Effects of Class-Wide Self-Monitoring on On-Task Behaviors of Preschoolers with Developmental Disabilities

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Abstract: The effects of class-wide self-monitoring on the on-task behaviors of preschoolers with developmental disabilities were determined. Also examined were whether the on-task behaviors of preschoolers with developmental disabilities had approximated the level of typically developing peers at the end of intervention, and classroom teachers and typically developing peers were interviewed on their opinions of the intervention. Four preschool children with developmental disabilities were involved in the research. In order to evaluate class-wide self-monitoring, a multiple-baseline design over the participants was used and replicated with three activities in the study. Class-wide self-monitoring was found to be effective in increasing the on-task behaviors of preschoolers with developmental disabilities, and their average on-task behaviors nearly approximated the average of the on-task behaviors of typically developing peers. Interviews were conducted to determine whether social validity indicated that the typically developing children and teachers expressed positive opinions of class-wide self-monitoring.

On-task behavior may be described as children direct their attention to activities that are appropriate for their situation and level of development and engage in behaviors that correspond to those activities (Rock, 2005; Stahr, Cushing, Lane, & Fox, 2006; Wolfe, Heron, & Goddard, 2000). On-task behavior is important in terms of enabling learning (McWilliam, 1991). Preschool teachers have stated that the on-task behaviors of children with developmental disabilities (DD) are unsatisfactory for many reasons, such as their difficulties with learning, cognitive and physical incompetence, or behavioral problems; therefore, these children need more individual time and attention from teachers than do their typically developing peers (Center & Ward, 1987). Consequently, classroom management can become difficult, activities in the classroom can be interrupted, and certain objectives might not be attained (Gok & Erbas, 2011; Padeliadou & Lampropoulou, 1997). This indicates that the lack of on-task behaviors by children with DD negatively affects classroom teachers, typically developing peers, and especially the child with DD. For this reason, increasing the on-task behaviors of children with DD would be beneficial.

To increase on-task behaviors among children with DD, traditional behavior modification techniques might be useful; however, these techniques are criticized because they are dependent on the presence of external stimuli (Otten, 2003). Furthermore, in educational settings, it is impossible for teachers to always prompt children or to reinforce them continuously (Agran, King-Sears, Wehmeyer, & Copeland, 2003; Yucesoy Ozkan, 2009). Accordingly, children with DD need to learn to control their own behaviors so as to take part in their general education setting along with other children (Bigge, Stump, Spagna, & Silberman, 1999; Koegel, Harrower, & Koegel, 1999). In order to fulfill this require-
ment, self-management strategies that have been developed to enable individuals to control their own behaviors can be used (Baer, Fowler, & Carden-Smith, 1984; Dougal & Brady, 1998; Yucesoy Ozkan, 2009; Ozkan & Sonmez, 2011).

Self-management is the process used by individuals to control their own behavior (Browder & Shapiro, 1985), and self-management strategies are used in this process (Yucesoy Ozkan, 2009). Self-management strategies include antecedent-cue regulation/self-prompting, self-instruction, self-monitoring, self-evaluation, and self-reinforcement (Agran et al., 2003). Self-monitoring (SM) refers to an individual determining whether he or she performed a target behavior (Agran et al., 2003). In children with DD, SM has been used effectively to decrease inappropriate behaviors (Mancia, Tankersley, Kamps, Kravis, & Parrett, 2000; Sutherland & Snyder, 2007), increase appropriate behaviors (Harris, Friedlander, Saddler, Frizzelle, & Graham, 2005; Stahr et al., 2006), and to improve academic performance (Shimabukuuro, Anne-Prater, Jenkins, & Edelen-Smith, 1999; Yucesoy Ozkan, 2009).

