



# The effect of using simultaneous prompting to teach opposite concepts to intellectually disabled children

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## Abstract

This study explores the effectiveness of using simultaneous prompting to teach opposite concepts to children with intellectual disabilities. Participants were three 6, 8 and 10 year-old children at a development level of 37-48 months, one with mild and two with severe intellectual disabilities. The study used one of the single subject research designs which is multiple probe design with probe sessions. Data were collected by using a personal information form, the “Gazi Early Childhood Development Evaluation Tool (GECDET)”, and “Forms for Evaluating the Concepts of Big and Small”. The results showed that simultaneous prompting was effective in teaching the concepts of big and small to intellectually disabled children.

**Keywords:** Children with intellectual disability, opposite concepts, simultaneous prompting, concept training

## Introduction

Many concepts like opposite concepts, colour, shape, number concepts start developing in early childhood years. These concepts improve children’s skills like counting, space perception and matching, categorizing, differentiating, and establishing meronymy relationship between objects according to their characteristics like colour, shape and magnitude (Charlesworth, 2005).

Children, in pre-school period, while developing physically, socially, and cognitively, also gain concepts and can use these concepts in their daily lives (Charlesworth, Ling & Fleege, 2003). However, some differences are observed in intellectually disabled children’s pace in learning, ratios of acquiring skills, in the levels of participating in studies, memory, generalization, and the transfer of the acquired information and skills. That’s why, they cannot acquire concepts in the same way and pace as their peers do (Blackhurst & Berdine, 1993).

Intellectually disabled children can learn these concepts in specially designed settings by using special education techniques such as direct teaching, teaching through steps and response-prompting procedures. In response-prompting procedures, which is one of these techniques,

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since a prompt is offered before the child gives an answer, mistakes in education are usually minimized, more opportunities are provided for children to reinforce information and the possibility of experiencing behavioral problems that may arise out of making many mistakes is lessened, and a positive instructional environment for both the teacher and the learner is presented (Morse & Schuster, 2004; Repp, Karsh & Lenz, 1990). Response-prompting procedures are made up of the techniques of system of progressive time delay and constant time delay, graduated system, most-to-least prompt, least to most prompt, and simultaneous prompting (Seward, 2009; Reichow & Wolery, 2009). According to studies carried out it has been found out that these techniques are effective in making individuals with various disabilities acquire numerous skills. In addition, it is striking to see that these studies are mostly carried out with children with mild and severe intellectual disabilities and children with autism (Seward, 2009). Teaching with simultaneous prompting procedure, which is one of these techniques, is a teaching method with prompting before behavior and teaching with trial (Gibson & Schuster, 1992). It is also one of the teaching methods that is effective and almost errorless (Doğan & Tekin-İftar, 2002).

In simultaneous prompting, the individual is presented with a certain number of target stimulus and controlling prompts simultaneously. The trainer offers the target stimulus and with no wait time (0 second) gives the controlling prompt. Controlling prompt is the prompt that makes it possible for the child to give the correct answer and it is always used in education. For instance, it's like the trainer saying "show the big ball" (target stimulus) and right after it showing the big ball (controlling prompt). In this method, the child does not have the chance to give an independent answer. That's why in determining whether there is an input data transfer in the child, probes play a crucial role (Ching, 2005; Fetko, Schuster, Harley & Collins, 1999; Gürsel, Tekin-İftar & Bozkurt, 2006; Kurt & Tekin-İftar, 2008).

After the first session of teaching with simultaneous prompting, in the first probing session, the primary aim is to evaluate the target behavior. In these probing sessions, after target stimulus is presented, controlling prompt is not given. If the child gives the correct answer without using the controlling prompt it means the transfer has been successful. In these sessions, the educator reinforces the child's correct answers and ignores his wrong answers. In this session, on condition that the child does not meet the pre-determined criteria, in other words, if learning does not take place in the desired level, it is not moved onto the next level, training in the same level is continued (Griffen, Schuster & Morse, 1998, Neitzel & Wolery, 2009, Seward, 2009).

Teaching by using simultaneous prompting has proven to be an effective method not only in the teaching of language, games, to both disabled individuals (Doğan & Tekin-İftar, 2002;

Doyle & Schuster, 1996; MacFarland-Smith, Schuster & Stevens, 1993; Waugh, Ferdrick & Alberto, 2009), and small groups (Colozzi, Ward & Crotty, 2008; Fickel, Schuster & Collins, 1998; Gast & Winterling, 1992; Gürsel, Tekin-İftar & Bozkurt, 2006; Kamps, Dugan, Leonard & Daoust, 1994; Keel & Gast, 1992; Singleton, Schuster & Ault, 1995) with intellectual disability, autism, and learning difficulty but also in making them gain different skills in various fields like getting to know the living and professions.

