Efficacy of Teaching with Simultaneous Prompting in Teaching the Environmental Sounds to A Child with Multiple Disabilities

Çok Özürlü Bir Çocuğa Çevre Seslerinin Öğretiminde Eşzamanlı İpucuya Öğretimin Etkililiği

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ABSTRACT: It is quite important for visually handicapped children to recognize the environmental sounds. This study was conducted to teach the sources of the environmental sounds to a visually handicapped and mentally retarded child. The purpose of the study was to teach visually handicapped student the names of the animals the sounds of which he/she hears in the near surrounding using the simultaneous prompting method. Three sets of animals which the child encounters in his/her near surrounding, but the names of which he/she doesn't know, were formed in order for the child to recognize them from their sounds. A multiple probe design across behaviors was used in the study. The subject included in the study was a 9 year-old visually and mentally handicapped girl. The names of animals were taught to the subject by holding sessions at the Unit for the Children with Developmental Disabilities in Anatolia University. At the end of the study, simultaneous prompting method was found to be effective in teaching the names of the animals based on the sounds.

Keywords: Training of people with multiple disabilities, functional skills teaching, teaching environmental sounds, simultaneous teaching


Anahtar sözcükler: Çok özürlülerin eğitim, işlevsel beceri öğretimi, çevrelere seslerinin öğretimi, esteemli öğretim

1. INTRODUCTION

In the studies conducted on people with mental retardation, it was found that these persons often had visual handicap in addition to mental handicap. In the studies conducted on the visually handicapped, similarly, the incidence of mental handicap was high (Broke, Janssen, Ramshorst & Deen, 2006; Evenhuis, Theuissen, Denkers, Verschuure, & Keme, 2001; Glazman & Ducret, 2003; McCall ve McLinden, 2001; Warburg, 2001). This can be explained by associating several genetic anomalies (Down syndrome, Engelmann syndrome, Fragile X syndrome, Prader-Willi syndrome, etc.) with the fact that they also lead to occurrence of visual impairments (Broke, et al. 2006). Presence of genetic background means that the visual and mental handicap has begun to affect the life of the individuals at a very early period. It is a reality that learning is mostly induced by motor and sensory stimuli at the infancy period. The lack of visual stimulus which one of the fundamental stimuli at that period is too hard to be restored with other sensory stimuli (De Jong, 1986; Vlaskamp, 2003). Hence, it is a predictable result that the lack of visual stimulus at the infancy period negatively affects development. The literature includes resources suggesting that merely 2% of the visually handicapped may be mentally handicapped, that the developmental disability and different behaviors occurring due to lack of stimuli in children with visual

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impairments lead to the fact that they are considered as mentally retarded (Broek, Janssen, Ramshorst, & Deen, 2006).

Another reason of high incidence of visual impairment in individuals with mental retardation is explained as failure in diagnosing and treating the preventable visual impairments in the individuals mental retardation in the early period. Considering several behavior patterns developing in the children with mental retardation in association with the visual impairment as the behaviors conducted by them because of mental handicap lead to delay in early treatment of preventable conditions (Broek, Janssen, Ramshorst, & Deen, 2006; De Jong, 1986; Vlaskamp, 2003).

Individuals with multiple disabilities are those who show retardation in one or more developmental areas. Presence of severe mental retardation is considered when the multiple disability is the case. Hence, the life qualities of individuals with multiple disabilities are assumed to be rather lower compared to their normal peers since they need extreme support in sharing all their life activities and social environments (Lancioni, G.E., O’Reilly, M.F., Singh, N.N., Sigafoos, J., Didden, R., Oliva, D. ve Severini, L. 2006). Whereas, in the study, it was found that individuals with multiple disabilities may have too different characteristics (Downing, 2002). Therefore, it would be more accurate to define individuals with multiple disabilities as such individuals who need interdisciplinary educational planning (Glazman & Ducret, 2003; Orelove & Sobsey, 1996).

