experimental sessions. Percentage of agreement was calculated by dividing the number of agreements between observers by the total number of agreements plus disagreements and multiplying by 100. Interobserver agreement (IOA) was collected for independent step completion and game-related on-task behavior for target children and peer partners. Interobserver agreement for independent step completion during the experimental conditions of baseline, game training, and post-game training was as follows: Billy= 100 %, 93.4 % (89–100 %), and 97.1 % (96.2–98 %); William=100 %, 98.5 % (97–100 %), and 98.1 % (97–100 %); Matt=96.6 % (83.3–100 %), 100 %, and 98 % (96–100 %); Karl=100 %, 98 % (96–100 %), and 96.6 % (92.5–100 %); Andrew=100 %, 99.5 % (99–100 %), and 100 %; and Paul=100 %, 98 % (96–100 %), and 100 %, during baseline, game training, and post-game training sessions, respectively. Interobserver agreement for game-related on-task behavior was as follows: Billy=98. 5 % (88–100 %), 100 %, and 100 %; William=98.6 % (91.6–100 %), 98.5 % (97–100 %), and 100 %; Matt=100, 100, and 100 %; Karl=100, 100, and 100 %; Andrew=100, 100, and 100 %; and Paul=100, 100, and 100 %, during baseline, game training, and post-game training sessions, respectively.

Procedural Integrity

All procedures were implemented by the experimenter who practiced with the second and third authors to follow the steps of the intervention until she reached 100 % accuracy before the study began. Procedural integrity data were gathered to assess the accuracy of implementation of the experimental procedures and experimenter prompts. First, a procedural integrity checklist was used to record observed experimental procedures for an average of 21 % of the sessions in each of the experimental conditions. Interobserver agreement results for the procedural checklist were 100, 100, and 100 % for Billy; 94 % (88.8–100 %), 100 %, and 100 % for William; and 100, 100, and 100 % for Matt during baseline, game training, and post-game training sessions, respectively. Second, the experimenter's prompts were assessed across all experimental conditions. During the baseline and post-game training sessions, the experimenter delivered general prompts such as "I would like you to play Spot's Play Day with your partner," "Remember to play with your partner," or "Remember to sit in your seat;" however, specific prompts for the game skills were not provided. In training, the teacher prompts consisted of verbal, modeled, and physical prompts related to the games (e.g., "Where does your piece go?"). Interobserver agreement for the experimenter's behavior was collected during an average, 39 % of the experimental sessions. Interobserver agreement results for the experimental sessions were 96.4 % (85.7–100 %), 97.2 % (95.2–100 %), and 100 % for Billy, 95.5 % (85.7–100 %), 92.3 % (84.6–100 %), and 92.3 % (84.6–100 %) for William, and 100 %, 99.6 % (99.2–100 %), and 97.6 % (95.2–100 %) for Matt during baseline, game training, and post-game training sessions, respectively.

Social Validity

To assess social validity, relevant consumers including the classroom teacher of the participants and the target children and their peers were asked to provide information about the intervention after the study was completed. The teacher was asked four questions as follows: (a) What did you like the best regarding the intervention and/or procedures, (b) Would you use a form of the intervention in your classroom, (c) what was challenging about the study, and (d) Would you want to have someone do another study with your students? In addition, each target child and his peer were asked which game(s) they most liked to play and why.

Experimental Design

A concurrent multiple baseline design across participants was employed to assess the effects of a least to most prompting procedure on the independent performance of board game steps and game-related on-task behavior of young children with special needs and their peers. The three experimental conditions were as follows: (a) baseline, (b) training of game skills, and (c) post-game training.

Procedure

General Procedures The experimenter placed the board game to be played that day on the table (in its box) before free play. At the beginning of free play, the experimenter brought each dyad over to the table to play the game. The order of the games was rotated throughout the sessions, and the children participated in one session per day. Across the experimental conditions, the experimenter provided prompts, praise, and negative statements. In baseline, the experimenter prompts consisted of general prompts (e.g., "Remember to sit in your seat.") when the children engaged in inappropriate behavior. In game training, the experimenter delivered game

specific prompts systematically to teach the games and the general prompts as well when engaging in inappropriate behavior. In post-game training, the experimenter provided general prompts as baseline. In addition, the experimenter made positive statements (e.g., "great") and negative statements (e.g., "don't throw game pieces) throughout the sessions.