Simultaneous prompting has been used in many studies for individuals with special needs in early childhood, middle childhood, adolescence, and even in adulthood. For instance, in early childhood, MacFarland-Smith, Schuster & Stevens (1993) used simultaneous prompting in teaching the skill of dressing up to children with developmental disability, Akmanoğlu-Uludağ & Batu (2005) used it in defining their relatives to two, 5 year-olds with autism, and Sönmez & Aykut (2011) used it in making a child with developmental disability gain the skill of making his toilet independent of his mother. Among the studies carried out in middle childhood, the study carried out by Parrott, Schuster, Collins & Gassaway (2000) with mild and severe intellectually disabled children between the ages of 6-8 in making them gain hand washing skill, the study conducted by Batu (2008) in making the children with developmental disability gain home life skills, the study by Ching (2005) in making four primary school children with severe intellectual disability gain the skill of drying their hands, and the study by Kurt & Tekin-İftar (2008) in which they taught children with autism how to change the CD and digital pictures can be given as examples. Pennington, Ault, Schuster & Sanders (2010), on the other hand, compared the effectiveness of simultaneous prompting and computer assisted learning to teach how to write stories to three children with autism between the ages 7-10, and they found out that both of the methods are effective. Pennington, Stenhoff, Gibson & Ballou (2012) also analyzed the effectiveness of teaching how to write stories to a 7-year-old child with autism through simultaneous prompting and computer-based teaching. The results of the study found out that both methods are effective in story writing in three different topics; in addition, it is observed that there has been an increased responding across topographies like handwriting and vocal story writing. In addition, Rao & Kane (2009) also used the method of simultaneous prompting to teach 12-step task analysis for subtraction with decimals to children with trainable intellectual disability. There are also many studies on adolescents with disability. Among these studies the following can be given as examples. Alberto, Waugh & Fredrick (2010), used this method with five 12-15 year old children with severe intellectual disability in teaching motor display of grasping words which they think are related to the individual text and verbal reading. Parker & Schuster (2002) used this method in teaching grocery aisle headers and occupational words,

defining prefixes, and identifying elements from the Periodic Table of Elements to children with mild and moderate mental retardation and who exhibit typical development, and Singleton, Schuster, Morse & Collins (1999) used it in teaching grocery shopping terminology to children with moderate intellectual disability. Moreover, Smith, Schuster, Collins & Kleinert (2011), on the other hand, used simultaneous prompting with four 15-19 year-old individuals with mild and severe intellectual disability to teach restaurant vocabulary and to determine their level of learning and grouping non-targeted information. Yücesoy Özkan & Gürsel (2006) also analyzed the effectiveness of using simultaneous prompting in teaching photocopying skill to 4 children with intellectual disability between the ages 14-17. When the studies given as examples are analyzed it is observed that using simultaneous prompting is effective in teaching all the mentioned skills and information. There are a limited number of studies using this method in adolescence. Palmer, Collins & Schuster (1999) used teaching with simultaneous prompting for individuals with special needs in this period and adults with mild intellectual disability to teach how to make aural definition of six hand gestures and Maciag, Schuster, Collins & Cooper (2000) used the same method with mild and severe intellectually disabled adults in teaching how to prepare carrier boxes. As it is seen in these studies using simultaneous prompting in teaching various skills to groups with various disabilities in different age groups is effective.

In the studies carried out it has been determined that teaching by using simultaneous prompting is effective in gaining both chained (Batu, 2008; Ching, 2005; Sewell, Collins, Hemmeter & Schuster, 1998; Tekin-İftar, 2008) and discrete skills (Birkan, 2005; Griffen, Schuster & Morse, 1998; Rao & Mallow, 2009; Reichow & Wolery, 2009).

Although teaching using simultaneous prompting is utilized in many discrete skills, the number of studies in using it for concept education is limited. The example studies related to the use of simultaneous prompting in concept teaching is given in the discussion section of this research. This study aims to make three children with mild and severe intellectual disability acquires the concepts of big-small through the use of simultaneous prompting.

## ***METHOD***

This study uses single-subject research method. The aim of single-subject research is to observe one or few subjects' out-come (e.g. performance) as a dependent variable at many different time points and to compare the changes to assess the effect of an intervention (e.g. a training method). There are many methods in this research like AB Design, Reversal Design, Multiple Baseline Design and Alternating Treatment Design (Kinugasa, Cerin & Hooper, 2004). In this study, multiple probe model with probe conditions was used. Multiple probe model is a

model that is based on evaluating the effectiveness of a teaching or behavior reversal program in multiple conditions. It has three types. These are multiple probe models among behaviors and multiple probe model in different environment (Tekin-İftar & Kırcaali-İftar, 2004). In the study multi-probe method among subjects is also used.

The dependent variable in the study is big-small concept and the independent variable is teaching by using simultaneous prompting.

#### *Participants*

In the study, the effect of using simultaneous prompting to teach big-small concept to three children with intellectual disability was investigated. The concept of big-small was tried to be taught to all three participants through individualized instruction (1:1) using simultaneous prompting.

The participants were chosen by analyzing the files of intellectually disabled children who are enrolled in the special education and rehabilitation centre where the study is carried out and by interviewing their teachers. Information about children, who meet the prerequisite of focusing attention for at least 5 minutes, maintaining verbal communication even if it is limited, understanding and performing verbal instructions and making choices, and who did not know the concept of big-small was collected and these children were observed during individual and group education. 5 children who met these prerequisite conditions and who did not know the concept of big-small were chosen. These children were administered the “Gazi Early Childhood Development Evaluation Tool (GECDET)”. As a result of this, three children between 37-48 months and who did not know the concepts of big-small were determined.

One of the participants in the study, Ezgi, is 6-year-old. She has mild intellectual disability and speech impediment. Ezgi has been receiving special education since she was six months old. She receives individualized instruction two days a week, one session in each. After Ezgi started attending this institution, she received training mostly in talking, and supporting self-care and cognitive skills. At the time the study was carried out, she has just started concept training. Buse, is 8 years old and has severe intellectual disability. She has never received special education before. She receives education three times a week; two individualized and one session with a group. Buse is working on supporting her skills in movement, cognitive, language and social skills. Görkem; on the other hand, is 10 and has severe intellectual disability. Görkem has been receiving education for 5 years on eliminating cognitive, language, movement and behavioral problems. Although Görkem has worked on big-small concepts before he is known to forget very quickly. As a result of the tests administered, it has been determined that Görkem does not know big-small concept. Görkem has individualized instruction (1:1) two times a week.