The individuals with developmental disabilities regardless of whatever reason need many systematic learning life in order to live independently and learn the skills they need (Broek, Janssen, Ramshorst, & Deen, 2006; Glazman & Ducret, 2003; McCall & McLinden, 2001). Developmental disability may arise either by the insufficiency of the sensory stimuli or from the fact that the stimuli cannot be evaluated by the individual in a functional manner (Broek, Janssen, Ramshorst, & Deen, 2006; De Jong, 1986; Vlaskamp, 2003).

The individuals with mental retardation perform distinctive learning through observing the visual models (Lovaas, 2003). Presence of visual handicap in addition to mental retardation makes it difficult to learn the information and skills to be generated by associating different sensory inputs and visual stimuli with each other (Glazman & Ducret, 2003). It is observed that the individuals with multiple disabilities with visual handicap and mental retardation have severe developmental disabilities in the skills of standing up, walking, space using, adaptation to the environment as well as in communication skills (Glazman & Ducret, 2003; Layton & Lock, 2001; Trief, 2007).

Communication can be performed in written, verbal and nonverbal form (with gestures, mimics and symbols). Communication is the way for the individuals to express their needs and wills to others and to share information. The verbal communication to be developed by children with multiple disabilities with visual handicap and mental retardation for sharing common information is vitally critical for them. The limitedness of children with multiple disabilities with visual handicap and mental retardation in communication skills limit their expressing themselves, consequently, their social recognition. Although the children with multiple disabilities with visual handicap and mental retardation experience limitedness in all forms of communication, they can use the verbal communication form supported by other sensory stimuli instead of visual stimuli in order to perform efficient sharing (Durando, 2008; Trief, 2007; Lancioni, O’Reilly, Sing, Pidala, Piazzolla, Oliva & Groeneweg, 2006).

Capability of the children with multiple disabilities with visual handicap and mental retardation to perform learning in order to develop themselves is closely associated with their verbal communication levels. Hence, it is a priority to teach the basic communication skills which enable verbal communication. Verbal communication is to generate sound output by taking turn
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Concerning the visual stimulus at which common interest is provided. The children with multiple disabilities with visual handicap and mental retardation cannot develop common interest sharing on the basis of the visual stimulus. Systematic arrangements must be made in order to enable the learning which will be provided by the visual stimuli which are known to be lacking (Layton and Lock, 2001). Therefore, they must be oriented so as to communicate on the basis of oral and tactual stimulants. Capabilities to orient at audio stimuli excellently and to evaluate the oral inputs meaningfully are the skills required by the individual to give responses fitting to the situation and to control his/her environment. Hence, a great number of skills that are planned to be addressed in the education programs for visually handicapped and mentally retarded children include skills based on oral stimulus such as listening, understanding.

The performance level of children with visual handicap and mental retardation in their communication skills is directly proportional with the learning level (Layton and Lock, 2001). Learning is use of information generated as a result of the stimuli obtained by many senses in a functional manner. Children with visual handicap and mental retardation suffer inadequacy in learning based on visual stimuli which materially affects learning. Therefore, they develop a learning life through supporting the tactual stimuli with oral stimuli. However, processing these two sensory stimuli fully and convert into information requires a mental performance. The limitedness of children with visual handicap and mental retardation in mental performance affects their acquisitions. Such limitedness can be eliminated only by systematic multiple repetitions of the information to be taught (Perfect, 2000).

One of the most fundamental behaviors of communication skills is listening to the sound. The infants start sound imitations after listening to the sound. They continue their language development which they start by imitating the sounds they listen to in the beginning through taking turn and giving meaning to the approvals of their oral outputs. Visually handicapped or poor-sighted children need to communicate in order to listen to and give meaning to the sounds. Visual stimulus has a very important role in giving meaning to the sound (Perfect, 2000, p. 353). The information as to what the heard sound belongs to must be matched and saved. Children with visual handicap and mental retardation’s recognizing and giving meaning to the sounds is critical for them (Lancioni, et al., 2006). For instance, the child must have generated an information as to that a sound which is close to him/her and emerges suddenly may be a sound which must be avoided.