Baseline During baseline, the children were seated at a child-size table. The board game to be played was in the box in front of them. The experimenter gave general directions such as "This is the game, *Spotś Play Day*. I would like you to play the game with your partner. Remember to take turns and share. Remember to stay seated until you are finished playing and tell me when you are finished." The children were then told that they could start playing the game. The experimenter observed game play without giving specific prompts on how to play the game; however, she gave general prompts when the children engaged in inappropriate behavior.

Game Skills Training At the beginning of free play, the experimenter brought each dyad to the table to play the game. The experimenter asked the target child and the peer partner to sit at the table with her. The game to be played that day was on the table. The experimenter introduced the game and told the children that they were going to learn how to play the game. The children were then asked to watch carefully, and the experimenter then modeled (with verbal descriptions) each step of the game.

For example, for "Snail's Pace Race," the experimenter modeled the step and said, "This is the first step. Open the box, take out the board, the snails, and the two dice." Then the experimenter had the target child imitate this step, followed by their partner with prompts and modeling as needed. The experimenter modeled the step and said, "This is the second step. Put the snails on the board on the color that matches the snail." The experimenter then had the target child imitate this step followed by the partner. The experimenter subsequently modeled the next step and said, "The third step is rolling the dice." The experimenter again had the target child do it, followed by his partner. Again, the experimenter modeled the step and said, "This is the fourth step. Check the colors on the dice (red and green, or red and red, and so on)." Each child imitated that step. Then the experimenter modeled the next step and said, "The fifth step is to move the snails that matched the colors you rolled on the dice." Each child completed that step. The experimenter modeled the next step and said, "The sixth step is to pass the dice to the next player." Each child did that step. The game then continued with the experimenter modeling steps three through six (passing the dice), and the target child and then their partner imitating the steps. This procedure continued until the end of the session. This process was also used for game 2 and game 3.

After playing the game three times following the above procedure, the experimenter asked the target child and his partner to tell her the steps of the game and then play the game. The experimenter then observed the children for independent performance of the steps. The experimenter also observed for incorrect, no response, or refused behaviors. One training session was conducted per day for each target child and his partner during this condition. Training of each game continued until the children were able to complete at least 80 % of the steps in a game without prompts.

A least to most hierarchy of corrective prompting was used. These prompts included (a) an indirect verbal prompt (for example, "What are you supposed to do?" or "Where are you supposed to move your piece?"), (b) a direct verbal prompt (for example, "put your piece on the yellow space"), (c) a gestural prompt or model (for example, pointing to the space), and (d) a physical prompt (for example, the experimenter places her hand on the child's and together they select the playing piece and move it to the colored space). For each step, the experimenter presented the material and waited 5 s for a response. If no response occurred or an error occurred, the prompts from the least to most intrusive were provided. The trial ended when the child responded correctly to any level of prompts and praise statements were given.

Post-game training Post-training sessions began once criterion was met for the training phase. The post-training condition was identical to baseline. Children were asked to play one of the trained board games. The experimenter gave a general direction saying, "Today I want you to play *the Richard Scarry game*." The children were then observed to see if they set up the game, interacted, followed the appropriate steps remaining game-related on-task while playing the assigned game. Identical to the baseline condition, general prompts were given when the children engage in inappropriate behavior; however, specific prompts on how to play the game were not provided.

Results

Data on the dependent variables across all conditions are presented for independent completion of board game steps and game-related on-task behavior. In addition, experimenter prompts and social validity from the participants and the children's classroom teacher are presented.

Independent Completion of Board Game Steps

Data on the participants' independent completion of board game steps were collected for each child in baseline, game training, and post-game training. The percentage of steps completed independently for each target child and his partner during each session is presented in Fig. 1.