### *Data Collections Materials*

“Individual Information Form” was used to collect information about the children and their families who participated in the study.

In order to determine the developmental stage of the participants Gazi Early Childhood Development Assessment Tool-GECDAT was administered. GECDAT has been prepared to determine the developmental level and characteristics of 0-72 month children. It is comprised of four sub-tests as psychomotor, cognitive, language and socio-emotional (Temel, Ersoy, Avcı & Turla, 2004).

Forms to Evaluate the Concept of Big-Small have been prepared by the researcher and an expert has been consulted about it. It has been prepared separately for each concept (big and small). The form is composed of 39 pages in total, with three pages for each level of recognition, matching, naming, grouping and differentiating. In order to pass one step of one level (recognition, matching, naming, grouping and differentiating), the participant has to complete at least two out of three pages prepared for each step of the concept.

### *Setting & Materials*

The evaluation of the participants in the study and their education (baseline data, instructional sessions, daily sessions, daily probing sessions, maintenance sessions, and generalization sessions) are carried out individually in stimulus controlled environments.

Instructional sessions are held in individual education rooms which are organized in such a way so as to prevent the subjects from being affected from external stimulus.

During the instructional sessions various objects and pictures like three dimensional objects, flashcards showing objects in the same and in different sizes, small/big (size) pictures, dominoes, bingos, and picture matching cards are used.

### *Research Process*

The research process includes collection of baseline data, instructional sessions, daily probing sessions, and maintenance and generalization sessions.

### *Collection of Baseline Data*

Baseline Data is the information about the situation of the dependent variable before the process of the experiment is carried out (Creswell, 1994). The aim of collecting baseline data is to determine the existing performance of the subject and to make predictions about the subject's performance during the experiment. Baseline data is gathered until consistency is obtained at least in three sessions (Kırcaali-İftar & Tekin, 1997).

In order to collect baseline data in the study, to evaluate the subjects' level of information in recognizing the big/small concepts, naming, matching, grouping and differentiating phases,

three sessions each with 15 trials were organized. To gather her baseline data, 3 sessions were held for the first participant, 6 sessions for the second participant and 9 sessions for the third participant. Baseline level data are recorded in “Baseline Data Record Checklist”.

#### *Instructional Sessions*

Instructional Sessions are comprised of trials with zero second (0 sec.) wait time. In instructional sessions, the skill instructions and controlling prompt are given simultaneously. In the first set the concept of big, and in the second set the concept of small is taught. The subjects were instructed once a day, twice a week. The teaching of one set lasted 5 weeks and the two sets lasted 10 weeks in total. For each set 10, in total 20 sessions were held. For the teaching of Set I and Set II 10 trials for each session and 200 trials in 20 sessions were held to teach the concept of addition. However, one session was repeated in Set II for one of the subjects. That’s why, for this subject 110 trials in 11 sessions were held.

Table 1

*Big/ Small Concept Session Contents (Targeted Behaviours) and Number of Trials*

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#### **1st Session (Recognition)**

**1st Step:** Shows the big/small one among the same objects (5 trials)  
Shows the big/small one among the same pictures (5 trials)

#### **2nd Session (Recognition)**

**2nd Step:** Shows the big/small one among different objects (10 trials)

#### **3rd Session (Recognition)**

**2nd Step:** Shows the big/small one among different pictures (10 trials)

#### **4th Session (Matching)**

**1st Step:** Points to the same size (big/small) object among the same objects shown (2 trials)

Points to the same size (big/small) object among the same pictures shown (3 trials)

**2nd Step:** Points to the same size (big/small) object among the different objects shown (2 trials)

Points to the same size (big/small) picture among the different pictures shown (3 trials)

#### **5th Session (Naming)**

**1st Step:** When the size of an object with distinct magnitude(big/small) is asked, says “big/small” (2 trials)

When the size of a picture with distinct magnitude(big/small) is asked, says “big/small” (2 trials)

**2nd Step:** When the size of an object among the same objects is asked, says “big/small” (3 trials)

When the size of an object among the same pictures is asked, says “big/small” (3 trials)

#### **6th Session (Naming)**

**3rd Step:** When the size of an object among different objects is asked, says “big/small” (5 trials)

When the size of an object among different pictures is asked, says “big/small” (5 trials)

#### **7th Session (Grouping)**

**1st Step:** Puts the big/small objects among the same objects in the wanted place (5 trials)

Puts the big/small pictures among the same objects in the wanted place (5 trials)

#### **8th Session (Grouping)**

**2nd Step:** Puts the big/small objects among different objects in the wanted place (5 trials)

Puts the big/small pictures among different objects in the wanted place (5 trials)

#### **9th Session (Differentiation)**

**1st Step:** Shows the object with a different size among the same objects (5 trials) Shows the picture with a different size among the same pictures (5 trials)

**2nd Step:** Shows the object with a different size among different objects (5 trials)

Shows the picture with a different size among different pictures (5 trials)

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For both sets of instructional sessions, the teaching of “recognition” was done in the first three sessions, “matching” in the 4th session, “naming” in the 5th and 6th sessions, “grouping” in the 8th session, and “differentiating” was done in the 9th and 10th sessions. The phases and steps of big/small concept, the content of sessions and number of trials are presented in Table 1.