A number of studies have analyzed the effects of SM, but this research has been frequently carried out with elementary school children, adolescents, or adults (Algozzine, Browder, Karvonen, Test, & Wood, 2001; Ozkan & Sonmez, 2011). However, self-management strategies can be used by children with DD in early childhood, and further research on this subject is needed (Brown & Cohen, 1996; Erwin & Brown, 2000; Lee, Simpson, & Shogren, 2007; Ozkan & Sonmez, 2011; Palmer & Wehmeyer, 2003; Wehmeyer & Palmer, 2000). Gaining self-management behaviors at an early age is especially important because teaching individuals how to control their own behaviors in adulthood is quite difficult (Yucesoy Ozkan, 2009). Therefore, the most reasonable time to teach self-management skills is during the preschool years.

In most of the research concerning SM, the interventions have been carried out in different settings such as a resource room, therapy room, or an empty classroom (Coyle & Cole, 2004; Ozkan & Sonmez, 2011; Wolfe et al., 2000). However, children also need to learn self-management in their usual educational settings (Hughes et al., 2002; Yucesoy Ozkan, 2009). Considering that the effects of interventions that are carried out in different settings might not carry over to the general educational setting (Mathes & Bender, 1997), class-wide interventions for children with DD are needed in their regular classroom settings with typically developing peers (Hughes et al., 2002; Kern & Dunlap, 1994). Additionally, interventions that require teachers to pay individual attention to a child take extra time and knowledge (deBettencourt, 1999); therefore, class-wide interventions that can be used for all the children in a classroom are preferred (Harlacher, Roberts, & Merrel, 2006). However, only a limited number of studies analyzing class-wide self-monitoring (CWSM) in preschool children are available (Miller, Strain, Boyd, Jarzynka, & McFetridge, 1999).

Against this background, the present study examined the effects of CWSM on the on-task behaviors of preschoolers with DD. Answers were sought to the following questions: (a) is CWSM effective in increasing on-task behaviors of preschoolers with DD, and will the emerging change be maintained, (b) will the on-task behaviors of preschoolers with DD reach the approximate level of typically developing peers at the end of the intervention, and (c) what are teachers’ and typically developing children’s opinions of CWSM? Additionally, the levels of SM use by the children with DD were examined.

Method

Participants

Children. Four girls with DD (Irem, Eda, Aylin, and Muge), each of whom attends a different preschool class in Canakkale in Turkey, participated in the research. The girls’ ages ranged between 66 and 76 months. The following prerequisites were required: (a) no diagnosed auditory and/or visual disability; (b) ability to attend to activities for at least 5 min; (c) ability to respond appropriately to simple instructions such as take, watch, attach, listen, look, leave, etc.; and (d) ability to stick magnetic cards to and remove them from metal surfaces. Written permission was obtained from the girls’ families.

According to the reports prepared for each child by the Guidance Research Center, which
is responsible for providing educational diagnostics for children in need of special education in Turkey, each of these four children was diagnosed with intellectual disability. As intelligence tests are not given to small children ranging from 0 to 6 years of age in Turkey, the data related to children’s IQ scores cannot be provided. In order to obtain standardized test results concerning their developmental disability, the Denver II Developmental Screening Test [DST] standardized for Turkish children (Yalaz, Anlar, & Bayoglu, 2009) was administered and on the basis of the test results, the percentage of developmental delay (PDD) was estimated. The children had not previously received systematic instruction in SM. The teachers of the children stated that the on-task behaviors of these children were below the levels of the typical developing peers in their classes.

Irem is a 66-month-old girl with intellectual disability. Irem has been attending the preschool class 5 full-days a week. She is also receiving supportive special education for 90 min a week for 22 months. Irem’s PDD is 60.3%. While Irem’s speech of 40% is perceived by her parents and teachers, her speech is not understood by foreigners. She can point to objects when they are named, but she needs to be prompted to be able to say the name of the objects. While she can match objects by their color and shapes, she has difficulty expressing their key features such as size, shape, and color, etc. She needs adult guidance in order to participate in group activities.

Eda is a 70-month-old girl with Down’s syndrome and mild intellectual disability. Eda has been attending the preschool education class 5 half-days a week. She is also receiving supportive special education for 90 min a week for 22 months. Eda’s PDD is 33.8%. She can answer questions related to the things she has previously heard when a verbal prompt is provided and 60% of her speech is understood by parents, teachers, and foreigners. From among objects frequently encountered in daily life, she points to those that are named, but she needs verbal clues in order to say the name of an object shown. When a verbal prompt is given, she expresses the key features of objects such as color, shape, and size. She needs adult guidance in order to maintain participation in group activities.