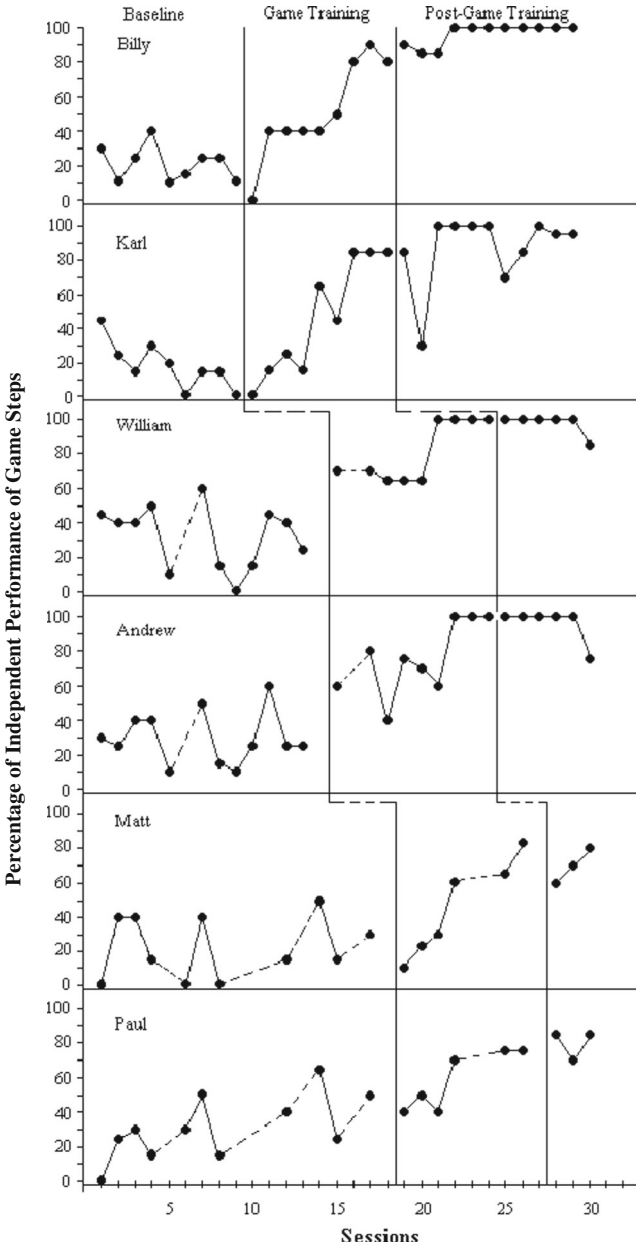

Fig. 1 Percentage of independent board game steps completed by target children, Billy, William, and Matt, and their peer partners

During baseline, the participants' level of independent completion of board game steps was low. The mean percentage of independent completion of board game steps for Billy, William, and Matt was 21.1 % (10–40 %), 32 % (0–60 %), and 22.2 % (0–50 %), respectively. All peer partners also had low percentages of independent completion of board game steps. The mean percentage of independent completion of board game steps for Karl, Andrew, and Paul was 18.3 % (0–45 %), 29.5 % (10–60 %), and 31.3 % (0–65 %), respectively.

During game training, the independent completion of board game steps increased for all participants. The mean percentage of independent completion of board game steps for Billy, William, and Matt was 51.1 % (0–90 %), 81.6 % (65–100 %), and 46.6 % (15–85 %), respectively. Their peers demonstrated increased independent completion of board games steps as well: Karl=46.6 % (15–85 %.), Andrew=76.1 % (40–100 %), and Paul=58.3 % (40–75 %).

During post-game training, all participants' independent completion of board game steps continued to increase: Billy=96.3 % (85–100 %), William=97.5 % (85–100 %), and Matt=70 % (60–80 %). The peers' completion of independent completion of board game steps increased more during this condition: Karl=85.4 % (30–100 %), Andrew=97.5 % (85–100 %), and Paul=80 % (70–85 %).