The following have been taken into consideration while preparing an education program using simultaneous prompting:

a) Target stimulus is presented as “skill instruction”. b) A control prompt is given. Modeling and verbal cue are used together in control prompt. Picture or an object is used from time to time. c) It is planned as zero second (0 sec.) trials (there is no wait time between the stimulus and the prompt.) d) Daily control sessions are planned. e) Response interval is determined to be 5 sec. f) The intervals between trials are determined to be 5 sec. g) The correct reactions of the subject are reinforced through the use of verbal reinforcement, applause and especially in the initial sessions as economical reinforcement. When the subject has wrong or no reaction at all, this behavior is ignored and the trial is repeated. h) In each instructional session, the reactions of the subjects are recorded in the “Instructional Sessions Record Checklist” i) Changes in the application process are made according to the performance of the subject, and for the subject who did not meet the criteria an additional instructional session was designed which deals with the step of the phase the subject was unsuccessful in. In this session, the session is repeated by using different materials related to the step that the subject was unsuccessful in.

#### *Daily Probes*

Daily probes are organized to assess how much the instructional sessions of the subjects have attained the objective and target behavior.

Daily probes are administered to the subjects individually in individual instruction room, right before the instructional sessions. For each set 10 daily probes, in total 20 daily probes were organized. However, for Set II, since one instructional session was repeated, 11 daily probes were organized. Each daily probe consisted of 10 trials. In each daily probe, whether the target behavior aimed at in a prior session was reached or not was evaluated.

In order for the subject to proceed to the next level in the daily probes, s/he had to give correct reactions to at least 8 out of 10 trials. In case s/he had less than 8 correct reactions, a new instructional session was planned for the step of that stage. This procedure was repeated until at least 8 correct reactions were received from the subject. In the study, an additional session and a daily probe session was organized for Buse for the first session of small concept (recognition). In the study, an additional instructional session and a daily probe session was organized for Buse for the first session of small concept (recognition phase).



In daily probes, the subjects' responses in probes were recorded in "Daily Probe Session Checklist", which was prepared separately for each set.

#### *Maintenance Probes*

Maintenance probes were arranged in order to determine to what extent the subjects in the study maintain information gained during instruction. For each set three maintenance probes, in total 6 maintenance probes were arranged. Maintenance probes were administered after the instruction of each set was completed in the 7th, 14th and 21st days.

Maintenance probes contained all of the objectives and target behaviors in the instructional sessions. Each maintenance probe is composed of 22 trials.

Maintenance probes were administered individually in the individual instruction room. In maintenance sessions two and three dimensional objects with the same and different size and features, picture cards, preparatory pages for reading and writing, matching cards, and big/small size pictures were used. In maintenance probes, trials for objectives and target behaviors explored in the instructional process for the subject were planned, and no prompt was used in these trials.

#### *Generalization Probes*

In the study, "Big Concept Generalization Form" and "Small Concept Generalization Form", prepared for each set by the researcher, were used for the objective and target behavior dealt with in generalization sessions, probe sessions, instructional and maintenance sessions.

The generalization session was applied separately in individualized instruction room. During the trials the interval between responses and trials was selected to be 5 seconds.

#### *Internal Validity*

Internal validity is an indicator of the dependence of the dependent variable on the independent variable only. In one-subject studies, the threats to internal validity are caused by maturation, and characteristics of the environment and independent variable. *Maturation*; frequent changes to the phases of the study and none of the studies' phases' lasting very long control the possible effects of maturation (Kırcaali-İftar & Tekin, 1997). In this study also, attention is paid to changing the phases of the study and completing the phases in a short time. In each phase as soon as the subject meets the determined criteria, it is moved onto the next phase. *Environment*; single-subject studies are usually held in real environments like education, home and work, which the subject is found in. That's why some characteristics of these environments affect experiment process (Kırcaali-İftar & Tekin, 1997). For this reason, in this study also, it is carried out in the special education and rehabilitation centers in which children are found in and in specially designed individualized instruction rooms.

*Characteristics of the independent variable*; it should be determined which dimensions of the independent variable are responsible for the change occurring in dependent variable. In order to do this, it should be made sure that the independent variable is applied as planned (Kırcaali-İftar & Tekin, 1997). To this end, the researcher personally got support and education from her own advisor. Each phase of the study is planned and administered separately.

#### *Inter-observer Agreements*

It is proposed that in one-subject research studies the inter-observer agreement be at least 80 % (Kırcaali-İftar & Tekin, 1997). In this study the data for inter-observer agreement was collected during baseline sessions, instructional sessions, daily probes and maintenance sessions. The researcher and the observer collected data simultaneously. The researcher gathered the data of the children attending in the study and then compared the results with those obtained by the observer, checked that the results are the same. Inter-observer agreement is calculated by dividing the agreement score with the sum of agreement and multiplying it with a hundred.

#### *Social Validity*

The data for social validity is gathered after the study is completed. It is gathered via family. After the study is completed, worksheets about the objective and target behavior dealt with in the study are prepared for the families of the children in the study and it is asked from them to complete a ten-day-worksheet one of which has to be covered in a day at home. The results of the study are analyzed and positive feedback is received from the families about the attainment of the concept. When the worksheets from the families are analyzed, it is observed that Ezgi had 100%, Buse had 80%, and Görkem had 90% success.

## **RESULTS**

The data obtained are evaluated by using graphic analysis. In each graphic, the vertical axis shows the subjects' rate of success. The horizontal axis shows the sessions. Each symbol in the graphic shows one session.

Success Rates of Subjects compared to the phases of Set I and Set II

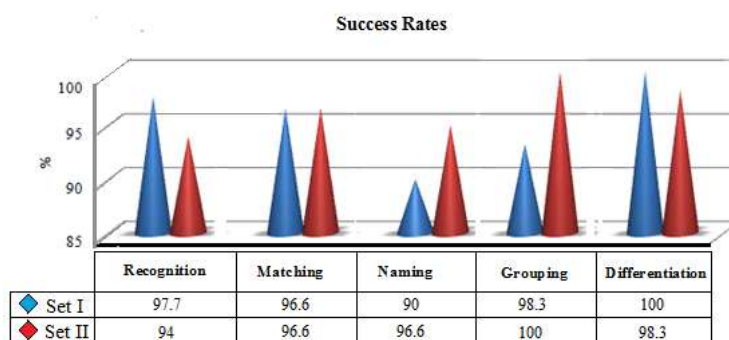


Table 2 shows the children's level of success in every phase of instructional and evaluative process.

