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EFFECTS OF A PARENT'S INTERVENTION TO DECREASE STEREOTYPIC
BEHAVIOR AND INCREASE INTERACTIONS USING SELF-MANAGE-
MENT TREATMENT FOR STUDENTS WITH AUTISM IN KOREA

by

Jeongil Kim

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Special Education

Approved :

UTAH STATE UNIVERSITY
Logan, Utah

1996

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ABSTRACT

Effects of a Parent's Intervention to Decrease Stereotypic Behavior and
Increase Interactions Using Self-Management Treatment for
Students with Autism in Korea

by

Jeongil Kim, Master of Science

Utah State University, 1996

Major Professor: Dr. Martin Agran
Department: Special Education

The present investigation examined the effects of a parent's intervention to teach students with autism self-management to decrease their stereotypic behaviors. A time-lagged ABA (A represents the first baseline, B does intervention, and A does the second baseline) design was used. Three mothers of children with autism were trained to reduce their children's stereotypic behaviors using a self-monitoring strategy. The training for the parent was conducted in two settings after the first baseline condition. A classroom was used for the first training session and the home was used for the second training session. The intervention by the parent was conducted in the child's natural home.

The results of this study revealed the following. First, the intervention decreased the students' stereotypic behaviors. Second, two students maintained the decreased frequency of stereotypic behavior in a nonintervention condition, the second baseline, when the parent withdrew the intervention for a month. Third, the students showed slight behavior change on their interactive behaviors with their family members after the intervention was withdrawn.

(76 pages)

ACKNOWLEDGMENTS

Appreciation is extended to my supervisory committee. Specifically, I would like to acknowledge Dr. Martin Agran, chairman, for his guidance, advice, and support throughout my graduate work and his efforts half-a-world away for this study; and to Dr. Richard K. Young and Dr. Kenneth W. Merrell.

I am grateful for the invaluable help of the president, teachers, the students' mothers and their families, and the students at Unpyoung Special School in Korea. Special thanks is given to the students for their participation and patience while I completed this work. Also, I appreciate the priceless support of my parents.

Jeongil Kim

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CHAPTER I

INTRODUCTION

Parent training has been demonstrated as an effective approach to modify the behaviors for children with autism (Cordisco, Strain, & Depew, 1988; Krantz, MacDuff, & McClannahan, 1993). In previous research, parent training has resulted in positive behavior changes of children with autism as well as the parents' improvement in their teaching skills.

In the parent training program investigated in this study, the parents were trained to teach their children to self-manage their own behaviors as a specific method to decrease the children's undesirable behaviors. Several previous studies have investigated that a self-management procedure is effective for modifying behaviors of children with autism (Koegel & Koegel, 1990; Stahmer & Schreibman, 1992).

Teaching students to self-manage their own behaviors by parents represents a promising approach for both children with autism and their parents. It may help to attenuate the burden on parents and caretakers as well as to promote the child's independence (Pierce & Schreibman, 1994). With this in mind, this study was conducted in Korea where there is an urgent need of suitably developed special education services for children with autism (and other severe disabilities).

In Korea, only 15% of children with disabilities have an opportunity of being

educated in a self-contained special school or residential facilities in which there is a high teacher-student ratio. The rest stay at home without any educational service because of a lack of educational programs for them (Seo, Thomas, Han, & Hu, 1992). Therefore, providing more special education services for children with severe disabilities is needed urgently in Korea.

Stereotypic behavior was selected for this study because the behavior is one type of maladaptive behaviors displayed by children with autism (Repp, Felce, & Barton, 1988). Additionally, after the parents introduced the intervention, the children's positive interactions with family members were measured.

This study had three purposes. The principal purpose of this study was to see if the parents' intervention using self-management treatment was effective for decreasing stereotypic behaviors of children with autism. The second one was to see if the behavior change could be maintained when the intervention was withdrawn for a month. The third purpose of this study was to see if there was a collateral change on interactions with family members with decreasing stereotypic behaviors by the effect of the parent's intervention in the natural home setting.

CHAPTER II

LITERATURE REVIEW

Procedures for Obtaining Sources

A thorough search of the research literature in the field of special education and psychology was conducted to locate studies involving parent training and self-management treatment to modify inappropriate behaviors and increase appropriate behaviors of children with autism. Studies were located by the use of the ERIC and Psychlit computer data-based system in addition to a manual search of the Current Index to Journals in Education (CIJE) and the Exceptional Child Educational Resources (ECER) for the years 1975-1995. Descriptors used in the search were autism, behavior, parent training, and self-management.

Summary of Studies Reviewed

Studies reviewed included papers about both parent training relating to autism and self-management relating autism. First, the studies about parent training are summarized, and then the studies about self-management are summarized.

Studies Reviewed About Parent Training

Studies involved in parent training are summarized below. The following

describes the participants, setting, methods, dependent variable, and results of the studies.

Participants. The description of the participants in the reviewed studies is summarized in Table 1. In the studies reviewed, the student's mother participated in a parent training program for a parent-delivered behavior modification of the students with autism (see Table 1). In only two studies, Cordisco, Strain, and Depew's (1988) and Koegel, Glahn, and Nieminen's (1978), the mother's educational background was reported. Participating couples of mother and child ranged from 3 to 20. Except for Baker and McCurry's (1984) study, authors of all the reviewed studies selected mothers who have children only with autism. Baker and McCurry (1984) employed students with mental retardation as well as autism. Only two of the studies reviewed reported the students' specific functioning levels (Holmes, Hemsley, Rickett, & Likierman, 1982; Krantz et al., 1993). The targeted behaviors for the effects of parent's intervention after completing parent training were reported specifically in all the studies reviewed, including increases in pre-academic skills, self-help, social communication skills, direction following, and perceptual-motor skills, and decreases in disruptive behavior, screaming, and stereotypic behavior (see Table 1).

Setting. Settings used in all the studies about parent training are also summarized in Table 1. In studies of parent training, except for Baker and McCurry's

Table 1

Participants' Characteristics and Study Conditions in Studies About Parent Training

Author (year)	Number of participants (Mother and child)	Mean of student's age	Disabling condition	Target behavior	Time for parent training	Setting
Baker & McCurry (1984)	20	5.7 yr	Mentally retarded, Autism	pre-academics, self-help, appropriate play, language, perceptual- motor skill		School
Cordisco et al. (1988)	3	4.7 yr	Autism	direction following appropriate behavior	2 hours/week for 10 weeks	Home
Holmes et al. (1982)	28	5.1 yr	Autism	communication skills, undesirable behavior	2 times/week -> one/month for 18 months	Home
Krantz et al. (1993)	3	7 yr	Autism	home-living skill social initiation disruptive behavior	74, 90, 53 hour for each subject	Home
Koegel et al. (1978)	4	4-13 yr	Autism	appropriate tasks		Home

Note. yr=years

(1984) study, which used a school-based training program, four authors used home-based programs with their children. The amount of time for parent training was reported only by Cordisco et al. (1988) and Krantz et al. (1993). It was reported that parents were trained for 2 hours a week for 10 weeks in Cordisco et al.'s (1988) study, and 74, 90, and 53 hours for each parent in Krantz et al.'s (1993) study.

Method. In all the studies reviewed about parent training, a program designed to train parents to acquire desirable skills necessary to modify their child's behavior was delivered to the mothers by the researchers, other professionals, or both. After the parents were trained, they were asked to implement the behavioral skills based on what they were trained to teach their children, and the effects of the parents' implementation of intervention with their children were measured.

Baker and McCurry (1984) used a brief summer school-based program that included three major components: individual consultation, active teaching, and individual video feedback. Each parent was assigned to one trainer and received consultation on how to tailor teaching and behavior management programs to her child's particular needs. Trainers also helped parents plan home programs and provided feedback on progress records. The active teaching training included a mini-camp activity schedule, enabling them to practice newly acquired teaching skill. The training began by having parents observe staff teach, then teaching other

campers, and, finally, their own child. In an individual video feedback phase, each parent was videotaped as she taught her child, and then the trainer and sometimes other parents viewed the tape, praised good teaching technique, and offered suggestions for improvement. To measure the effects of the training, the Behavioral Vignettes Test, Teaching Proficiency Test, Child Behavior Checklist, Teaching Interview, and Consumer Satisfaction were administered before the training and after the training.

In Holmes et al.'s study (1982), two psychologists visited the experimental group families regularly and trained the parents to teach their children specific skills. The mothers in the experimental group were encouraged to conduct their own functional analyses of their children's difficulties, decide on a course of action, and note their success. Then, behavior change of the children and the parents' improvement of coping behavior with their children were measured.