Aylin is a 76-month-old girl with mild intellectual disability. Aylin has been attending the preschool education class 5 full-days a week and benefiting from special support education services. Aylin’s PDD is 13.2%. From among pictures of objects used in daily life, she points to those that are named, and she can say the names of the ones shown. She expresses the key features of properties, such as size and color; however, she needs clues to be able to say their features such as shape and number. When a verbal prompt is given, she answers questions related to what she has heard. She participates in group activities by herself, but she needs adult guidance in order to complete activities.

Muge is a 69-month-old girl with moderate intellectual disability and attention deficit hyperactivity disorder (ADHD). Muge has been attending the preschool education class 5 half-days a week and she is receiving supportive special education for 90 min a week for 12 months. According to Denver II DST results, her PDD is 62.2%. From among objects frequently encountered in daily life, she points to those that are named, but she needs verbal clues in order to say the name of an object shown. When a verbal prompt is given, she expresses the key features of objects such as color, shape, and size. She needs adult guidance in order to maintain participation in group activities.

A total of 89 typically developing children participated in CWSM, including 27 children from Irem’s classroom, 25 from Eda’s classroom, 25 from Muge’s classroom, and 12 from Aylin’s classroom. The children in Irem’s and Aylin’s classes ranged in age between 68 and 72 months. The children in Eda’s and Muge’s classrooms ranged in age between 52 and 60 months. None of the children other than Irem, Eda, Aylin, and Muge had any diagnosis of a physical or intellectual disability. Turkish language which is all the children’s native language, is spoken in these classrooms.

Staff. The first author, a doctoral student in special education, carried out the CWSM. The first author has a bachelor’s degree in preschool education and special education and previously worked as preschool teacher and special education teacher. A student attending the undergraduate program in the department of preschool education acted as
an independent observer and collected the reliability data. Two interviewers who have doctoral degrees in educational sciences interviewed the classroom teachers to determine social validity.

Settings and Materials

The research was carried out in four different preschool classrooms in Canakkale in Turkey. In these classrooms, tables and chairs that are suitable for use by preschool children, bookcases, cupboards in different sizes, and educational toys are available. In all the sessions, the classroom teacher, researcher, and two research assistants were present in the classroom. During the activities, the research assistants assisted with duties such as providing children with materials and collecting them. In the CWSM classrooms, the intervention was carried out 3 days a week, with activities lasting an average of 60 minutes a day. Baseline data was collected daily. Materials used during CWSM included (a) picture cards on which on-task and off-task behaviors are illustrated, (b) metal record files on which the picture cards are fastened, (c) magnetic smiley face cards, (d) computer, (e) loudspeaker, (f) projector, and (g) camera and two video cameras.

Dependent Variables

On-task behavior. This was described as the child directing attention to the tasks during the activity and displaying behaviors appropriate for these tasks. Since behaviors corresponding to the description of on-task behavior may vary according to each task, on-task behaviors and off-task behaviors for every task are shown in Table 1. Among these behaviors listed, three behaviors that the children could easily distinguish and carry out during the relevant task were selected. These behaviors were listed on the data sheet used by the children over the course of the study and are indicated by the asterisk in Table 1. All the behaviors which remain outside these behaviors (to wait while doing nothing, to leave the work area, etc.) have been regarded as off-task behaviors.

Self-monitoring. This was described as the child determines whether he or she performs on task behaviors or not, and records them. Task analysis of self-monitoring is shown in Table 2.

Data Collection

Data concerning on-task behavior and SM use were collected. To determine on-task level, two types of response, (a) on-task behavior and (b) off-task behavior, were identified and the whole interval recording was used in data collection. The observation period was divided into intervals of 10 s. Observation was made for 8 s, and in the remaining 2 s, the child’s behavior was coded. If the child’s behavior was on-task for the entire observation period of 8 s, a plus sign was entered on the data sheet; if not, a minus sign was entered. Data were summarized, and percentage of on-task behavior was calculated for each student.