Table 2

*Success Rates of Children who Participated in the study in Set I (Big) and Set II (Small) in every Step of Instruction and Evaluation Phase*

	SET I			SET II		
	Number of Sessions	Rate of Error Responses	Rate of Correct Responses	Number of Sessions	Rate of Error Responses	Rate of Correct Responses
<b><u>Ezgi</u></b>						
Baseline Data	3	% 93.4	% 6.6	3	% 93.4	% 6.6
Daily Probes	10	% 2	% 98	10	% 1	% 99
Instructional Sessions	10	% 0	% 100	10	% 0	% 100
Maintenance Sessions	3	% 0	% 100	3	% 0	% 100
Generalization Session	1	% 0	% 100	1	% 0	% 100
<b><u>Buse</u></b>						
Baseline level Data	6	% 96.7	% 3.3	6	% 95	% 5
Daily Probes	10	% 4	% 96	11	% 8.2	% 91.8
Instructional Sessions	10	% 10	% 90	11	% 2.7	% 97.3
Maintenance Sessions	3	% 3.4	% 96,6	3	% 3.4	% 96.6
Generalization Session	1	% 10	% 90	1	% 10	% 90
<b><u>Görkem</u></b>						
Baseline level Data	9	% 94.5	% 5,5	9	% 94.5	% 5.5
Daily Probes	10	% 4	% 96	10	% 2	% 98
Instructional Sessions	10	% 1	% 99	10	% 1	% 99
Maintenance Sessions	3	% 3.4	% 96.6	3	% 0	% 100
Generalization Session	1	% 0	% 100	1	% 0	% 100

The graphics of each subject's findings are presented in Graphic 1 and 2. At the end of the study, it is found out that all of the subjects reached the determined criteria in gaining both of the concepts. The findings of the study revealed that teaching by using simultaneous prompting is effective in gaining big and small concepts. The maintenance and generalization sessions held at the end of the study also put forward that children with intellectual disability can learn this concept, can keep what they have learned, and can generalize it.

#### *Effectiveness*

In the study carried out, when baseline data for Set I (big concept) is analyzed, it is observed that the average success rate which was maximum 6.6% (Ezgi 6.6%, Buse 3.3%, Görkem 5.5%), increased up to 90%-100% after instructional sessions. This shows that teaching using simultaneous prompting is effective in the attainment of big concept. .

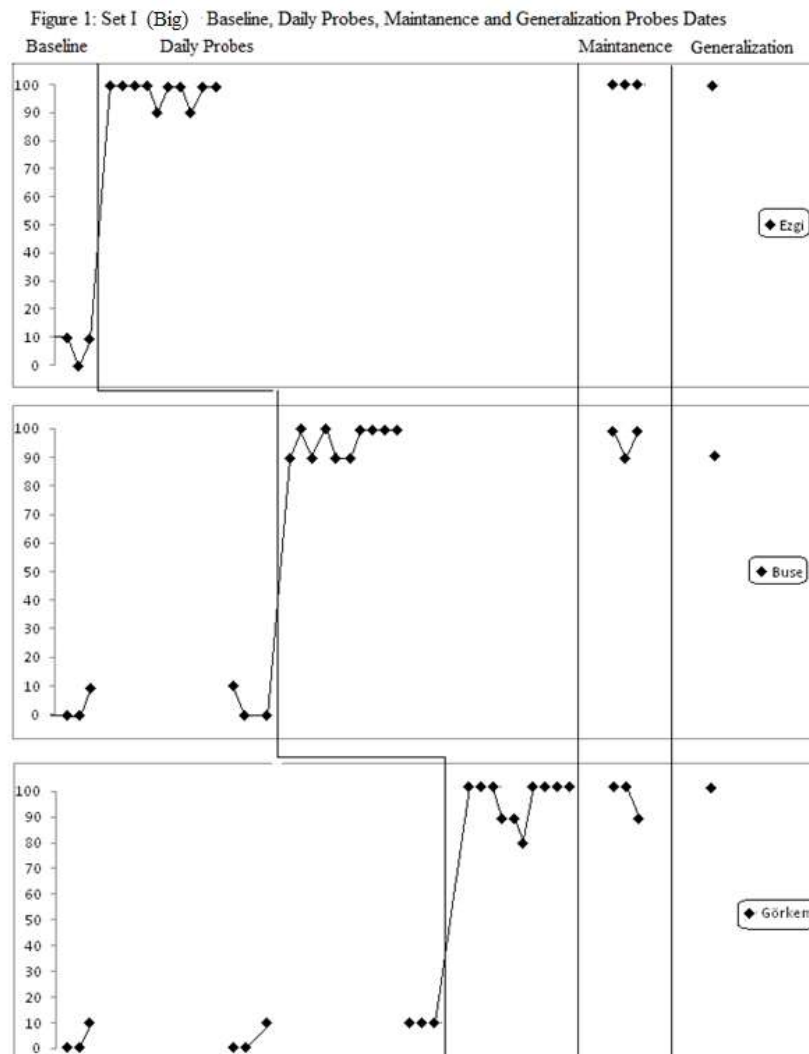
It is observed that success rate which was 6.6% for Ezgi, 5.5% for Görkem and 5% for Buse in sessions that baseline data was collected for Set II (Small concept), reached to 90% to 100% in instructional sessions. This also shows that using simultaneous prompting to teach small concept to children with intellectual disability is effective.