In Cordisco et al.'s (1988) study, the parents were trained to teach direction-following, appropriate use of differential attention, procedures to decrease inappropriate behaviors of children, and how to structure the environment to minimize misbehavior. After the parents' implementation of the program with their children, the children's behavior and parents' correct use of behavioral procedures were measured.

Krantz et al. (1993) trained parents to teach their children to follow photo-

graphic activity schedules in the intervention setting that included leisure, social interaction, self-care, and housekeeping tasks. After the parents' implementation of intervention with their children, the behavior of their children in home-living tasks and the frequency of disruptive behaviors were measured.

In Koegel et al.'s (1978) study, parents were taught how to teach their children with autism new behaviors according to task sequences. The parents were trained in behavioral techniques to teach target tasks to their child, encouraged to deliver the teaching procedures to the children, and then the parents' correct employment of the behavior modification procedures and the children's performance of the tasks were measured.

Dependent variable. The target behaviors involved increasing parents' educational skills/knowledge to teach their children and positive behavior change of students with autism. Data on parents' correct use of teaching skills to their children, behavior change of the children with the parents' intervention, or parent's feeling about the intervention program were described as dependent variables in the studies. Four studies measured both of the parents' performance of teaching skills for their children and behavior change of the children with the parents' intervention (Baker & McCurry, 1984; Cordisco et al., 1988; Holmes et al., 1982; Koegel et al., 1978). Kranz et al. (1993) measured the children's performance of tasks and frequency of disruptive behaviors of the children.

Results of the studies. In the studies reviewed, a parent training program was shown to be effective in teaching parents to reduce undesirable behavior and increase desirable behavior of their children with autism. The findings from this review indicated that parents can be effective resources for children with autism once they acquired effective teaching skills.

Baker and McCurry's (1984) study showed that parents who completed parent training program showed significant gains for mothers' knowledge of behavioral principles (in Behavioral Vignettes Test), teaching skills (in Teaching Proficiency Test), and reported child self-help skills (in Child Behavior Checklist). At a 6-month follow-up, the authors reported that parents evaluated the parent training program highly and satisfactorily (in Teaching Interview and Consumer Satisfaction).

Holmes et al. (1982) reported that most parents in an experimental group viewed the parent training favorably and felt that the child's behavior improved as a result of their intervention. The authors also reported that most of the mothers seemed to have an accurate impression of the treatment and its aims.

Cordisco et al. (1988) reported that all parents of the study increased their correct use of teaching skills. The skills included appropriate instructions, appropriate use of physical prompt procedures, appropriate use of consequences for child direction-following or nondirection-following, and parent attention to

appropriate and inappropriate child behavior. The authors also reported that there was an increase in positive behavior change of children with autism due to the parent-delivered intervention.

Marked increases in engagement of social initiation and decreases in disruptive behavior when parents taught their children to follow photographic activity schedules were reported by Krantz et al. (1993). They also reported that those behavior changes were durable, maintaining for 2.5 months.

Koegel et al. (1978) reported that the parent training was effective for modifying undesirable behavior of children with autism. The result showed that the parent-delivered intervention produced reliable improvement in the behavior of children with autism.

Studies Reviewed About Self-Management

Studies involved in self-management are summarized as follows. Descriptions of the participants, setting, method, dependent variables, and results of the studies are presented below.

Participants. Descriptions of the participants are summarized in Table 2. In the research reporting the effects of self-management to modify behaviors of children with autism, the number of students used in the studies reviewed ranged from three to six. The mean ages of the students ranged from 4 years (Sainato,

Table 2

Students' Characteristics and Treatment Conditions in Studies About Self-Management

Author (year)	N	Mean Age	Disabling Condition (Inappro.behav.)	Mean of Functioning Level	Method (Strategy)	Setting	Length	By whom
Koegel & Koegel (1990)	4	11.7yr	Autism (stereotypic)	Vineland 51	Self-mgmt. (self-monit.)	Treatment Room	115 sess.	2 observers researchers
Koegel under. et al. (1992)	4	8yr	Autism (disruptive)	IQ 71	Self-mgmt. (self-monit.)	Clinic room Community Home/school	95 sess.	Advanced Graduate Specialist
Sainato et al. (1992)	6	4.2yr	Autism (Not mentioned)	CIS 50	Self-mgmt. (self-eval.)	Classroom	60 sess.	2 observers researchers
Stahmer & Schreibman (1992)	3	11yr	Autism (self-stimulatory)	Vineland 49	Self-mgmt. (self-monit.)	Clinic room	55 sess.	2 observers researchers
Pierce & Schreibman (1994)	3	7.7yr	Autism (self-stimulatory, screaming)	Vineland 48	Self-mgmt. (Self-reinf., monit., & eval.)	Clinic room	14 sess.	2 observers researcher

Note. N=subject number; yr=years old; Inappro.behav.=inappropriate behavior; CIS=Cognitive Index Score on McCarthy Scale of Children's Ability; Vineland=socialization domain score on the Vineland Adaptive Behavior Scale; IQ=Intelligence Quotient by Stanford Binet; Self-mgmt.=Self-management; sess.=session; monit.=monitoring; eval.= evaluation; reinf.=reinforcing; Under.= Undergraduate student

Goldstein, & Strain, 1992) to 14 years (Koegel & Koegel, 1990). Except for Sainato et al.'s (1992) study, authors of all the reviewed studies employed only students with autism. Sainato et al.'s study employed three triads of children, comprised of one trained, normally developing peer, one untrained peer who was not disabled, and one child with autism. All studies reviewed reported the students' functioning levels (see Table 2).

Setting. In the reviewed studies about self-management treatment, classroom, treatment room, or clinic rooms as settings were used by Sainato et al. (1992), Koegel and Koegel (1990), Stahmer and Schreibman (1992), and Pierce and Schreibman (1994), respectively. Koegel, Koegel, Hurley, and Frea (1992) used four settings: clinic room, community, home, and school. The length of the treatment was also indicated by all authors and varied widely, from a low of 14 sessions to a high of 115 sessions.

Method. Several self-management procedures have been used to reduce stereotypic behavior. These include self-instruction, self-reinforcement, self-monitoring (observing own behavior and recording it), and self-evaluation. Self-instruction involves teaching a person to verbally direct his/her own behavior (O'Leary & Dubey, 1979). Self-reinforcement is providing oneself with reinforcement upon the behavior that meets a performance standard (Kazdin, 1984). Self-monitoring is a two-stage process in which the subject observes his/her own

behavior, then records the occurrence of the observed behavior (Nelson, 1977).

Self-evaluation involves having the individual evaluate his/her own performance and determine whether it has met a desired standard or not (Kanfer, 1980).

Koegel and Koegel (1990), Koegel et al. (1992), and Stahmer and Schreibman (1992) used the self-monitoring strategy in which the students were taught first to discriminate the target behavior, then to record the occurrence and nonoccurrence of the behavior. To promote the students' independent self-monitoring, the treatment provider's contact and reinforcement were thinned gradually; however, specific information about this process was not provided.

Sainato et al. (1992) used a self-evaluation strategy. They taught three preschool children without disabilities to self-evaluate their interactions with classmates who had autism. The peers were trained to interact appropriately with children with autism, then to evaluate if their implementations were successful. The reinforcement schedule and fading process were not described specifically in this study.

Pierce and Schreibman (1994) used self-reinforcement, self-monitoring, and self-evaluation strategies together. In the study, the subject was taught to discriminate the target behavior for living skills, then to choose his/her own reinforcer. Once correct responding had been initiated, s/he was asked to execute the target response, then asked to evaluate his/her own performance and reinforce him/

herself. To promote maintenance, the treatment provider's presence was gradually faded. This study reported that they used a VR(3) reinforcement schedule with verbal and snack reinforcement in teaching discriminating target behavior, but the fading process was not described.