Game-Related On-Task Behavior

Table 2 depicts the mean percentage and range of game-related on-task behavior for the target children and their peers. During baseline, the mean percentage of game-related on-task behavior was 41.2 % (12.5–87.5 %), 56.2 % (13.5–94.1 %), and 58 % (20–87.5 %) for Billy, William, and Matt, respectively. The mean percentage of intervals of game-related on-task behavior for Karl, Andrew, and Paul was 39.1 % (12.5–68.2 %), 52 % (10–88.2 %), and 66.8 % (32.5–84.2 %), respectively. During game training, all target children and peer partners had high levels of game-related on-task behavior. The mean percentage of intervals of game-related on-task behavior for Billy, William, and Matt was 90.8 % (80–100 %), 92.2 % (60–100 %), and 100 %, respectively. The mean percentage of intervals of game-related on-task behavior for peers, Karl, Andrew, and Paul was 89.7 % (75.5–97.5 %), 91.6 % (77.5–100 %), and 95 % (85–100 %), respectively.

During post-game training, all children continued to show high levels of game-related on-task behavior with some variability. There were slight increases and decreases in mean percentage and range compared to the training session. The mean and range of observed intervals of game-related on-task behavior for Billy, William, and Matt was 88.6 % (62.5–100 %), 92.6 % (87.5–96.6 %), and 94.3 % (93.3–95 %). The mean and range of game-related on-task behavior for the

Table 2 Mean and range of all children's percentage of game-related on-task behavior

	Baseline		Game training		Post-game training	
	Mean	Range	Mean	Range	Mean	Range
Billy	41.2	12.5–60	90.8	80–100	88.6	62.5–100
William	56.2	13.5–94.1	92.2	60–100	92.6	87.5–96.6
Matt	58	20–87.5	100	–	94.3	93.3–95
Karl	39.1	12.5–68.9	89.7	75.5–97.5	89.3	60–100
Andrew	52	10–88.2	91.6	77.5–100	92	87.5–94.8
Paul	66.8	32.5–84.2	95	85–100	88	80–97.4

peers, Karl, Andrew, and Paul was 89.3 % (60–100 %), 92 % (87.5–94.8 %), and 88 % (80–97.4 %), respectively.

Experimenter Behaviors

Observational data on the experimenter's behaviors including prompts, praise, and negative statements were collected to ensure that the experimenter accurately and consistently implemented the intervention with each child. The experimenter delivered prompts across baseline (general prompts only when engaging inappropriate behavior), training (specific prompts for game steps and general prompts when engaging inappropriate behavior), and post-game training (general prompts only when engaging inappropriate behavior) to each target child and his partner (Table 3).

During baseline, the mean number of experimenter's general prompts to the target children, Billy, William, and Matt, was 6.44 (3–11), 4.16 (1–7), and 4.18 (1–10), respectively, and to the peers, Karl, Andrew, and Paul, was 6.88 (1–14), 3.91(0–8), and 5.45 (2–12), respectively.

Table 3 Mean and range of teacher behaviors for target children, Billy, William, and Matt, and their peer partners

	Baseline		Game training		Post-game training	
	Mean	Range	Mean	Range	Mean	Range
Billy						
Prompts	6.44	3–11	17.2	8–25	9.72	3–14
Praise	0	0	3	0–8	1.9	0–8
Negatives	0	0	.33	0–1	1	0–6
William						
Prompts	4.16	1–7	11.5	3–19	4	0–7
Praise	0	0	4.55	0–9	1.16	0–2
Negatives	0	0	.77	0–7	0	0
Matt						
Prompts	4.18	1–10	24.1	18–28	14	9–18
Praise	0	0	8	3–15	2.6	1–6
Negatives	0	0	0	0	0	0
Karl						
Prompts	6.88	1–14	23.2	14–31	10.54	4–24
Praise	0	0	3.88	0–12	2	0–6
Negatives	0	0	.55	0–2	1.72	0–7
Andrew						
Prompts	3.91	0–18	12.4	3–19	4.16	4–10
Praise	0	0	6.7	1–11	1.83	0–5
Negatives	0	0	.44	0–4	0	0
Paul						
Prompts	5.45	2–12	21.1	11–26	8	3–12
Praise	0	0	6.5	2–13	2.3	1–13
Negatives	0	0	0	0	0	0