#### *Instructional Sessions*

In all of the instructional sessions in Set I and Set II a controlling prompt was used. The subjects participated in the instructional sessions with enthusiasm and they were held as planned. In other words, subjects were presented with a target stimulus, right after they were given the controlling prompt and it was expected that the subject reacts in 5 seconds. All of the subjects exhibited behavior that was expected. There was no need for trial repetitions. Whether the subjects learned or not was determined as a result of daily probes.

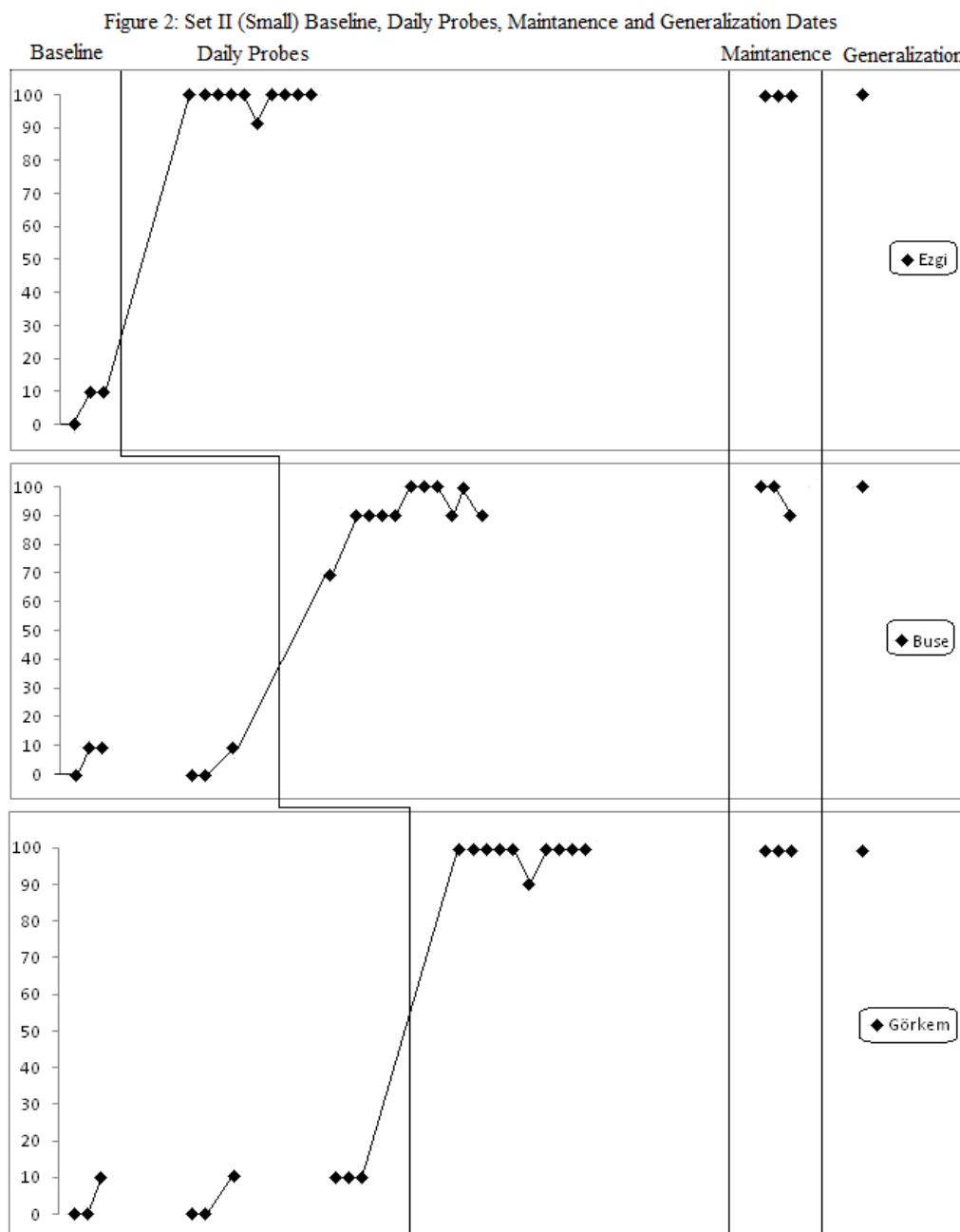
#### *Daily Control Sessions*

Whether subjects learned the activities done in instructional sessions was evaluated via daily control results.