In four of the studies, data were collected by two trained observers using interval recording and the treatment was conducted by the researchers (Koegel & Koegel, 1990; Pierce & Schreibman, 1994; Sainato et al., 1992; Stahmer & Schreibman, 1992). In Koegel et al.'s (1990) study, the treatment was conducted by advanced undergraduate and graduate students and supervised by a licensed speech and language specialist. Reliability of the data was based on independent observation by two observers and all the studies reviewed reported interobserver agreement over 80%. In the studies reviewed, the self-management procedure included discrimination training, self-management implementation training in presence of treatment provider, and independent self-management training. After achieving stable baseline data, discrimination training was implemented in all studies. In discrimination training, students were taught to discriminate their target behaviors and several reinforcers were identified. Once discrimination training was taught, the students were taught by verbal instruction to self-manage their own target behaviors such as placing a mark in a printed box depending on the occurrence or nonoccurrence of target behaviors. Pierce and Schreibman (1994), which

used a pictorial method instead of verbal instruction. To train students to manage their own behaviors, verbal and, if needed, physical prompts were used in all studies reviewed, except in Pierce and Schreibman's study (1994) which used pictorial prompts. All studies reviewed reported that prompts were faded gradually to promote independence, but the fading process was not described specifically.

Dependent variable. The studies of self-management treatment involved increasing decreasing stereotypic/self-stimulatory, disruptive behaviors, and increasing social interactions. Repetitive behaviors such as finger-flipping and rocking were categorized as stereotypic/self-stimulatory behaviors. Disruptive behavior included tantrum, running away, yelling, and any other noncompliance behaviors. Social interaction behavior involved a reciprocal behavior that occurred as a result of an initiation-response sequence. Four authors described the inappropriate behaviors targeted to decrease (Koegel & Koegel, 1990; Koegel et al., 1992; Pierce & Schreibman, 1994; Stahmer & Schreibman, 1992) as dependant variable(s) for their studies. Sainato et al. (1992) did not mention the students' inappropriate behaviors; however, the study sought to increase social interactions of the students.

Results of the studies. In the studies reviewed, the effects of self-management have been effective in decreasing the students' inappropriate behaviors and in

increasing the students' appropriate behaviors. The findings from this review indicated that individuals with autism could learn to self-manage, that self-management was effective in decreasing inappropriate behaviors and increasing their appropriate behaviors, and that even in the treatment provider's absence, the effects were maintained over time.

Koegel and Koegel's (1990) study assessed whether students with severe autism could learn to use a self-management treatment package to reduce their stereotypic behaviors. The results showed that all of the students learned to use self-management procedures to reduce greatly levels of stereotypic behavior (typically to zero), and the behavior change was maintained for extended periods of time in new settings without the presence of a treatment provider.

In Koegel et al.'s (1992) study, the researchers assessed whether self-management could be used as a technique to produce extended improvements in responsiveness to verbal initiations from others in community, home, and school settings without the presence of a treatment provider. The results showed that children with autism who displayed severe deficits in social skills could learn to self-manage their behaviors across multiple community settings and that such improvements were associated with concomitant reductions in disruptive behavior without the need for special intervention.

Sainato et al. (1992) investigated effects of self-evaluation procedures on

preschool children's use of social interaction strategies. The authors facilitated social interaction strategies for participating children for increasing their social interactions among their classmates with autism after a self-evaluation intervention was introduced. The results reviewed showed that self-evaluation procedures can enhance the use of social interaction strategies on the part of normally developing peers during social skills interventions.

In Stahmer and Schreibman's (1992) study, a self-management treatment package was used to teach three children with autism who exhibited inappropriate play behaviors to play appropriately in unsupervised settings. After self-management training, generalization and maintenance of the behavior change were assessed. Because of the detrimental effects of self-stimulation on learning, the relationship between self-stimulatory behaviors and appropriate play was measured. The results indicated that the children learned to exhibit appropriate play skills in unsupervised settings, these play skills generalized to new settings, and two of the children maintained their gains at 1-month follow-up. In addition, self-stimulatory behaviors decreased as appropriate play increased.

The efficacy of pictorial self-management, which used pictures to teach three children with autism to manage their daily living skills in the absence of a treatment provider, was investigated in Pierce and Schreibman (1994). Stimulus and response generalization, stimulus control of self-management materials, and

maintenance of behavior change were also assessed in their study. Results showed that children with autism could successfully manage their behaviors using pictures that represent selected steps derived from a task analysis of the target behaviors to manage their behavior in the absence of a treatment provider, generalize their behaviors across settings and tasks, and maintain the behaviors at follow-up. In addition, when compared to baseline, all children showed a substantial decrease in stereotypic behaviors. When picture order of tasks was manipulated in stimulus control probes, the children followed the new picture sequence, suggesting that the pictures were controlling their behaviors.

Summary

The reviewed studies about parent training suggest that parent-delivered interventions may produce positive effects. The studies on the effects of self-management indicate that teaching children with autism to manage their behaviors contributes to reduction in inappropriate behaviors and increases in appropriate behaviors.

Problem

The use of effective behavior-analytical procedures has helped improve the quality of special education in Korea (Seo et al., 1992). In particular, procedures

to help children with autism (and other severe disabilities), who have been neglected in Korean society, would be most beneficial to the special education field.

Various conditions have impeded the delivery of effective special education programs in Korea. These include high teacher-student ratios, the reliance on self-contained programs, lack of professionals, and lack of educational services for students with severe disabilities. The use of parents as behavior change agents represents a potentially effective means to modify the undesirable behavior of children with autism in Korea. Consequently, further investigations of systematic procedures to reduce undesirable behavior of children with autism in Korea are needed.

Purpose

This study had three purposes. The principal purpose of this study was to see if parents could be trained to decrease the stereotypic behaviors of children with autism using self-management treatment in Korea. The second one was to see if such behavior change could be maintained in a withdrawal condition after the intervention. The third purpose of this study was to see if there was a collateral change on interactions with family members.

CHAPTER III

METHOD

Participants

Three students with autism who were displaying stereotypic behaviors, their mothers (or a caretaker), and their other family members participated in this study. Ka was a 12-year-old boy, Na was a 15-year-old boy, and Da was a 12-year-old girl. Two mothers and one caretaker were selected on the basis of recommendations from the school teachers. The parents of students ranged in age from 36 to 57 years old (36, 41, and 57, respectively), and all had completed at least a high school education. At the time of this study, no parent had any formal training in behavior modification of autism. There were no drop-outs after training began. All the students were enrolled in a special school. Two of them lived at their homes with their parents and other family members, while one lived at an orphanage with a caregiver and six other children with disabilities. All of the students' parents (or caregiver) and teachers indicated that the students were capable of following one-step simple directions.

The Vineland Adaptive Behavior Scales were administered by the students' teachers. The Autism Behavior Checklist was scored by the parents and teachers of the students and resulted in a total raw score (Note: A score of 67 or higher on

The Autism Behavior Checklist indicates a high probability of autism). Each subject had been diagnosed previously as autistic by the school when the students enrolled in the school. IQ and mental ages could not be derived.

Descriptions of each student are provided in Table 3, which shows their chronological ages (CA), socialization domain scores (SQ) on the Vineland Adaptive Behavior Scales, and scores on the Autism Behavior Checklist (ABC).

Ka was a 12-year-old boy who has been in the special education program for 6 years. He lived at an orphanage with a caregiver and six boys with disabilities. His only vocalization was sudden screaming, and he occupied himself for extended periods of time in stereotypy. He responded to his name by making eye contact with another person for less than 1 second. He had an immature fine object grasp and could not hold objects for more than 3 seconds, except for a milk

Table 3

Description of Students

Student	CA	SQ	ABC
Ka	12	27	81
Na	15	49	69
Da	12	38	78

straw. His teacher reported that he had not participated in any classroom activity because of his uncompliant and destructive behavior when he was asked to participate in a class task (Note: Because of the teacher-student ratio, one teacher with no assistant and 13-15 students in a class, individualized teaching is not practical in the special school where this study was conducted). He scored 27 on The Vineland Adaptive Behavior Scales and 81 on the Autism Behavior Checklist. His caregiver reported that he never interacted with his family members using appropriate behaviors. Free playing in a room with the other six boys was his usual family activity.

Na was a 15-year-old boy who has been enrolled in the special school system for 8 years. He lived at his home with his parents and two younger sisters. He could follow several classroom directions and could attend to the teacher for more than 3 seconds. He responded to his name by attending to the person. He led other people to a desired object when he needed something. He often attempted to communicate verbally paired with gestures. He used a few simple gestures to communicate his needs and was currently using a sound to identify other desires, but had no functional speech. He also interacted with his family by smiling to his family members or making sounds to express his needs. He got 49 on The Vineland Adaptive Behavior Scales and 69 on the Autism Behavior Checklist. His usual family activity was watching TV.