In order for children with visual handicap and mental retardation to learn life information on the basis of the sounds, they must be interested in the environmental sounds, and learn what they belong to, in the first place (Lancioni, et al., 2006; Perfect, 2000). This is also a skill which has a character of a precedent to develop their communication skills such as imitation, sharing common information, initiating communication and continuing communication by taking turn. Hence, naming to a visually and mentally handicapped child based on listening to the sounds was studied in this study.

One of the most effective methods in education of children mental retardation is the simultaneous prompting method, which is one of the errorless teaching methods. In the literature, there are many studies showing the efficacy of the simultaneous prompting method. Some of these are associated with teaching single-step skills. One of these is the study of Tekin-Iftar, Kurt & Acar (2008) where two students diagnosed as mentally retarded were taught the tool names and their functions with additional information presentation. Another study is the study of Akmanoglu and Batu where (2005) two autistic children were taught to recognize their relatives and in another one, Akmanoglu-Uludag and Batu (2004) taught two autistic students to show the figures of the sounded numeral. Another study is the study of Birkan (2005) where three children exhibiting developmental disabilities were taught to read three different skills (reading figures, saying object names and telling the time).
There are studies also in other countries where simultaneous prompting method is used in teaching single-step skills. In one of these, Singleton, Schuster and Ault (1995) taught to two students with moderately mental retardation to read signboard writing. In the study conducted by Wolery, Holcombe, Werts and Cipolloni (1993), the authors studied the skill of three children exhibiting mental retardation to show the sounded symbol. In the study conducted by MacFarland-Smith, Schuster and Stevens (1993), they taught to three subjects showing developmental retardation in the preschool period to name the foodstuff verbally. Gibson and Schuster (1992) studied on teaching the skill of finding words to the children at the preschool level. In the reviewed studies, it is obviously seen that the subjects have learnt the targeted skills, accordingly, the simultaneous prompting method is efficient in teaching single-step skills. Therefore, simultaneous prompting method was preferred in this study. The purpose of the study was to examine the efficacy of simultaneous prompting in teaching recognizing and naming the sounds to a child with visual impairment and mental retardation.

2. METHOD

2.1. Subject

A nine year-old girl with visual impairment and mental retardation was participated in the study. During the study, the student was attending to the special classroom of a public school at the centrum of Eskişehir to which students with mild mental retardation attended.

Before the study, the subject was taught moving independently within the house by touching, and if guided, moving and using space outside home. The student’s having light perception increased her independently moving initiatives. It was found that she did not watch out the oral stimuli in her environment at all during independently moving initiatives. In consequence of the interview with her family and the observations of the researcher, it was taught that the possibility of student to encounter hazardous situations increased because she did not listen the environmental sounds. Conducting a study of recognizing and naming the sounds was decided to be appropriate as the first step of the study of listening and giving meaning to the sounds.

2.2. Researcher

The study was conducted by a researcher with doctoral degree in special education field. The researcher, in addition to having a background in the field of education of the mentally handicapped, has received in-service training on education of children with multiple disabilities, and has been giving individual education to the children with multiple disabilities and their families for eight years.

2.3. Environment

The study was conducted in one of the individual study rooms of Anadolu University Research Institute for the Handicapped Disability Implementation Unit. The room is in the dimensions of 3.5 X 4.5, and contains a table and chairs where the subject and researcher can sit against each other. The researcher performed education practices in individual desk study format. The data of the study were recoded with a video camera.

2.4. Equipment

In the study, a keyboard (organ) which generated animal sounds when the keys were pressed was used in each education session of the study. A daily probe session was held in the beginning of each education session except the first session. The same keyboards were used in the probe sessions.
2.5. Study Design

In the study, the multiple baseline design across behaviors, which is one of the single-subject study methods, was used in the study in order to examine the efficacy of simultaneous prompting in teaching the skills of saying the names of the animals when she hears their sounds in her near surroundings. Multiple baseline design across behaviors is a design where the efficacy of a method applied to the subject is studied on more than one targeted behaviors (Alberto & Troutman, 1995; Kircaali-Iftar & Tekin, 1997; Tawney & Gast, 1984).