Data on SM use were collected with task-analysis recording. Regarding SM, responses were identified as either correct or incorrect. Correct responses were indicated by entering a plus and incorrect responses or no responses were indicated by entering a minus on the data sheet. Data were summarized, and percentage of SM was calculated for each student.

Experimental Design

A multiple-baseline design across participants was used and replicated with three different activities. Data were analyzed by visual analysis and a percentage of data exceeding the mean (PEM) to reveal the effectiveness of CWSM (Ma, 2006, 2009). PEM was calculated with the formula below (Ma, 2006, 2009): PEM = the number of data points exceeding the baseline/the number of total data points at the intervention stage.

General Procedure

CWSM was carried out in the four preschool classes in three separate activities, Turkish language arts, early literacy, and game activities, by the first researcher. In the Turkish language arts activity, all children sat in chairs or on the floor in a semi-circle; the researcher sat where all the children could easily see her and read a story from a book. Each Turkish language art activity which was fulfilled lasted for...
about 10 minutes. For the activities related to early literacy, line tracing on an A4-sized paper with black and white printing and painting were used. First, the children were instructed on line tracing. After the completion of lines, the activity was continued with instructions for painting a book. Each early literacy activity which was fulfilled lasted for about 7 minutes. In game activities, the children were positioned in the classroom as required for the game chosen. After the researcher described the rules of game and a trial had been performed, the game was started. Each game activity lasted for about 10 minutes. All activities throughout the baseline, training, and maintenance sessions, the children were given opportunities to practice all of the on-task behaviors listed on the data sheet. Following each activity, the children determined whether their behavior had been on-task by using SM.

**Baseline Sessions**

In baseline sessions, the researcher first gained the children’s attention to the activity (e.g., “Let’s read a story now!”) and verbally reinforced behaviors of directing their atten-

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**TABLE 1**

**Behaviors Regarded as On-Task and Off-Task**

<table>
<thead>
<tr>
<th>Turkish Language Arts Activity</th>
<th>Off-Task Behavior</th>
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</thead>
<tbody>
<tr>
<td><strong>On-Task Behavior</strong></td>
<td><strong>Off-Task Behavior</strong></td>
</tr>
<tr>
<td>Looking at the teacher/book*</td>
<td>Walking around in the classroom</td>
</tr>
<tr>
<td>Asking for the right to speak by raising hand*</td>
<td>Crying</td>
</tr>
<tr>
<td>Sitting down in her seat*</td>
<td>Screaming</td>
</tr>
<tr>
<td>Listening in by facing the people who are speaking</td>
<td>Looking around pointlessly</td>
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<table>
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<tr>
<th>Early Literacy Activities</th>
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<tbody>
<tr>
<td><strong>On-Task Behavior</strong></td>
</tr>
<tr>
<td>Looking at the paper in front of her</td>
</tr>
<tr>
<td>Line drawing*</td>
</tr>
<tr>
<td>Painting*</td>
</tr>
<tr>
<td>Pointing to the object asked</td>
</tr>
<tr>
<td>Taking materials such as paint, pencil, eraser, etc.</td>
</tr>
<tr>
<td>Request for help from the teacher/peer</td>
</tr>
<tr>
<td>Displaying the activity she has performed</td>
</tr>
<tr>
<td>Listening to the teacher</td>
</tr>
<tr>
<td>Looking at her peer’s paper</td>
</tr>
<tr>
<td>Sitting down in her seat during the activity*</td>
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<tr>
<th>Game Activities</th>
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<tbody>
<tr>
<td><strong>On-Task Behavior</strong></td>
</tr>
<tr>
<td>Staying in her place within the playground*</td>
</tr>
<tr>
<td>Performing the required moves*</td>
</tr>
<tr>
<td>Waiting her turn*</td>
</tr>
<tr>
<td>Looking at the teacher while the game is being described</td>
</tr>
<tr>
<td>Ask/remind game rules to her friends</td>
</tr>
</tbody>
</table>