Da was a 12-year-old girl who has been enrolled in the special school system since she was 7 years old. She lived at her home with her parents and her one younger brother. She responded to her name by attending to the person for about 1 to 2 seconds. She also could follow basic one-step simple directions, identified her wants by leading an adult's hand to the objects, but she did not attend to the teacher or other person for more than 2 seconds in a one-to-one situation. She had few imitative skills and rarely vocalized as a form of communication. The Vineland Adaptive Behavior Scales were administered to Da and she got a score of 38 on the socialization domain, and a score of 78 on the Autism Behavior Checklist. She did not interact with her family voluntarily except for the expression of her needs. Her parent reported that she usually did not participate in a family activity. Her typical family activity was to do religious service together, then to talk about the day.

Setting

Training the parent how to teach her child self-monitoring was conducted in two settings: a classroom in the special school where the students attended and their homes. All the individual parents attended a 4-hour individual behavior management training class every day for 4 days. They also received 4 hours training for the first phase and were assisted by the researcher for the first day of

each phase. All parents received about 32 hours of training individually.

By completing the parent training class after baseline, the parent implemented intervention by one-to-one instruction to her child after school. The setting was each student's usual home environment. During the intervention for a student by the parent, the parent was encouraged to have a seat facing the student at any place that was comfortable for the student such as a sofa, a bed, or a chair.

During baseline condition, the family members were asked to be present in the home setting and were encouraged to engage in their typical family activity. Table 5 lists each family's typical activity. Each student's family activity was engaged in two baseline conditions. Except for the mother, other family members were not present during the parent's implementation of intervention.

Dependent Variables

The dependent variables in the study were the students' stereotypic behavior and the interactions with family members. These two target behaviors were selected based on preliminary reports by the students' parents and teachers and pre-baseline observational data. These behaviors are defined below.

Stereotypic Behavior

A ritualistic behavior and/or repetitious body movements that did not appear to

serve any function other than to provide sensory input and which occurs (most often) in the form of body rocking, complex hand/finger movement and so forth. Each individual's stereotypic behavior is listed in Table 4.

Interactive Behaviors with Family Members

A positive behavior which involves communicating the student's interest, expression, or revealing his/her needs to family members without the performance of any inappropriate behavior (self-injurious, disruptive, or aggressive behavior). Each student's primary interactive behavior is listed in Table 4.

Functional analysis was conducted with the student's mother (or caregiver) to assess if getting attention was a principal function of the student's stereotypic behavior. Based on the functional analysis, Ka's and Da's stereotypic behavior was not associated with getting attention. The functional analysis for Na showed that his stereotypic behavior included a possibility of association with getting attention. Na's mother reported in an interview she thought Na showed more frequent stereotypic behavior when his family had a visitor(s).

Ka rarely engaged in interactions with family members, but he showed a slight smile after the intervention. Na showed leading other people's hands and short vocalization paired with gestures to express his needs. He often made such sounds as "uhh" and "dudu" when he needed to express something. He also smiled when

Table 4

Stereotypic Behavior and Interactive Behavior of Students

Student	Stereotypic Behaviors	Interactive Behaviors
Ka	Repetitive hand flipping with a milk straw Rocking in a chair	Smiling slightly when a family member touches a part of his body. (This emerged after the intervention.)
Na	Repetitive jumping with raising hand Repetitive nonsense syllable vocalization Repetitive finger flexing and arm waving at shoulder level Repetitive rocking	Smiling, leading people's hands, making sounds and short vocalization paired with gestures to express his needs.
Da	Loud, repetitive short sound with hands placed over ears Repetitive rocking in a chair with making noise Repetitive nonsense syllable vocalization	Leading people's hand when she needs.

Table 5

Participants' Family Activities

Student	Family activity	Members	Description	Student's Participation (Interactions)
Ka	Free playing	A care giver 6 boys	Eight members including him get together in their bedroom. Care giver gives them usual play toys.	He smiles slightly when a family member touches a part of his body. (This emerged after self-management intervention.)
Na	Watching TV	Parents 2 younger sisters	Five members including him get together in the living-room. One member turns on TV and they talk about the program.	He answers with a nonsyllable sound when asked. He often attempts to communicate verbally with simple gestures. He leads people to the object to express his needs. He smiles and attends family talking.
Da	Brief religious service and talking about the day	Parents 1 younger brother	Four members including her get together in the living-room. Her father leads the activity, and after the brief service they talk about the day.	She leads other's hands to an object which she needs.

his family members interacted with him. Da showed leading people to an object(s) when she asked for something.

The individual's average duration of stereotypic behaviors and positive interaction were recorded in pre-baseline observation data. Duration lasted from 9 to 15 seconds for each student's stereotypic behaviors and 0.45 to 5 seconds for their interactions (see Table 6).

The average duration was derived from 10 observations. It was obtained in the following manner. First, the researcher recorded the duration of time between the beginning and the ending of the behavior 10 times. Then, the total duration summed was divided by 10. Because all the durations of each student's stereotypic behavior were in the range of 9 to 15 seconds, a 15-second interval was selected. Interactive behaviors were also recorded using the 15-second interval.

Table 6

Duration of Target Behaviors

Student	Stereotypic Behavior	Interactive Behavior
Ka	11 s	1 s
Na	9 s	5 s
Da	15 s	0.4 s

Note. s=second(s)

Independent Variable

Parents were trained to teach their children with autism to self-monitor their own behaviors. Self-monitoring involves the student's observing his/her own stereotypic behavior and recording the observed behavior on a self-monitoring sheet.

Parent training was conducted individually with four major components. First, the parent met with the researcher/trainer individually in a classroom to learn how to teach her children for 4 days after the first baseline condition. Then, the trainer visited the home for training the parent at the first day of each phase of implementation and assisting the parent to teach the student. The parent and the trainer kept contacting each other every day to report on teaching at home.

The parent was asked to teach her children to self-monitor their stereotypic behaviors by one-to-one instruction directly. The parent was taught how to deliver training by the researcher in the following sequence using the training script included in Appendix B. The training was done until the parent achieved a criterion of 90% correct answers in 10 trials of a verbal test for two sessions each sequence. The training for parents was delivered for over 4 hours a day from the session after a stable baseline was obtained. The parents' mastery of the intervention procedures was checked before each phase of parent implementation

started by the verbal test until parents achieved 100% correct answers in 10 trials for two times for a session. The components of the contents of parent training included the following. First, the procedure that was used to teach the student to discriminate stereotypic behavior was explained to the parent; she was asked to memorize and practice the training script and was given a verbal test. The instruction in discrimination training included teaching the parent to say to her child, "You are engaging in stereotypic behavior (specific behavior such as hand flipping, jumping, and rocking)" or "You did stereotypic behavior (specific behavior)." Second, clear directions to teach self-monitoring were given to the parent for memorization/practice and were checked with a verbal test. The verbal directions included "(Name), it's time to observe your behavior"; "Stop observing (Name), put a mark by what you did"; "(Name), you did stereotypic behavior (or you did not stereotypic behavior), put the mark here (in the right place)"; and "Good work, (Name). I'll be back after you do your work." Third, how/when to prompt the student and how/how long/when to model the child's stereotypic behavior were taught. If the student did not show a clear action in response during the parent's implementation of intervention, the treatment provider was taught to prompt the student verbally. If the student still did not show any action in response to the verbal prompt, the treatment provider prompted the student physically. Fourth, the response correction method was taught. If the student

failed to distinguish the stereotypic behavior correctly, the treatment provider provided the student with the correct answer, saying “(Name), you did stereotypic behavior (specific behavior) (and pointing to the picture depicting a stereotypic behavior of a child).” If the student failed three or more times, the treatment provider provided the student with additional training. In teaching the student to monitor his/her own behavior, if the student recorded the behavior incorrectly, the treatment provider provided the student with the right answer saying, “(Name), you did stereotypic behavior (specific behavior) (or you did not stereotypic behavior),” and then the treatment provider prompted the student to record it correctly with a verbal and physical prompt if needed. If the student failed to answer correctly three or more times, the parent provided the student with additional training. Fifth, the reinforcement schedule and treatment provider’s presence time schedule displayed in Table 9 and 10 (shown later) were given and the parent was asked to memorize/practice the schedule. Sixth, the treatment provider was taught to ignore the student’s disruptive behavior, such as refusing or noncompliance, which could be an influential factor while teaching self-management training. The parent’s mastery in delivering training was assessed periodically during the study. Right before each phase of the parent’s implementation of intervention to the student, the parent was tested by a verbal test.