During game training, the mean number of experimenter's general and specific prompts for the game steps for the target children, Billy, William, and Matt, was 17.2 (8–25), 11.5 (3–19), and 24.1 (18–29) and for the peers, Karl, Andrew, and Paul, was 23.2 (14–31), 12.4 (3–19), and 21.1(11–26), respectively.

During post-game training, the mean numbers of experimenter's general prompts for the target children, Billy, William, and Matt, was 9.72 (3–14), 4 (0–7), and 14 (9–18) and for the peers, Karl, Andrew, and Paul, was 10.54 (4–24), 4.16 (4–10), and 8 (3–12) .

The experimenter's general prompts maintained at the similar levels during baseline and post-training sessions or increased for Billy, Matt, and Karl during the post-training sessions. No experimenter praise and negative statements for all children were observed during baseline, and more praise was given during teaching the games. During post-training, less praise was provided and no negative statements were observed.

Social Validity

Following the completion of the study, each of the children was asked to name the game(s) that they liked the most and why. In addition, the classroom teacher was asked to answer questions about her opinion of the study and the intervention.

Children's Responses Billy, William, Karl, and Andrew reported a preference for "The Richard Scarry: Busytown Board Game," stating that they liked getting the gold bug on the dice. Billy and William also named "Snail's Pace Race" as another favorite game because they got to move snails and make them race. Matt and Paul reporting a preference for "Snail's Pace Race" and said, "it's fun" and "you can move the snails you like." Paul also named "Spot's Play Day" as another game he preferred playing, noting, "I like the alligator."

Teacher's Responses With regard to the teacher's opinion of the study we asked, "What did you like the best regarding the intervention and/or procedures?" the teacher responded, "I thought that showing each of the steps to the children helped them to pick up the game quickly. I also thought that having them tell you how to play was a great language idea. The second question for the teacher was "What was challenging about the study?" Her response was, "The most challenging parts were getting your schedule and my schedule to match in order to fit in your game time.

Discussion

The results of this study indicate that teaching board game steps using a least to most prompting procedure resulted in an increase in the correct performance of the board game steps

and game-related on-task behavior for all of the target children and peer partners. Following training, all target children and the peer partners were able to maintain high levels of task performance, steps completed, and game-related on-task behavior. Social validity measurements indicated that the children enjoyed playing the games and were able to name specific aspects of the game they enjoyed. In addition, the classroom teacher reported that the intervention was helpful in teaching the children to play games.

This study supports previous research suggesting a least to most prompting procedure implemented for each step of a task is an effective means of teaching game play skills (Arntzen et al. 2003; Deming 1999; Oppenheim-Leaf et al. 2012). In the present study, after a task analysis of each board game was created, the participants were taught the steps of the game using least to most prompting. The results of the study also suggest that direct and systematic play skill instruction is effective for improving the play skills of young children with special needs (Boutot et al. 2005; Malone and Langone 1999). Further, as the children engage appropriately in game play with their peers, they may also increase appropriate behavior and cooperative play as documented by other studies (Baker 2000; McConnell 2002; MacDonald et al. 2009). This study extends the previous literature as the board games were directly and simultaneously taught to children with special needs and their typically developing peers. In addition, their acquired games skills were assessed during free play in the context of the play with their peers in their children's classroom. In the previous studies, children were taught games with adults (Deming 1999) or trained and assessed with adults (Oppenheim-Leaf et al. 2012). Although the typical curriculum in preschools includes a variety of play activities providing opportunities for young children to learn through interactions with play materials and peers, interventions on directly teaching play skills, in particular, the playing of games, have received little attention. In addition, this study assessed procedural integrity and social validity unlike most other play skills intervention studies (Jung and Sainato 2013).