In the multiple baseline design across behaviors, two or three target behaviors which are independent of each other in functional terms, and are thought to be likely to change with the same application are selected by the researchers. The multiple baseline design across behaviors, like with other multiple baseline designs, consists of two phases, the baseline stage (A) and application stage (B). At the baseline stage, all target behaviors are measured in the same environment simultaneously, and until stability in the data is obtained. After stability is obtained in all baseline stages, application is started in the first target behavior. In the meantime, baseline data are continued to be collected for the other two target behaviors. Once the criterion in the first target behavior is met in the application stage, the application stage in the second target behavior is started. These procedures are continued until the application process is completed for all target behaviors (Alberto & Troutman, 1995, p.169; Kircaali-Iftar & Tekin, 1997, p.86; Tawney & Gast, 1984, p.231; Tekin-Iftar & Kircaali-Iftar, 2004, p.113).

The trial control in the studies of multiple baseline across behaviors is established through the facts that change occurs only at the level of data in the behavior to which the independent variable is applied, that no change occurs at the levels of data in the behaviors for which the application has not been started yet; however, that similar changes occur successively at the levels of data in other behaviors as the application is performed (Tekin-Iftar and Kircaali-Iftar, 2004, s.113).

2.6. Dependent Variable

The behavior targeted to be taught within the study is saying the name of the animal the sound of which is listened to. The researcher, before starting the study, determined which animals were present in the near surroundings of the child, but which she could not name when she heard their sounds. The child was made listen to the sounds of the animals present in her surroundings and asked: “What this sound belongs to, what made sound now?”. It was determined that the student did not know the names of any sources of the environmental sounds. But six voices which could be simulated using keyboard were addressed in the study. Two keyboards that could generate the sounds of the determined animals were provided. Then the names of the animals which the subject didn't know were written, lots were drawn, and three sets consisting of two animals were prepared. The sound sets taught to the subject and the animal names addressed are shown in Table 1.

Table 1. Names of Animals included in the Sound Sets

<table>
<thead>
<tr>
<th>Set I</th>
<th>Set II</th>
<th>Set III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bird</td>
<td>Dog</td>
<td>Cow</td>
</tr>
<tr>
<td>Sheep</td>
<td>Duck</td>
<td>Cock</td>
</tr>
</tbody>
</table>

2.7. Independent Variable

The variable of this study is the simultaneous prompting method.
2.8. Trial Process

The trial process consists of baseline data collection, teaching and daily probe sessions. Below are the information as to how these sessions are held.

The baseline data of the study were collected in order to determine the subject’s performance concerning targeted skills before starting teaching. The daily probe session data of the study were collected in the beginning of each teaching session.

For collection of the data, the researcher put the keyboards which generated animal sounds when their keys are pressed on in front of the student. The researcher was asked to say which animal the sound she heard belonged to. In order to draw the attention of the student, the researcher said: “Today, we will try to say the name of the animal which the sounds we will hear today belong to. But I wonder whether you recognize these sounds. Now, I will make you listen to a sound. I want you to listen well, and say me which animal it belongs to. “Are you ready now?” The researcher instructed: “Say which animal the sound you listened belongs to”, and made the student listen to the sound by pressing the keyboard. The researcher gave a model and verbal prompter as a controlling prompter, said: “say which animal calls baaa baaa”, and waited for 4 seconds for the student to respond. Each sound was made listened to three times, and 18 trials were performed. Afterwards, the researcher determined the correctness percentage of what the student said. If the student has not responded within 4 seconds, the researcher considered this as “no response”. The correct responses of the student were verbally confirmed, but the wrong responses were disregarded (Tekin-İftar & Kırcaali-İftar, 2004, p.145; Wolery, Ault & Doyle, 1992, p.48).

Daily probes were conducted in a similar way, and six trials performed with three trials for each of two animal sounds being taught.