Observation and Recording Procedures

To measure the effects of parent training on modifying their children's behaviors, the frequency of occurrence of the student's stereotypic behavior and positive interactions with his/her family members was measured in 15-second intervals in a 20-minute observation session once per day. Stereotypic behaviors were measured in three conditions: the first baseline, parent's implementation of intervention, and a second baseline. Interactions with family members were measured only in two baseline conditions.

Observers recorded data on the student's stereotypic behavior and interactions with family members using a partial-interval recording system. This method was selected because of the number of behaviors (e.g., smiling, leading to an object, or making sounds/making vocalization to express any needs) to be observed. If the student's behavior occurred during any part of an interval, the observer slashed the box corresponding to that interval and behavior.

Direct observation by two observers was conducted. The observers were taught the following sequence. First, observers were taught the behavioral codes to be used and how to record the data. Second, the observers were asked to watch a video about the target behaviors of children with autism. After watching the video, the observers were asked to record whether the behavior did or did not

occur. This observer training was done until they reach 95% agreement for three sessions. For collecting data, one observer was in the environment for the duration of this study. The other observer was in the environment for 10% of the sessions of this study to assess reliability. Appropriate time of observation for each student was selected according to the student's and his/her family members' situation. Data on the parents' delivery of the intervention were not measured to avoid making the parents feel uncomfortable. Another reason was to prevent the parents from dropping out of the study. Last, accuracy of self-monitoring by students (while the student was trained for independent self-management) was not rated.

Interobserver Agreement

Two observers who were naive to the intervention procedure and the purpose of the experiment were selected. Interobserver agreement was calculated using the following agreement formula:

$$\text{Interobserver agreement} = \frac{\text{Agreement for occurrence/nonoccurrence per interval}}{\text{Agreement for occurrence/nonoccurrence} + \text{Disagreement for occurrence/nonoccurrence}}$$

Observers were employed to ensure reliable data collection. These observers were junior university students studying social work. All observers received individualized training and group training for 2 days and were required to achieve

competency in data recording prior to observing the students. A video camera was used to record each student's target behaviors in the natural home setting on randomly selected days in pre-baseline. Reliability observations were made in all three conditions of this study.

Interobserver agreements for occurrence/nonoccurrence of the stereotypic behavior and interactions were 90% and 98%, respectively. Table 7 lists the interobserver agreement scores.

Experimental Design

A time-lagged ABA design with three students was used to assess the effects of parents' implementation of teaching students self-monitoring in reducing stereotypic behaviors and collateral gains on positive interactions with family members. A description of each condition is described below.

First Baseline Condition

Prior to implementation of the intervention, baseline data were recorded for the three students. No feedback was provided in this condition. The number of intervals that stereotypic behavior and interactions with the family members for the student was recorded in this condition. The students were observed in their each usual family activity. Efforts were made to ensure that there was no novel

Table 7
Interobserver Agreement for Students' Behaviors

Student	Stereotypic Behavior	Interactive Behavior
Ka	736/64	786/14
Na	791/89	853/27
Da	919/121	1,019/21
Total	2,446/274	2,658/62
% Agreement	90	98

Note. Each fraction indicates the number of agreements between two observers over the number of disagreement.

sources of variability that could influence the number of target behaviors in this condition. Possible sources of variability were checked. Time of day, events preceding the observation period or events anticipated after the observation period, setting features, and so forth were checked. Once the source of variability was checked, it was isolated and controlled. If the data in the baseline condition suggested ascending or descending trends, the baseline was continued until a steady-state condition was achieved.

Training Program

After receiving training, the parent implemented teaching self-monitoring to the student. The parent received approximately 4 hours of training and was assisted in teaching her child by the trainer.

Training involved a program that had four components: discrimination, recording, self-monitoring in the presence of the parent, and self-monitoring independence training. The first student's parent delivered self-management training to her child once the student's behavior showed a stable baseline pattern. The parent was assisted by the researcher on the first of the training day of each phase.

The student was trained by the parent for approximately 60 minutes a day. However, there were differences in training time for each student from 60 minutes to 70 minutes a day. First, the student was taught to discriminate his/her

stereotypic behavior to a criterion of 90% correct identifications in 10 trials per day for three sessions. In training the student to discriminate his/her stereotypic behavior, the parent told the student "You're engaging in stereotypic behavior (specific behavior)" (according to the student's stereotypic behavior targeted) when the child started to display his/her stereotypic behavior. At the same time, the parent showed a picture depicting a stereotypic behavior of a child. Also, the parent told the student "You did stereotypic behavior (specific behavior)" when the student's behavior ended, showing her child the picture depicting a stereotypic behavior of a child right after the student ended to display the behavior. Then, the student was asked to point to the right picture out of the two pictures in a paper (one depicting a stereotypic behavior of a child and one depicting an appropriate behavior, a with a smiling face), after the parent modeled a stereotypic behavior related to the student's behavior. When the student failed to distinguish the stereotypic behavior correctly, the parent provided the student with the correct answer, saying, "(Name), you did stereotypic behavior (specific behavior)," while pointing to the picture depicting a stereotypic behavior of a child. If the student failed three or more times to make the discrimination, the parent went back to the beginning of discrimination training, telling the student, "You did stereotypic behavior (specific behavior)," and showing a picture depicting a stereotypic behavior of a child, then asking again the student to point to the right picture.

Students were reinforced by the parent when an accurate discrimination was made. This discrimination training was done until the student reached a criterion of 90% correct responding for 10 trials per day for three sessions.

Reinforcers were individually determined and included verbal praises, touching/petting one's hands/arms or smiling as social reinforcers, and intermittent edible reinforcers. Reinforcers for each student were selected mainly by the reports of the student's parents or caregiver and 2 days' preintervention observation by the researcher. The reinforcers for each student are listed in Table 8. All reinforcers in this study were delivered according to the reinforcement schedule displayed in Table 9.

Table 8

Reinforcement for Each Student

Student	Reinforcement	
	Edible	Social
Ka	yogurt	petting his arms/hands with smile
Na	snack	verbal praising with smile
Da	snack	petting her arms/hands with smile

Table 9

Reinforcement Schedule

Type	Baseline	<u>Self-Management Implementation Teaching</u>			Self-Management Independence Teaching	Maintenance
		Discriminating	Recording	Self-Monitoring		
Social	None	Con.	Con.	Con.	C 1 : Con. social	None
Edible	None	FR(2)	FR(2)	FR(2)	C 2: Con. Social + FR(2) Edible	None

Note. Social:social reinforcement; Edible:edible reinforcement; Con.:continuous reinforcement schedule-reinforcing every time the subject produce the required response successfully; FR(2):(intermittent) fixed ratio reinforcement schedule-reinforcing every 2nd correct response; C1:Condition 1-correct monitoring but occurrence of stereotypic behavior; C2: Condition 2-correct monitoring and nonoccurrence of stereotypic behavior.

Following discrimination training sessions, the student was taught to record the occurrence of a stereotypic behavior by placing a mark in a printed box on a piece of paper. In this phase, the parent also modeled the stereotypic behavior. The modeling started at the same time the student engaged in stereotypic behavior and continued even when the student ended the behavior. The modeling lasted 15 seconds after the student ended the behavior. While the parent modeled the behavior, the student was asked to observe the behavior with a prompt (verbal or physical) if needed. Then, after the parent modeled it, the student was asked to place a mark for the occurrence of the behavior in the right blank with a verbal and physical prompt. When the student failed to record correctly, the parent provided the student with correct answer, saying "(Name), here, stereotypic behavior" and pointing the right blank. If s/he failed three or more times to record it correctly, the parent went back to the beginning of recording training. Prompts were used, if needed. Placing a mark was done until the student achieved a criterion of 80% correct identifications in 10 trials for three sessions. Students were reinforced by the parent when an accurate recording was made.