There has been little research on teaching game skills, in general, and board game skills, in particular. This study directly taught and measured board game skills providing children opportunities to develop a play repertoire with peers in a natural context. Acquisition of these types of game skills could be a critical tool in a child's repertoire needed to engage with peers in early childhood settings. Further, teaching of board game skills may encourage young children with special needs to engage in appropriate behavior and build positive relationships with peers (Baker 2000; MacDonald et al. 2009; Van Berckelaer-Onnes 2003).

Although this study supports and extends the previous literature on play skills, there are some limitations. First, we were unable to determine whether the children would have generalized their game skills to an untrained game. Second, the experimenter was the primary observer. Third, experimenter's general prompts for some children increased from baseline to post-game training sessions. For example, some children preferred certain games to others and often tried to take extra turns in some games. This resulted in more general prompts from the experimenter to continue playing. Lastly, during training sessions, the data on the experimenter's general prompts and specific prompts related to the game skills were provided without separate analysis.

This study provides several implications for practice. Teaching play skills in the natural environment with peers may enhance children's interactions with peers as well as promote maintenance and generalization of play skills (Jung and Sainato 2013; Liber et al. 2008). Embedding instruction of play skills into daily routines during naturally occurring activities may facilitate the spontaneous play of young children with special needs in the child's natural environment (Lifter et al. 2012). Teaching game play skills using a least to most prompting procedure was effectively incorporated into daily activities in a classroom setting. For example, board game skills instruction could be embedded into free choice play or center time in inclusive preschool classrooms.

To implement board game instruction, teachers may need to identify games that match the skills and interests of children with and without special needs and have similar attributes. It is also important to observe game play of typically developing children such as game steps, nonverbal play actions, verbal

Table 4 Guidelines for game skills instruction

1. Identify games that match the skills and interests of children with and without special needs and have similar attributes
2. Observe play of typically developing children
3. Identify the current skills and possible reinforcers for children. Develop a menu of reinforcers from interviews of caregivers as well as observations of children
4. Task analyze games steps/sequences. Be aware of prerequisite skills. Make sure children understand basic game vocabulary (e.g., "take a turn or wait for your turn")
5. Teach games with multiple play partners using a systematic prompting strategy
6. Allow children to choose a game to play while switching play partners after instruction
7. Provide a contingent reinforcement (e.g., a winner can choose a next game)
8. Introduce new games that have similar attributes as the taught games

statements, and other game-related interaction. Then, the current skills of a child with special needs should be assessed. The information on the child's play/game skills and preferences could be obtained from parents as well as direct observations of the child's play in the classroom. Each game should be task analyzed into a sequence of steps based on the observations and assessments. In addition to game steps, game-related nonverbal and verbal play actions could be planned for instruction. If needed, the game may be modified by simplifying the rules or steps of the game. In order to motivate and maintain interactive play between children with and without special needs, it is important to select and modify the games based on the child's interests as well (Baker 2000; Baker et al. 1998). A systematic prompting strategy should be employed while teaching the game in addition to rotating multiple play partners. As children master the game, a second game could be taught. The same procedure is implemented as each game is introduced. After initial instruction, children may be allowed to choose a preferred game to play. In this study, some children required the experimenter's general prompts due to the inappropriate behavior resulting from their preferences for some games over others. Allowing children to choose a game to play or providing more games requiring similar skills may promote the generalization of children's game skills as well as help to maintain the children's interest. Additionally, providing contingent reinforcement (e.g., a winner can choose a next game) may help motivate children's play as well. As children became fluent, new games having similar attributes as the taught games could be introduced to facilitate generalization of game skills. Table 4 provides a list of guidelines for implementing board game instruction in inclusive classrooms.

Future research needs to examine a variety of effective instructional strategies for teaching game skills that are feasible for use in classroom settings as well as interesting for children. Further research should also investigate strategies needed to maintain and generalize the game play skills. Use of multiple exemplars (i.e., different games) or multiple peers as play partners may reduce the likelihood of children becoming bored and increase the probability of play skills generalizing to multiple play partners and untrained games.

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