In the first three sessions of Graphic Set I (Big Concept) “recognition phase” was tried to be gained to the subjects. While Ezgi and Görkem exhibited 100% success in all three sessions in which recognition phase was given, Buse had 90% success in the first and third sessions, and 100% success in the second session. Buse, made a mistake in the first session while pointing to the picture that was the biggest among the pictures in the “showing the biggest one among the same objects and pictures” phase. While she did not make any mistakes in “showing the biggest one among different objects” step in the second session, she again made a mistake in the last session of recognition phase. In the last step of recognition phase, it was worked on “showing the biggest one among different pictures”. While Buse demonstrated more success in studies which were carried out with objects, she sometimes made wrong choices in pictures. However, these mistakes were negligible since they met the criteria. In the 4th session it was worked on “matching”. This has been the phase that the subjects were the most successful in and both of the matching phases were attained in one session. When the success rates of subjects are considered, it is seen that Ezgi and Buse’s success rates are 100% and Görkem’s success rate is 90%. Görkem pointed to a wrong picture in “showing the same picture with the same size among different pictures shown” step in one of the matching phases. In the 5th and 6th sessions “naming” step is tried to be taught. This was the most difficult phase for the subjects because all three subjects have speech impairment; especially Görkem has the most severe impairment in speaking. In the 5th session, “naming the size of a single picture shown and naming the size of the object and the picture among the same objects and pictures shown” steps were tried to be taught. All three subjects had a success rate of 90%. Ezgi and Buse, in naming the size of a single picture shown, and Görkem, in naming the size of a picture shown among the same pictures, had no reaction at all in one of the trials. In the 6<sup>th</sup> session, in “naming the object and the picture shown among different objects and pictures” phase, it is observed that while Ezgi reached 100% success rate, Buse reached 90%, and Görkem reached 80% success rate. Buse in one trial, in naming the size of a picture shown among different pictures step, and Görkem in two trials, gave wrong reactions. It may be assumed that since Ezgi is the child with the mildest intellectual disability and speech impairment, her level of success was higher in these sessions. However, though they had some mistakes both Buse and Görkem were found to be successful in this phase because 80-90% is a value that meets the criteria. When we come to the phase of grouping, two sessions were held for this. In the first session, “differentiating the big one among the same objects and pictures” (classification), and in the second session “differentiating the big ones among different objects and pictures” (classification) steps are worked on. In the first phase of grouping all three subjects have completed the task with ease and no mistakes were observed.

However, in the 8<sup>th</sup> session, in one trial Ezgi made a mistake and her level of success dropped to 90%. Buse and Görkem maintained the same level of success they had previously. It is believed that Ezgi made this mistake just out of carelessness. In the last phase of Set I, which is differentiating (9<sup>th</sup> and 10<sup>th</sup> sessions) all of the three subjects exhibited 100% success. This shows that all of these three subjects with intellectual disability have gained this concept.



In graphic 2, the findings of Set II (small concept) are displayed. In the first three sessions of instruction, while Ezgi and Görkem had 100% success after instruction, it is observed that Buse reached 70% success in the first session. Since this result did not meet the criteria (at least 80% success is needed to meet the criteria), an additional session was organized with Buse for the

objective and target behaviour in this session and the same targets were worked on again. For this reason, in Graphic 2, there are 11 points (11 sessions) in Buse's instructional sessions. In the second session of recognition phase, Buse increased her level of success from 70% to 90% and kept this level (90%) in the other two sessions of "recognition" phase. This result may be attributed to the fact that Buse loses her attention quicker than the other subjects. In matching phase while Buse had 90% success, it has been determined that Ezgi and Görkem exhibited 100% success. Buse, in this phase, in "matching the picture with the same size among the pictures shown" step, could not show the correct picture in one trial. Two sessions have been organized related to naming phase. In the first step of these sessions (5<sup>th</sup> session), "naming the size of the subject shown" and in the second session "naming the size of the object and the picture shown among different objects and pictures" steps are worked on. In this session, while Ezgi and Görkem exhibited 100% success rate, Buse had a rate of 90%. In the 6<sup>th</sup> session, while Buse exhibited 100% success, a drop has been observed in Görkem and Ezgi's success rate (90%). In the step of naming the size of the picture shown among different pictures, Görkem did not give any answers and Ezgi; on the other hand, gave a wrong answer. In the grouping phase, all three subjects could group both same and different objects and pictures correctly. Subjects have been the most successful (100%) in this phase. Two sessions were held related to differentiation phase. In the first session (9<sup>th</sup> session) it was worked on "the same objects and pictures", and in the second session (10<sup>th</sup> session) "differentiating the small one among different objects and pictures" steps. While all three subjects had a 100% success rate in the 9<sup>th</sup> session, the 10% drop in Buse's success rate is striking. However, this drop also meets the criteria. Buse, in one of the trials for "differentiating the small one among different pictures" step in this session, had difficulty in differentiating the pictures. When the results are analysed, that the subjects had a success rate between 90% and 100% shows that all three of them gained this concept.

When the results are analyzed in general, it is seen that Buse had difficulty mostly in activities with pictures. The reason for this may be attributed to the fact that she is more capable in perceiving three dimensional objects; whereas in pictures, she is less capable in perceiving the big-small picture. In all of the activities held with objects, Buse showed more interest in objects; they attracted her attention more. Therefore, it may be thought that she was more successful in these sessions.

When the subjects' levels of success are compared according to Set I (Big concept) phases, it is observed that the subjects exhibited 97.7% success in recognition phase, 96.6% in matching phase, 90% in naming phase, 98.3% in grouping phase, and 100% in differentiating phase. As it is also seen in the success averages of subjects according to concept phases, the level that they had

most difficulty in is naming, and the level that they were most successful in is differentiating. The fact that subjects had 100% success average in the last phase (differentiation) of big concept shows that subjects gained the concept big.

When the success averages of subjects according to Set II (Small concept) phases are analyzed, it is observed that subjects had 94% success in recognition phase, 96.6% success in matching phase, 96.6% success in naming phase, 100% success in grouping phase, 98.3% success in differentiation phase. When success averages of subjects according to concepts phases are analyzed, it is seen that the lowest rate is in recognition and the highest is in grouping phase. Buse's having a low success average rate in recognition phase is caused by repeating her first session.