Next, the student was taught to monitor his/her stereotypic behavior. This training session included sixty 15-second intervals for the student to monitor his/her own behavior a day. In this phase, momentary time-sampling recording system for training the student to monitor his/her behavior was used. The student

was asked to observe his/her stereotypic behavior for each 15-second interval and record its occurrence/nonoccurrence at the end of each interval. In this condition, each time the interval started and ended, an alarm sounded, which was adjusted to sound softly, to let the student know when to monitor his/her stereotypic behavior. Right before the first interval-starting alarm sounded, the parent gave the student the self-monitoring activity sheet and a pencil, and told the student, "(Name), it's time to observe your behavior." When the alarm sounded for the interval ending, the parent said, "Stop observing. (Name), put a mark by what you did." If necessary, the student was verbally and physically prompted to mark it according to occurrence/nonoccurrence (the occurrence/nonoccurrence was depicted by two pictures of stereotypic behavior and appropriate behavior). When the student monitored (observed/recorded) his/her stereotypic behavior correctly, the parent reinforced the student. If the student recorded occurrence/nonoccurrence of the behavior incorrectly, the parent provided the student with the right answer, saying, "(Name), you did stereotypic behavior, (specific behavior) (or you did not stereotypic behavior)," and then the parent prompted the student to record it. In this phase, only the correct monitoring was reinforced, regardless of occurrence/nonoccurrence of stereotypic behavior. If the student failed to monitor his/her behavior incorrectly three or more times, the parent provided the student with additional training. This monitoring training was done until the student reached a

criterion of 80% correct identification in 10 trials per day for three sessions.

Last, to promote independence, the parent's presence faded according to the following steps until the absence time was up to 15 minutes. The schedule is displayed in Table 10. In this phase, a momentary time-sampling recording system, which had sixty 15-second intervals, was used for the student to monitor his/her behavior. Initially, the parent left the student right before the alarm sounded for the interval, which was prefaced by a statement such as "Good work, (Name). I'll be back after you do your work." At this time, the parent left to a place where she could observe the student. A wrist watch with the parent was used to distinguish intervals. Once the student monitored his/her own behavior independently for the intervals in the absence of the parent, the treatment provider went back to the student and reinforced him/her for his/her correct self-monitoring. In this time, the reinforcement was focused on for the correct monitoring of the last 15-second interval right before the parent came back. In this phase, the reinforcement was provided for only two situations. In the first situation that the student monitored nonoccurrence of his/her stereotypic behavior, he/she was reinforced with social reinforcement and edible reinforcement together according to the reinforcement schedule displayed (see Table 8). The parent also told the student that "(Name), you did a good job with monitoring your behavior correctly, and you did not engage in stereotypic behavior." In the second situation that the

Table 10

Parent's Presence Time Schedule During Self-Management Independence Training to Student

Training Time	1st day	2nd day	3rd day	4th day	5th day	6th day	7th day
½ time (sec)	20	60	140	300	300	600	600
½ time (sec)	40	120	280	600	600	900	900

Note. sec:seconds

student monitored the occurrence of the stereotypic behavior correctly, he/she was reinforced with only social reinforcement by the parent saying, "(Name), you did a good job with monitoring correctly." If the student failed to monitor his/her behavior correctly, the parent provided the student with the right marking prompt and assistance, verbally and physically if necessary, saying, "(Name), you did stereotypic behavior, (specific behavior) (or you did not stereotypic behavior), put the mark here (in the right place)." If the student failed to monitor correctly three or more times, the parent provided the student with additional training. Gradually, the parent's absence time was increased to promote the student's independence. The schedule of reinforcement was also gradually thinned and removed by the parent's presence time schedule (see Table 10). This self-management independent training was done until the student reached a criterion of 80% correct monitoring in 10 trials per day for three sessions.

Second Baseline Condition

Data in the second baseline were collected daily for a month by the two data recorders with the same method used in the first baseline and intervention conditions. The student's parent corresponded weekly with the researcher by telephone or by any other way to communicate how well her child was doing. The correspondence was checked weekly by the researcher. During this period, the

number of interactions was also recorded in the context of usual family activity at their homes. No reinforcement or feedback was delivered to the child in this condition.

CHAPTER IV

RESULTS

This investigation considered the effects of parents' intervention to teach children with autism to self-monitor to decrease stereotypic behaviors and produce collateral gain in interactions with the family members. The data were visually analyzed. Figure 1 displays these data.

A visual analysis of graphic data was used to interpret the results of this study. Results were displayed by single line graphs with one reporting the occurred interval numbers of stereotypic behaviors and the other one reporting the number of interactive behaviors with family members of the students by number of response intervals. The ordinate (number of the target behaviors) indicates how many intervals the target behaviors occurred in each session. The abscissa marks each consecutive session. The visual analysis also revealed the interval number in which stereotypic behaviors occurred and the interval number in which interactive behavior occurred before (in baseline condition) and after (in the second baseline condition) the parents' intervention.

Figure 1 represents the number of intervals that each student's target behaviors occurred in each session. Trends and levels in the baseline condition showed a relatively consistent change in a single direction in each condition for all students.

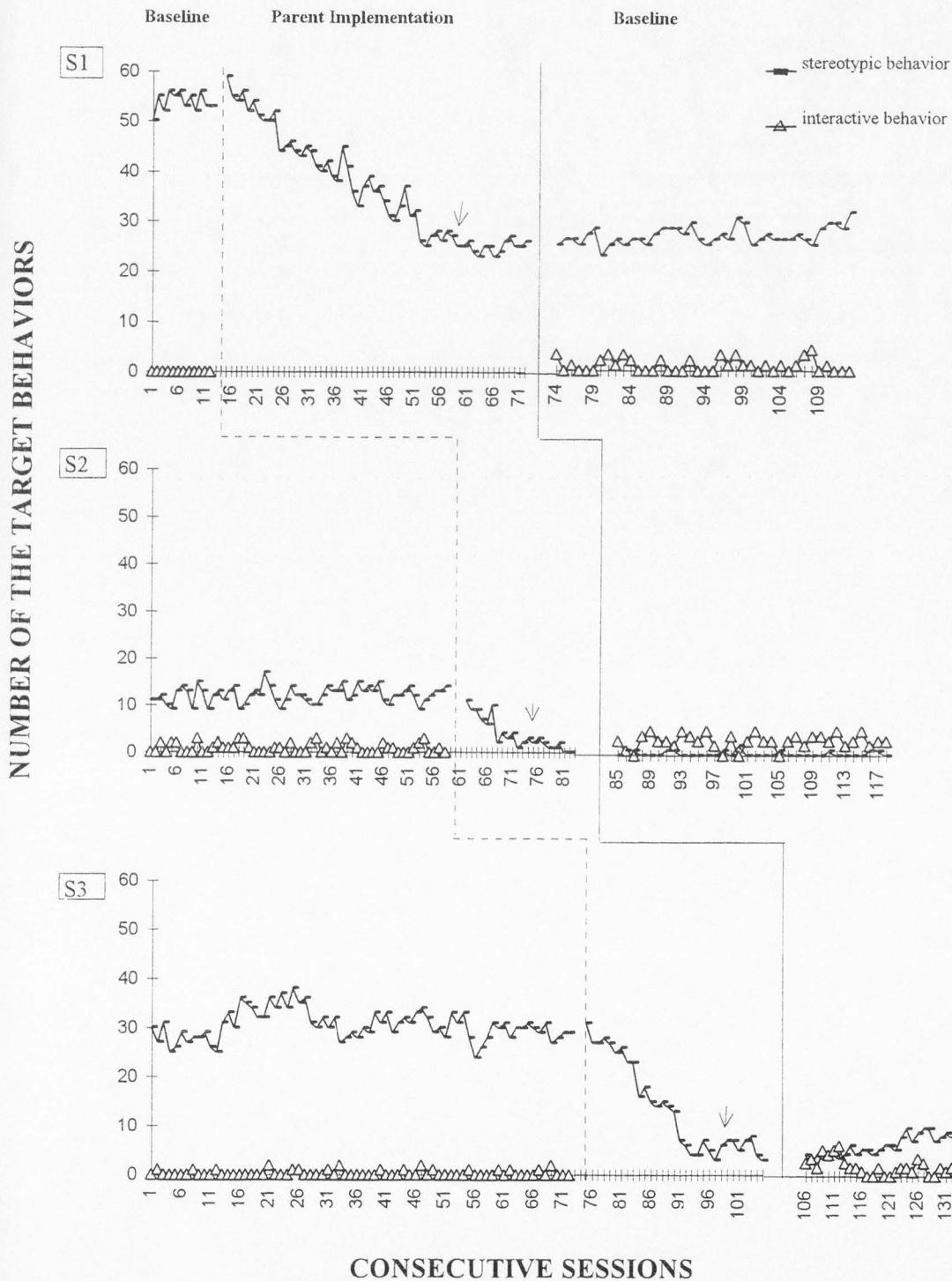


Figure 1. Number of interval for the target behaviors of the students

No changes in level and trend were observed in this condition. Since the third student's baseline was ascending in session 13 through 27, the responding data for the first baseline were extended until a steady-state pattern was achieved.