Teaching sessions were performed individually on two days of the week, and completion of five trials for each of two sounds was regarded to be essential in each teaching session. In the teaching sessions, like with baseline and probe sessions, the subject was ensured to focus her attention on the study saying her: “Today, we will try to say the name of the animal which the sounds we will hear belongs to, are you ready now?”. Each trial of the teaching session was performed with 0 seconds waiting time as per the simultaneous teaching method. During teaching, the researcher gave the controlling prompter after making the listened from the keyboard saying “the lamb calling baaa baaa”, and gave the skill instruction (“Now you say which animal the sound you listened belongs to”). In the trials with zero second waiting time, the researcher, soon after giving the controlling prompter, gave again the skill instruction to the student, and confirmed the correct response of the student. Teaching was continued until the student named the sounds of two the two animals in the first set 100% correctly on three successive days. Afterwards, teaching of the sounds in the second set was initiated. All sessions were performed in one-to-one teaching session format.

2.9. Data Analysis

In the research, the video shootings of all the data were taken in order for inter-observer reliability and application reliability analyses to be made. Inter-observer reliability and application reliability data were collected in 20% of all sessions. Both the inter-observer reliability and application reliability were found to be 100%.

3. FINDINGS

At the end of the study, it was determined that the visually and mentally handicapped subject acquired and maintained the skills of recognizing and naming the sounds, which is taught to her by simultaneous prompting (See Figure 1).
The subject, having learnt the names of the animals in the first sound group in eight sessions, the names of the animals in the second sound group in 13 sessions, and the names of the animals in the third sound group in 10 sessions; learnt naming once she hears the sounds of the six animals determined in a total of 31 sessions.

Figure 1. Baseline (BL), Application (A) and Monitoring (M) data regarding the correctness percentage in the subject’s recognizing and naming the sounds.
The student could not attend in the studies for one week after the second session for the first sound group, and after the third session for the second sound group. Following these compulsory breaks, declines were seen in the performance of the student. The fluctuations in the second sound group aroused out of the fact that the student confused the names of the animals which she was ought to say after listening the sounds. Observing a more stable curve in the third sound group is the indication of development of the students in recognizing during listening as well as in naming the oral input.

4. DISCUSSION AND RESULT

Briefly, it is seen that simultaneous prompting method is efficient in teaching naming to a mentally and visually handicapped student through listening the environmental sounds. This result which was obtained in the study is in concordance with the results of the studies in the literature (Akmanoğlu & Batu, 2005; Akmanoğlu & Batu, 2004; Birkan, 2005; Doğan & Tekin-İftar, 2003; Fetko et. al., 1999; Gürsel, Tekin-İftar & Bozkurt, 2006; Kurt & Tekin-İftar, 2008; Parrot et. al., 2000; Schuster & Griffen, 1993; Sewell et. al., 1998; Tekin-İftar, 2008; Tekin-İftar, 2003; Tekin-İftar & Kurt, 2008; Tekin-İftar, Kurt, & Acar, 2006; Tekin-İftar, Acar & Kurt, 2003; Tekin-İftar & Kicaali-İftar, 2002). Additionally, the student’s family expressed that the student was naming the sounds by listening following teaching. Accordingly, the researcher suggested including teaching other environmental sounds in the Individualized Education Plan.

No study conducted with error-free teaching methods concerning listening to sounds and naming was found in the literature. However, Lancioni, et al. (2006) have taught to recognize the environmental stimuli to two visually handicapped students in a study conducted with inter-subject multi-probe method. It was reported that both subjects have acquired the targeted skills. This result shows similarity with the results of this study. But when considered the average number of the teaching sessions, it is observed that teaching with simultaneous teaching takes less time.

In further studies, the researchers may examine the efficacy of the simultaneous prompting method in teaching recognizing and giving meaning to the environmental sounds. Moreover, the efficacy and efficiency of teaching with fixed waiting time in teaching the skills of recognizing and giving meaning to the environmental sounds may be evaluated.