When the results of both sets are analyzed, although there are occasional drops in the subjects' success averages, they can be negligible since they all meet the expected criteria. In teaching with simultaneous prompting method, because of reasons like not letting the subjects make any mistakes during sessions, continuously using the prompts, the subjects' having high motivation due to not making any mistakes during instructional sessions, showing eager participation to the educational activities during instructional sessions, variety of objects and pictures used and their attractiveness, while success rate was 6.6% highest in sessions where baseline data was collected, starting from the very first session of instructional sessions, this rate increased and effective learning took place. These results also reveal that besides chained step skills, teaching with simultaneous prompting is effective in the teaching of concepts which is one of single step skills

#### *Generalization sessions.*

“Big Concept Generalization Form” and “Small Concept Generalization Form” that involve all the phases and steps of big and small concepts for generalization sessions were used. In generalization sessions, for each subject, for each set, a generalization session was held. In Set I (Big concept) generalization session, Ezgi and Görkem could generalize the information they had with 100% rate, and Buse could do so with 90% rate. This result shows that, although there was a 10% drop in Buse's success rate, all three subjects could learn and generalize the big concept. In Set II (Small concept) generalization session; on the other hand, that all three subjects had 100% success shows that they all learned and can generalize the small concept.

#### *Maintenance Sessions*

Three maintenance sessions were held in order to determine to what extent subjects retained the information they learned. Maintenance sessions were held in the 7<sup>th</sup>, 14<sup>th</sup>, and 21<sup>st</sup> days after the completion of teaching the concept in each set. When the results of maintenance



sessions for Set I are analyzed, it is seen that Ezgi had 100% success in all three sessions and she learned and retained the big concept. When Buse and Görkem's maintenance sessions' results are analyzed, it is observed that Buse had a fall from 100% to 90% in the 2nd maintenance session, and Görkem had a drop in the last session. In the session related to the "naming" phase, Buse gave a wrong reaction and Görkem had no reaction at all.

When the results of Set II (Small concept) maintenance sessions are analyzed, it is seen that while Ezgi and Görkem had 100% success in all three maintenance sessions, Buse's rate of success fell from 100% in the first two maintenance sessions to 90% in the last session. However, this decrease also meets the criteria.

As it can also be understood from the results of the maintenance sessions, subjects could gain, generalize, and retain the concepts of big and small through the use of simultaneous prompting.

## ***DISCUSSION***

This study investigated the effectiveness of using simultaneous prompting in teaching the concepts of big and small to children with intellectual disability.

The findings of the study reveal that teaching through simultaneous prompting for the attainment of big and small concepts is effective. In each session, it was expected from the subjects to give at least 8 (80%) correct answers to proceed to the next phase. For each subject 10 sessions for the big concept, and for the small concept, 10 for Ezgi and Görkem and 11 sessions for Buse were organized. Buse could not move onto the next session as she did not have a success rate to meet the expected criteria in the "showing the small one among the same objects and pictures" step in the first session of Set II, and so an additional session to attain the same step was organized. In this session, it was worked on trying to attain the same step of "recognition" phase; however, in this session different materials and pictures were used. In this session which was held again since Buse had 90% success, it was moved onto the teaching of the next step. While Set II was taught to Ezgi and Görkem in 10 sessions, Buse was taught in 11 sessions.

When the graphics are analysed, in Set I (big concept) it is seen that while the success averages of the subjects were between 3.3% and 6.6% in the sessions where baseline data were gathered, after utilizing the method of teaching by using simultaneous prompting, a significant rise in their success rates was observed starting from the very first session. While the success averages were 6.6% the highest in the sessions that baseline level data was collected, this rate increased up to 90% to 100% in instructional sessions. In addition, the results of generalization

and maintenance sessions also indicate that the subjects learned and can generalize these concepts, and that they maintained the information learned. These points to the fact that using simultaneous prompting in teaching the big concept is effective. Akmanoğlu & Batu (2004) have also used the method of using simultaneous prompting in teaching the skill of marking numbers to children between the ages 6 to 17 and they have found out that this method is effective. In another study carried out by Leaf, Sheldon & Sherman (2010), they compared the methods of using simultaneous prompting in teaching math skills (addition), determining labels, and answering “Wh-” questions to three autistic children between the ages 3-8, and no-no prompting method. As a result, they found out that no-no prompting was effective in the teaching of all skills; whereas, simultaneous prompting was effective in teaching a couple of skills.

When the baseline level and the success rates of subjects in instructional sessions in Set II (small concept) are compared, it is striking to see that the success rate which was 6.6% the highest increased up to 100% after instructional sessions. 90% and 100% success rates of subjects especially in differentiation phase, 100% success level in generalization session and 98.8% in maintenance session, point to the fact that simultaneous prompting can be used for the effective teaching of concepts. Head, Collins, Schuster & Ault (2011) compared the method of teaching different countries and state capitals to four high school students with learning and behavior disorder by using simultaneous prompting and constant time delay and concluded that both methods are effective. However, they have also pointed out that simultaneous prompting is more effective in terms of errors in instructional and maintenance phases. Waugh, Alberto & Frendrick (2011) used simultaneous prompting in teaching sounds and blending skills to children with intellectual disability between the ages 12 and 15 and they also found out that this procedure is effective.

As can be seen in the studies carried out, simultaneous prompting is used more in teaching mathematical skills rather than concept teaching. However, simultaneous prompting can be used in the teaching of various concepts to children with special needs and in this way teaching can be more effective and long lasting.

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### **Writer's Notes**

This study utilizes one of the single-subject research models. In studies carried out with single-subject research model, the number of subjects can be one, two, three. Having more than three-four subjects is generally not preferred. Since this study is also a single-subject research and that it makes use of individualized instruction, it is carried out with three subjects.

In the "Methods" section it is possible to find the method of the study, and since it uses one of the errorless teaching methods, in this section, there are the sub sections of sampling, data collection method, tools and also baseline data collection, instructional sessions, maintenance and generalization sessions and validity.