* Behaviors included in the form used by the children when self-monitoring.
tion, such as looking at teacher/book or preparing for listening (e.g., “Wonderful!”). The activity began when all the children were ready and lasted from 7 to 10 min. After the completion of the activity, the researcher approached each child individually with the data sheet and the box containing magnetic smiley cards, and she provided the target stimulus for using SM (e.g., “Record your on-task behavior”). In baseline sessions, the researcher did not comment on correct or incorrect responses. However, in the event that the children asked what these forms do or how to use these forms, it had been stated that “If you know, you can do; if you do not know, you can leave them blank, do not worry. I’ll teach it to you.” After each child had the opportunity to use SM, the activity was concluded by thanking all the children for their participation and cooperation.

Training Sessions (CWSM)

After baseline sessions, the training sessions (CWSM) proceeded in the first child’s classroom. Three activities a day were used in the training sessions. CWSM was carried out using a nine-step instructional process that was based on an instructional process recommended by King-Sears (1999). All the students in the class participated in the training sessions. While teaching, there has not been any individualization for DD students.

In training sessions, the researcher first secured the children’s attention (e.g., “Are you ready to study with me?”), and she then verbally reinforced the behavior of directing their attention (e.g., “You’re doing great!”). In the first step, on-task behavior was defined (e.g., “On-task behavior means only performing the tasks needed at the moment and not being occupied with anything else”). In the second step, the researcher showed pictures illustrating on-task and off-task behavior, using a MS Office PowerPoint® presentation displayed by a projection device (e.g., “Like in these pictures, . . . . are on-task behavior; but, like in the pictures, . . . . are off-task behavior”). In the third step, the author explained the advantages of on-task behavior (e.g., “If we behave correctly by directing our attention to the activities, we will learn more in school”), and she explained the allowable criterion for on-task behavior in the fourth step (e.g., “In order to prove that your behavior is on-task, you must have gained three smiley faces”). In the fifth step, tools and materials to be used in the SM procedure were introduced (e.g., “These are your forms. Here, there are pictures showing correct behaviors. If you have behaved correctly, you can attach one of the smiley faces next to the picture; but if not, you cannot stick a smiley face on”). In the sixth step, the advantages of SM were clarified (e.g., “If you decide your behavior was on-task and you stick the smiley faces on, you can see that you completed the activity well by seeing the smiley faces you have attached”). In the seventh step, the children watched a video showing children registering whether they had displayed on-task behavior by using the SM procedure. A child who exhibits all of the

<table>
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<th>TABLE 2</th>
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<td>Task Analysis for Self-Monitoring</td>
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**Steps for the Task of Using Self-Monitoring**

1. She takes the registration form given to her.
2. She states whether she has performed the behavior that is displayed on the first picture or not.
3. If she has displayed the behavior, she takes the magnetic smiley card that is in the container and attaches it to the metal registration box; if not, she leaves it blank.
4. She states whether she has performed the behavior that is displayed on the second picture.
5. If she has displayed the behavior, she takes the magnetic smiley card that is in the container and attaches it to the metal registration box; if not, she leaves it blank.
6. She states whether she has performed the behavior that is displayed on the third picture or not.
7. If she has displayed the behavior, she takes the magnetic smiley card that is in the container and attaches it on the metal registration box; if not so, she leaves blank.
8. She leaves/gives the registration form to the practitioner.
on-task behavior and a child who has some off-task behaviors are included in this video. While a child who exhibits all of the on-task behavior pastes the smiley face magnet for all of the behaviors in the form, the other child indicates the behavior that he/she has not fulfilled (e.g., “I did not sit down in my position”) and he/she is passing the next step without pasting the smiley face magnet to the related step. In the eighth step, a similar activity that was demonstrated in the video was carried out (e.g., “Now, I will read a story for you. You too, listen to me by displaying the correct behaviors you are seeing on these pictures”). In the last step, the children recorded their on-task behaviors by using SM. This step was carried out as described in the baseline phase; however, in the training session, children’s correct use of SM was verbally affirmed. If response was incorrect, the behavior was interrupted, verbal prompt was given, and the response was recorded as incorrect.