The teachers may use the simulations primetime method in teaching recognizing and giving meaning to the environmental sounds. They may also teach the environmental sounds which must to avoided with a method similar to that in this study.
REFERENCES


**Uzun Özet**


Hangi nedenle olusan olsun gelişimsel gerilili olan bireyler bağımsız yaşamayile ve gerekşinin duyduğu becerileri öğrenebilme için pek çok sistematiğ öğrenme şantsanın gerekşinin duymaktadırlar (Broek, Janssen, Ramshorst ve Deen, 2006; Glazman ve Ducret, 2003; McCall ve McLinden, 2001). Eksikliği bilinen gorsel uyanılarla sağlanacak öğrenmelerin, diğer duyuşal uyanılarla sağlanmasına yönelik sistematiğ düzenlemeleri yapılmış gerekir (Layton ve Lock, 2001).
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İşitsel uyaranlara çok iyi yönelebilmek ve işitsel girdileri anlamak olarak değerlendirilmek, duruma uyanın tepkileri veremek ve bireyin çevresini kontrol edebilmesi için gereken temel becerilerdir. Göreme ve zihin özlü çocukların için sesleri tanıma ve anlamladığı, duyuların da etkisi altında olduğu gibi, çevresinde de çoklu sahip bireylerin sistematik eğitimin planlanması ve yürütülmesi için bir önem oluşturmaktır.


 Araştırmada, tek denekli araştırma yöntemlerinden davranışlar arası çoklu başlama modeli kullanılmıştır. Davranışlar arası başlama modeli, bir video kamerarla kaydedilmiştir. Yapılan kayıtların % 20'si gözlemler arasına ve uygulama güvenilirliği verileri toplanmıştır. Gözlemler arası güvenilirlik % 100 uygulama güvenilirliği de % 100 olarak bulunmuştur.

 Araştırmada, tek denekli araştırma yöntemlerinden davranışlar arası çoklu başlama modeli kullanılmıştır. Davranışlar arası başlama modeli, deneğe uygulanan bir yöntemin etkililiğini birden fazla davranış üzerinde araştırıldığı bir modelidir (Alberto ve Troutman, 1995, s.167; Kırcaali ve İftar, 1997, s.82; Tawney ve Gast, 1984, s.231; Tawney ve Gast, 1984, s.231; Tekin ve İftar, 2004, s.113). Davranışlar arası başlama başlama arastırmalarında deneysel kontrol, yalnızca bağımsız değişkenin uygulanmaya başlandığı durumda zihin ve görme özlü çoklu engelli sahip öğrencinin, davranışa verilen bilgiyle ilgili bir etkiyi göstermesi, henüz uygulamanın başlamaması olduğu davranışların veri düzeylerinde değişiklik olmaması, ancak, diğer davranışlar için uygulama gerçekleştirdiğinde verilerin düzeyinde benzer değişikliklerin ard-ardan olarak geçişini sağlamaktadır.

 Araştırmanın sonunda özetle, eş zamanlı ipucuyla öğretim yönteminin, zihin ve görme özlü çoklu engelli öğrencinin çevresindeki sesleri dinlemeye çalışmasında etkili olduğu görülmüştür. Ek olarak, öğrencinin ailesi, öğrencinin öğretiminden sonra sesleri dinlemeye istemlendiğini ifade etmiştir. Dolayısıyla, uygulamacı diğer çevre seslerinin öğretimini de öğrencinin Bireysel Geliştirilmiş Eğitim Planı kapsamına alınmasını ve yanılışlı öğretim yöntemine öğretilebileceğini eğitim kurumuna bildirmiştir.

İleri araştırmalarda uygulamalar çoklu engele sahip bireylere farklı çevre seslerini ayırt etme ve anlamlandırma öğretkmektedirler. Ayrıca, çevre seslerini ayırt etme ve anlamlandırma becerilerinin öğretiminde sabit bekleme süreli öğretimin etkiliğini ve verimliliğini de değerlendirilebilirler.

Çok engelli çocuklarla çalışan öğretmenler, çevre seslerini ayırt etme ve anlamlandırma öğretiminde eğitici becerileri eğitimin etkiliğini ve verimliliğini de değerlendirilebilirler. Çalışma zihin ve görme özüne sahip tek bir denekle sınırlı olsa da, çoklu engeli olan bireylerin eğitimlerinde duyulan yöntem tereddütünü azaltacağı umulmaktadır.

Citation Information