Analysis of the first baseline condition for Ka showed that he exhibited high levels of stereotypic behavior across all 12 days, with the range of number of stereotypic behaviors in his baseline data from 50 to 56, and showed a relatively consistent pattern. Following training, a decrease in the frequency of stereotypic behavior to below the first baseline level was observed. Fading of the reinforcement and the parent's presence was done in the 59th session. The arrow in Figure 1 represents the approximate session in which the parent's implementation of self-management independent training to the student was started. After the parent's self-management independent training to the student for 14 sessions, from the 59th to 72nd session, the second baseline measures were taken. The data in the second baseline condition indicated that Ka maintained the number of his reduced stereotypic behavior after the withdrawal of the parent-delivered intervention.

Ka's interactive behaviors with his family members were also measured in two baselines. He did not display any positive interactions in the first baseline at all. However, after parent's intervention was introduced, he displayed a slight smile when his family member pets his hand/arm while playing in family activity time.

Since the smile was a new behavior, data were collected and visually displayed in the study, although the number of it was slight.

In all, stereotypic behavior alone averaged 54 occurrences at baseline, 36 during the intervention sessions, and 25 across the second baseline session, while interactive behavior alone averaged 0 number at the first baseline and 1 across all of the second baseline sessions.

Na exhibited an decrease in stereotypic behavior after the intervention was introduced. His stereotypic behavior level in baseline showed a consistent pattern from the number of 17 to 9. For Na, the intervention resulted in immediate reductions in his stereotypic behavior. When the intervention was implemented, the student's stereotypic behavior decreased to a 0 level. During the first baseline, his average level of stereotypic behavior was 12. During parent's intervention sessions, his level of stereotypic behavior decreased dramatically. Fading of the reinforcement and the parent's presence were started in the 77th session, which is shown by an arrow in Figure 1. After introducing self-management independent training to him for 8 days, the intervention was withdrawn. The number of stereotypic behavior remained low during the second baseline, averaging 0.3.

Also, for Na, interactive behaviors with family members were measured in the first baseline and the second baseline conditions. The range was 0 to 3, averaging 0.9. In the second baseline condition, the number of interactive behavior increased

to level 5, averaging 3. In all, Na showed decreases in stereotypic behavior after the intervention and increases in interactive behavior.

A similar effect was demonstrated with Da. Da's level of stereotypic behavior ranged from 24 to 38, averaging 30. Her stereotypic behavior data showed a possible ascending trend at the beginning of the first baseline. However, her stereotypic behavior stabilized once her brother's disruptive behavior was checked and controlled. With the introduction of parent's intervention, the number of stereotypic behavior rapidly decreased to the level of 4, averaging 14. After being taught independence training, she entered the second baseline condition. The data in the second baseline condition displayed an ascending pattern in which stereotypic behavior returned to the level of the first baseline again, averaging 8.

The data of Da's interactive behavior with her family members were also measured in the first baseline, which ranged from 0 to 2, averaging 0.3. The number of her interactive behavior showed a slight increase to 7 at the beginning sessions of the second baseline condition. However, her interactive behavior decreased close to the first baseline level, averaging 2 in the second baseline. In all, Da showed decreases in her stereotypic behavior after the intervention and slight increases in interactive behavior in the beginning of the second baseline condition, which returned to the level of the first baseline. However, the decreased frequency of stereotypic behavior was followed by a gradual increase

under the second baseline condition. The number of her interactive behaviors showed an increase for about eight sessions, then stabilized again under the second baseline condition.

Figure 1 shows that, during the first baseline, a stable pattern of stereotypic behavior occurred, ranging from 52 to 56 for Ka and 9 to 17 for Na. For Da, the level of numbers ranged from 25 to 38. The intervention resulted in a reduction in stereotypic behaviors and a small increase in interactive behaviors with all three students. With the initiation of the intervention, Na and Da showed relatively rapid decreases (typically within a few sessions). For Ka, the parent needed more sessions to teach him self-monitoring, which resulted in a distinctive decrease in his stereotypic behavior.

The data suggest that the students learned the self-management procedure relatively quickly. Also, interactions with family members increased slightly. The arrows on the graph indicate the point at which the reinforcement schedule and the parent's presence time schedule were thinned for independent self-management training. Typically, the reinforcement schedule and the parent's presence time were faded together gradually according to the schedules in Table 9 and 10.

CHAPTER V

DISCUSSION

General Summary

This study examined the effects of intervention delivered by parents to teach their children with autism to self-monitor their own stereotypic behaviors. As the parent implemented the intervention, behavior change of the target behaviors of students was shown. The behavior change maintained for a month after the intervention was withdrawn for two students. One of the students showed a slow ascending trend in her stereotypic behavior after the intervention was faded. At the same time, there was a small collateral behavior change in all three students' interactive behaviors without any special intervention.

The present study extends past findings in several ways. First, this study focused on assessing the effects of a parent-delivered program to teach self-management to students with autism in Korea. It resulted in positive behavior changes for all participants. The findings suggest that such a procedure would be a valuable adjunct to individualized educational programs. Additionally, such a program represents a cost-effective program that may reduce the need for a professional therapist, and may save time and money and the child's (and his/her family's) dependence on an external therapist.

Limitations of This Study

Although the intervention described above appears to have been successful in reducing stereotypic behavior and increasing interactive behavior, there are several limitations that need to be addressed.

The first limitation pertained to observation. For collecting data, two observers were present in the corner of the setting because it was difficult to set up an extra setting in the family situation. Thus, one was present to collect data in the setting every session during the whole study and the other one entered into the setting every 10 days to assess the reliability of the observation. For Da, the observers present in the setting may have had an influential effect. From the first time when the two observers were present together in the setting, variability in the frequency of stereotypic behavior of Da was recorded. It is possible that the observers' presence in the setting may have interrupted Da's natural activity in that setting. Also, Da's younger brother may have displayed aberrant behavior toward the subject to get attention from the observers. Additionally, the observers' presence for data collecting may have influenced the family members' attitude toward the student, which may be an extraneous factor for the behavior change.

Lack of data on the parents' delivery of the intervention represented the second limitation. Thus, it was not clear if the parents delivered the intervention exactly

as specified. It is conceivable that the parent may have used another method to affect behavior change.

The third limitation was that it is not clear which aspect was responsible for changes in the students' behaviors. Several factors may be responsible for the change. First, reinforcement during intervention may have influenced behavior changes. Second, the parents' and family members' social expectations and their efforts to realize the expectations may have been an influential factor and helped lessen the frequency of stereotypic behavior and increase social interaction.

Implications for Further Research

Intervention delivered by parents may be an invaluable resource for children with autism, especially when there is a shortage of special education services. For students with severe disabilities in Korea, the approach studied in the present study represents a promising procedure, given the lack of special education professionals.

This study raises several issues for further research. These included the following. First, ways to promote a parent's teaching skills after completing training should be studied to develop a more durable parent training program. Second, procedures to enhance generalized effects across individuals and across target behaviors warrant more attention. Additionally, studies about the effects of

sibling/peer training programs to decrease the frequency of undesirable behavior should be conducted.

Conclusion

The effects of a parent-delivered intervention to teach a self-management procedure to children with autism in Korea were examined in this study. Although it is not clear what contributed to the positive behavior change, the data suggest that the intervention was effective in two ways. First, there was positive behavior change in the decreasing of inappropriate behavior and in the increasing of appropriate behavior. Second, the parent-delivered intervention using self-management appears to be suitable for special education services in Korea.

Without further empirical experimentation, the reasons for the reported behavior change remain uncertain. Nevertheless, the intervention represents a practical educational approach for children with autism and one that could be a promising method for the special education in Korea.

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APPENDICES

Appendix A
Explanation Letter and Parent
Consent Form

EXPLANATION LETTER FOR PARENT OF THE CHILD IN THIS STUDY

Dear Parent,

The purpose of this study is to examine the effects of self-management, which is an educational program designed to produce desired modifications of the challenging behavior of children. The information about this study is attached in this consent form. The procedure that will be used in the study is safe, valid, and well researched, and no risk is anticipated to your child (or the other people who will be involved in this study). Additionally, there will be no penalty if your child terminates at any time from the project. U special school has offered to help me in every way possible. Confidentiality for the data which will be obtained would be maintained. You have the parents' rights explained below.

1. The child's name will be changed on all reports to maintain confidentiality.
2. No changes will be made in the child's placement or classification as a result of these observations.
3. The parent has the right to see a copy of all observations and reports resulting from the observations if requested by the parent.
4. The parent may withdraw consent for this observation at any time, all observations will be terminated and any data previously collected will be destroyed.