Training sessions were continued until the child with DD met the criterion for on-task behavior, which was at least a 50% increase over the average level of their on-task behavior in baseline sessions in three successive sessions. Furthermore, so as to determine whether the change in on-task behavior resulted from SM, it was expected that children would also use SM with at least 85% accuracy.

Maintenance Sessions

After the criterion had been met by one child with DD in training sessions, the CWSM intervention was begun in the second classroom. While training sessions were progressing in the second classroom, maintenance data were gathered in the first classroom once a week. Maintenance sessions were conducted in the same way as the baseline session.

Social Validity

In order to evaluate social validity, data were collected by means of social comparison and subjective evaluation. For social comparison, five different preschool classes were chosen one year before the research was carried out. Without conducting any training, on-task behaviors of 15 typically developing children in these classrooms were determined. Moreover, data related to the levels of on-task behavior were collected from 22 randomly chosen children in the classrooms where CWSM was carried out so as to make a social comparison. To obtain subjective evaluations, 20 children and four teachers from the classrooms in which CWSM was conducted were interviewed. The children were asked what they thought about CWSM and whether they liked the procedure. The teachers were asked about the role of on-task behavior in preschool education and what they thought about CWSM and the results obtained at the end of the intervention.

Reliability

Reliability data were collected by an independent observer using 30% of the all recordings. Inter-observer reliability was calculated with the following formula: Inter-observer reliability = (agreement/(agreement + disagreement) x 100 (Tekin-Iftar & Kircaali-Iftar, 2006). Inter-observer reliability of on-task behavior in baseline, training, and maintenance sessions was 94.6% (range = 93.7–95.3%) for Irem, 94.9% (range = 94.1–95.8%) for Eda, 97.6% (range = 95.1–99.1%) for Aylin, and 96.9% (range = 96.1–97.8%) for Muge. The inter-observer reliability for SM was 95.8% (range = 87.5–100%) for Irem and 100% for Eda, Aylin, and Muge. The analysis of consistency between the way the children with DD evaluated their own on-task behaviors and the evaluations by the researcher was also carried out using the formula given above (Tekin-Iftar & Kircaali-Iftar, 2006). The coefficient of consistency was calculated as 93.7% (range = 87.5–100%) for Eda and Muge and 100% for Irem and Aylin.

In baseline and maintenance sessions, procedural integrity data concerned (a) securing the children’s attention, (b) reinforcing the behavior of directing their attention, (c) carrying out the activity, (d) offering children the opportunity to use SM after the activity, (e) thanking children for their participation, and (f) completing the task. In baseline and maintenance sessions, procedural integrity was determined as 100% for all children and behaviors. In training sessions, procedural integrity data concerned (a) securing children’s attention, (b) reinforcing the behavior of directing their attention, (c) identifying the on-task behavior, (d) showing the behaviors that illus-
trated on-task and off-task behavior, (e) explaining the advantages of on-task behavior, (f) clarifying the criterion for on-task behavior, (g) presenting tools and materials to be used for SM, (h) explaining the advantages of SM, (i) showing the video images of on-task behavior and SM, (j) carrying out the activity, (k) offering the opportunity to use SM after the activity, (l) thanking children for their participation, and (m) completing the task. Procedural integrity was determined 100% for all the steps except explaining the advantages of SM (94.4%).

**Results**

Data concerning on-task behaviors of children with DD and the levels of their use of SM are shown in Figure 1, 2, and 3.

**On-task Behavior and SM**

For Turkish language arts activities, on-task behavior was 28% for Irem, 31% for Eda, 39% for Aylin, and 35% for Muge at baseline sessions; 62% for Irem, 44% for Eda, 74% for Aylin, and 72% for Muge in the training sessions; and 68% for Irem, 59% for Eda, and 90% for Aylin in the maintenance sessions. For the early literacy activities, on-task behavior was 45% for Irem, 31% for Eda, 44% for Aylin, and 30% for Muge at baseline sessions; 71% for Irem, 42% for Eda, 86% for Aylin, and 63% for Muge in the training sessions; and 72% for Irem, 57% for Eda, and 83% for Aylin in the maintenance sessions. For the game activities, on-task behavior was 37% for Irem, 55% for Eda, 92% for Aylin, and 63% for Muge at baseline sessions; 91% for Irem, 86% for Eda, and 96% for Muge in the training sessions; and 84% for Irem, 90% for Eda in the maintenance sessions. SM accuracy level was 62.5–100% for Irem, 75–100% for Eda, 87.5–100% for Aylin, and 50–75% for Muge.

For game activities, Aylin’s on-task behavior was 92% at baseline. The children continued to use CWSM during game activities as evidenced by Aylin’s high level of on-task behavior; however, data were not used as a basis on which the researchers decided to move to the next step of the intervention. In addition, as is seen in the figures, the study was brought to an end before intervention could be completed with Muge. This is because permission to carry out the research, which had been given by the Directorate of National Education, expired.

Results of the PEM calculation, which was carried out to determine the size of the functional relationship between CWSM and on-task behaviors of children with DD, showed an effect size in Turkish language arts and early literacy activities of 1.0 for Irem, Aylin, and Muge and .8 for Eda. This ratio was 1.0 for all the children in game activities.

**Social Validity**

**Social comparison.** Before CWSM, it was determined that on-task behaviors for Irem, Eda, Aylin, and Muge were lower than the levels of typically developing peers. Following CWSM, an increase occurred in the on-task behaviors of each of the four children with DD, and the difference between their levels and the levels of typically developing peers decreased significantly. We determined that following CWSM, the on-task behaviors of children with DD approximated the average on-task behaviors of their peers selected randomly from different classrooms.

In baseline sessions, the average on-task level in the Turkish Language activities, early literacy activities, and game activities was 36% for Irem, 41% for Eda, 58% for Aylin, and 42% for Muge. In the same activity, the average on-task level of typically developing children was 76% in Irem’s classmates, 79% in Eda’s classmates, 82% in Aylin’s classmates, and 77% in Muge’s classmates. In training sessions, the average on-task level in all activities was 74% for Irem and 87% for Irem’s classmates; 63% for Eda and 80% for Eda’s classmates; 89% for Aylin and 86% for Aylin’s classmates; and 77% for Muge and 90% for Muge’s classmates. In training sessions, the average on-task level in all activities was 86% for the children in the classes. SM was not performed.

**Subjective evaluation.** Typically developing children who were asked for their opinions about CWSM mentioned that they liked this instruction and found it entertaining and instructive. The children also stated that there was nothing they did not like or that disturbed them over the course of CWSM.
Teachers of the classrooms in which CWSM was carried out stated that they regarded on-task behavior as significant and functional behavior in preschool. Teachers commented that they thought CWSM was different and preferable to other techniques that they traditionally applied in their classrooms. Furthermore, they said that the intervention did not...
Figure 2. Percentage of On-task Behaviors and Level of SM for Irem, Eda, Aylin, and Muge in Early Literacy Activities.
have any unlikeable or disturbing aspects. The teachers also mentioned that the on-task behavior of the children with DD in their classrooms before the intervention was low, but
they were pleased with the marked increase in this behavior after CWSM.

**Discussion**

Results show that CWSM was effective in increasing the on-task behaviors of preschoolers with DD, and that the change was maintained after the intervention was completed. Social comparison results indicate that the average of on-task behaviors of children with DD approximated the averages of on-task behaviors of typically developing peers at the end of the intervention. Results of interviews show that the opinions expressed by the typically developing children and the teachers in the CWSM classrooms were positive.

These results are consistent with the findings of previous research (Amato-Zech, Hoff, & Doepke, 2006; Rock, 2005; Stahr et al., 2006; Wolfe et al., 2000). While our study differs from previous studies in the sense that on-task behaviors of preschoolers with DD were analyzed and SM instruction was provided class-wide, it is similar to another study that evaluated CWSM as an intervention to increase the on-task behavior of preschoolers (Miller et al., 1993). A significant difference of this research as compared with the previous studies is that it was carried out in preschool classrooms where education is inclusive; that is, children with disabilities were not educated in a separate setting (Amato-Zech et al., 2006; Rock, 2005; Stahr et al., 2006; Wolfe et al., 2000). From this perspective, CWSM may set a new example of the use of SM in preschools. Our findings related to the levels of SM use by children with DD are also consistent with research pointing out that children with DD can learn SM (Amato-Zech et al., 2006; Miller et al., 1993).