Name : Jeongil Kim

Signature : _____

Date : _____

PARENT CONSENT FORM

I give permission for my child _____ to participate in your study. I understand that his/her full confidentiality will be respected and that my child may terminate from the study at any time without penalty.

Parent's Name :

Signature : _____

Date : _____

Appendix B

Self-Management Training Sheet

SELF-MANAGEMENT TRAINING SHEET

Pretraining

1. Define your child's stereotypic behavior targeted to decrease in this program.
2. Recognize the beginning and the end of the stereotypic behavior.
3. Make sure to keep using the words and/or sentences of this training script consistently and optimally during the training.
4. Follow the four phases explained in the following.

1. Discrimination Training

1. Recognize clearly the occurrence of your child's stereotypic behavior targeted.
2. Tell your child "you are doing stereotypic behavior (tell the specific stereotypic behavior) while (when) your child displays the behavior, showing the picture depicting stereotypic behavior.
3. Tell your child "you did stereotypic behavior (tell the specific stereotypic behavior) and, at the same time, show the picture depicting a stereotypic behavior again right after s/he ends to display the behavior.

Practice steps 1-3.

4. Model his/her stereotypic behavior when your child starts to display it.
5. Keep modeling the stereotypic behavior for 15 more seconds after s/he stopped doing it.
6. Ask your child to point to the right picture (one depicting a stereotypic behavior of a child and one depicting a face with smile) after you have modeled the stereotypic behavior.
7. Provide your child with the right answer, if s/he fails to distinguish the stereotypic behavior correctly, saying “(Name), you did stereotypic behavior (specific behavior) while pointing to the picture depicting a stereotypic behavior.
8. If your child fails three or more times to make the discrimination, go back to step 2 for additional training and give verbal or/and physical prompt to point it correctly.
9. Do this discrimination training until your child has 90% correct identifications in 10 trials per day for 3 sessions.
10. Reinforce when your child discriminates his/her behavior correctly according to the reinforcement schedule.

2. Recording Training

1. Model your child's stereotypic behavior targeted clearly from the same time your child starts to display the behavior, and continue to model the behavior for 15 seconds more after s/he ends the behavior.
2. Ask your child to observe the behavior while you model the behavior, using a verbal or/and physical prompt if needed.
3. Ask your child to place a mark for the occurrence of the behavior in the right blank in a printed box on a piece of paper after you modeled the behavior (with a verbal and/or physical prompt, if needed).
4. Provide your child with right answer if s/he fails to record it correctly, saying "(Name), here, stereotypic behavior" and pointing the right blank.
Use a verbal and/or physical prompt with step 5, if necessary.
5. Go back to the beginning of this recording training if your child fails to record it correctly over three times continuously.
6. Do this recording training until your child achieves a 80% correct identifications in 10 trials for 3 sessions.
7. Reinforce your child's correct monitoring according to the reinforcement schedule.

3. Monitoring Training

1. Set the alarm sound each time the 15-second interval, which should be adjusted to sound softly.
2. Put the alarm in the place out of reach of your child.
3. Give your child self-monitoring sheet and a pencil right before alarm sounds, and tell your child “(Name), it’s time to observe your behavior (tell specifically).”
4. Tell your child “Stop observing. (Name), put a mark by what you did” when the alarm sounds for the interval ending, pointing to the self-monitoring training interval sheet.
5. If necessary, prompt verbally or/and physically to mark what your child monitored.
6. Provide your child with the right answer saying “(Name), you did stereotypic behavior (specific behavior) (or you did not stereotypic behavior)”, if your child fails to record the occurrence/nonoccurrence correctly. Then, prompt your child to record it again.
7. Continue this monitoring training until your child reaches to a 80% correct identification in 10 trials per day for 3 sessions.
8. Reinforce your child only the correct monitoring, regardless of occurrence/nonoccurrence of stereotypic behavior, when your child monitors it correctly.

4. Self-Management Independence Training

1. Set the alarm sounds according to the 15-second interval scheduled.
2. Leave your child right before the alarm sounds for the interval (according to the schedule).
3. Tell your child "Good work, (Name). I'll be back after you do your work" when you leave your child, and go to the place where you can observe your child.
4. Check your wrist watch to make sure of your presence interval time.
5. Once the interval ends, go back to your child and check what your child did, and reinforce him/her for correct monitoring of the last interval of his/her independent self-monitoring right before you came back.
6. Provide him/her with correct answer, saying "You did (or did not) stereotypic behavior (specific behavior), mark it here (in the right blank)", if your child fails to monitor his/her behavior correctly.
7. Go back to step 2 if s/he fails three or more times.
8. Thin your absence time and reinforcement gradually, then terminate your presence according to the schedule.
9. Do this training until your child achieves a 80% correct identification in 10 trials per day for 3 sessions.
10. Reinforce your child in two situations as follows.

First, reinforce with social reinforcement and edible reinforcement together according to the reinforcement schedule when your child monitored nonoccurrence of his/her stereotypic behavior, saying “(Name), you did a good job with monitoring your behavior correctly, and you did not stereotypic behavior.”

Second, reinforce your child with only social reinforcement when your child monitored the occurrence of the stereotypic behavior correctly, saying “(Name), you did a good job with monitoring correctly”.

5. How to do when your child displays disruptive behavior in training

Ignore your child’s disruptive behavior.

Appendix C
Functional Analysis Interview Form
for Students' Target Behaviors

FUNCTIONAL ANALYSIS INTERVIEW FORM

Student's Name _____ Age _____ Sex ____ Interviewer _____ Respondent(s) _____
Date of Interview _____

A. Describe The Behavior(s)

1. What are your child's stereotypic behaviors of concern? For each, define the topography (how it is performed), frequency (how often it occurs per day, week, or month), duration (how long it lasts when it occurs), and intensity (What is the magnitude of the behaviors [low, medium, high]? Does it cause harm?).

Behavior	Topograph	Frequency	Duration	Intensity
1	_____	_____	_____	_____
2	_____	_____	_____	_____
3	_____	_____	_____	_____
4	_____	_____	_____	_____
5	_____	_____	_____	_____

B. DEFINE POTENTIAL ECOLOGICAL EVENTS THAT MAY AFFECT THE BEHAVIOR(S)

1. Does the child take any medicine? If yes, do you believe that they may affect his/her stereotypic behavior targeted?
2. Describe the *eating routines and diet* of the person and the extent to which these routines may affect his/her behavior.
3. Briefly list below the person's typical daily schedule of activities and your family activity in which the person participates (or be asked to participated).
4. How many members are in your home? Do you believe the *density of people* or interactions with other individuals affect the targeted behavior(s)?

C. DEFINE EVENTS AND SITUATIONS THAT PREDICT OCCURRENCES OF THE BEHAVIOR(S)

1. Describe the person's most typical response to the following situations.

	When	Where	With whom	What activity	Any particular situation	Your actions with it
Most likely						
Least likely						

D. IDENTIFY THE “FUNCTION” OF THE STEREOTYPIC BEHAVIOR(S). (WHAT CONSEQUENCES MAINTAIN THE BEHAVIOR(S)?

1. Think of the stereotypic behaviors listed in Section A, and define the function(s) you believe the behavior serves for the person (i.e., what does s/he get and/or avoid by doing the behaviors?).

BEHAVIOR	WHAT DOES S/HE GET	WHAT DOES S/HE AVOID
1.		
2.		
3.		

2. Describe the person’s most typical response to the following situation.

Are the above behavior(s) most likely, less likely, or unaffected if you give him/her attention?

_____ if you present him/her with a difficult task?

_____ if you interrupt a desired event (eating, watching TV)?

_____ if you deliver a “stern” request/command?

_____ if you are present but do not interact with the person ?
_____ if by change in routine?
_____ if s/he is alone (no one else is present)?
_____ if something s/he wants is present but s/he can't get it?

E. WHAT EVENTS, ACTIONS, AND OBJECTS ARE PERCEIVED AS POSITIVE BY THE PERSON?

1. In general, what are things (events/activities/objects/people) that appear to be *reinforcing or enjoyable* for the person?

EDIBLE

SOCIAL

Appendix D

Self-Monitoring Sheet for Students

a picture of a child depicting stereotypic behavior (colored)	a picture of a child depicting reading a book with a smiling face (colored)
blank for student's mark	blank for student's mark