On the basis of our social comparison and objective evaluation findings, it can be said that CWSM has high social validity. Our social validity data are similar to the social comparison data of previous research (Koegel et al., 1999). The fact that our data were collected by means of social comparison is an important feature that distinguishes this study from others that were carried out for the purpose of analyzing the effects of SM on on-task behavior (Miller et al., 1993). Subjective evaluation showed that the opinions expressed by typically developing children in the preschool classes in which the research was carried out were positive. This finding is similar to the social validity findings obtained from the primary users in research analyzing the effects of SM on various behaviors (Harris et al., 2005; Sutherland & Snyder, 2007). Subjective evaluation findings also show that preschool teachers considered the objectives of this research to be significant, its method acceptable, and its results meaningful. This finding is consistent with research (Stahr et al., 2006) revealing that teachers’ opinions of SM are positive, but it differs from the previous studies in the sense that it reports teachers’ opinions about class-wide usage of SM, not its individual use, and it includes not only obtained results but also teachers’ views concerning the importance of the research objectives.

In addition to the strengths of this research, there are some limitations. First, CWSM was carried out by the researcher rather than the classroom teacher. To reduce the effects of this limitation, the researcher spent time with the children in the classrooms where CWSM would be carried out for 4 months before the intervention. In this way, another adult in the classroom was used to prevent influencing the children’s level of interest in the event. A second limitation is that conducting the intervention in crowded classrooms is difficult. In this study, the classrooms of Irem, Eda, and Muge were very crowded. During the intervention, the author had to verbally remind the children to study more quietly. These reminders could have affected the children’s level of on-task behaviors. However, to minimize this effect, the author gave verbal stimuli to only the typically developing children. In addition, when the children were using self-monitoring, an undergraduate student assisted in managing the classroom in order to prevent problem behaviors by waiting children. A third limitation is that the collection of maintenance data were cut short owing to time constraints; hence, the intervention had to be brought to an end before Muge met the criterion for the level of SM use. The fourth limitation is in a few instances, incomplete data were collected because of a child’s absence from school or interruptions in a session. This could constitute a constraint on internal validity. However, we do not believe the findings are significantly
affected, as we did not observe substantial changes in performance when data were collected in the next subsequent session. A fifth limitation is the type of activity. Self-monitoring that has been learned may influence the other types of activities (covariance effect). To try to overcome this limitation, the events in teaching sessions were presented with the sequences different from each other. Thus minimizing the covariance effect. For the evaluation of social validity, the reason why the views of the children with DD were not consulted was that their language and speaking skills were not good enough to respond to these questions asked for. Even in this situation, it could be considered as the last limitation of the study.

Future Research

Taking the strengths and limitations of this research into account, we offer suggestions for intervention and future research based on our findings. Teachers may vary the materials used in CWSM to align with the characteristics of children who are receiving instruction in their classes. Moreover, teachers for whom auxiliary staff is not available may make adaptations in order to develop recording systems by which all the children can study at the same time during SM and/or complete the recording procedure in single phase.

A suggestion for future research is to study the effects of CWSM on different behaviors. Secondly, we suggest researching the efficiency and effectiveness of using SM individually as compared to class-wide to enhance on-task behavior. Third, we recommend research to analyze the effects of CWSM on different behaviors in children at other educational levels. A fourth suggestion concerns analysis of the effects of CWSM use by classroom teachers. Furthermore, the effects of other self-management strategies used by preschoolers could be analyzed, and we suggest research to examine the effects of providing class-wide instruction for the use of other self-management strategies. A study to determine whether classroom size is an important factor in class-wide instruction of self-management strategies is also suggested.

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