

自我教導策略對一位腦性麻痺學生穿鞋子時間的影響效果之研究

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The Effects of Self-Instruction Strategy on the Time Spent on Putting-on -Shoes Behavior in One Student with Cerebral Palsy

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摘要

本研究的目的旨在檢視自我教導的訓練對一位腦性麻痺學生穿鞋子行為的影響效果。使用單一受試研究法之多基準線跨不同情境的實驗設計來進行研究：以自我教導為自變項，以穿鞋子所花的時間為依變項。受試者歷經基準線階段、訓練階段、以及保留階段的評量，研究者則採用視覺檢查法來分析穿鞋子時間的資料。研究結果顯示：在學校情境，自我教導技能的獲得可以有效地減少該學生穿鞋子的時間，此外，撤除自我教導的介入後，穿鞋子的表現仍具有保留的效果；然而，在家庭情境，自我教導的訓練效果與保留效果並不顯著。最後，訪談老師與父母後發現，他們都對自我教導持有正向的態度，並證實該名學生穿鞋子的表現有進步。

關鍵詞：自我教導、腦性麻痺、穿鞋子

Abstract

The purpose of this current study was to examine the effects of self-instruction training on the performance of putting on shoes in one student with cerebral palsy. A single-case approach using multiple-baseline-across-settings design was conducted. The independent variable was the self-instruction training, and the dependent variable was the time spent on putting on shoes. The participant received the experimental phases of baseline, training processes, and maintenance. Visual inspection was employed to assess the effects of self-instruction training on this student in terms of the time he spent on putting on shoes. The results of this study showed that the acquisition of self-instruction skills decreased the time spent on putting-on-shoes behavior of this student at school settings. Additionally, the treatment effects could be maintained over time while withdrawing self-instruction training. However, the training effect and maintenance effect in self-instruction was not significant at home settings. Finally, both teachers and parents interviewed showed positive attitude toward the self-instruction, and confirmed the improvement on performance of putting on shoes in this student.

Key Words: self-instruction, cerebral palsy, put on shoes

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The self-instruction approach is to employ verbally mediated training to enhance self-control via the use of self-verbalizations as discriminative stimuli and reinforcers during the performance of a task (Blackwood, 1970; Dubey & O'Leary, 1975; Vygotsky, 1986). Studies have shown that there exists in functional interaction between verbal and nonverbal responses, and personal speech acted as a cognitive self-guidance mechanism (Vygotsky, 1986). Some researchers even developed self-instruction program to promote verbally mediated self-control for impulsive children (Chou & Lin, 1996; Meichenbaum & Goodman, 1971; Wang & Ho, 2003). The program in their study consisted of self-verbalized statements modeled by teachers or adults and rehearsed overtly and covertly by students. These self-instruction statements included the definition of the target behavior, focused attention, response guidance, self-reinforcement, self-evaluation, and error-correction skills (Chou & Lin, 1996; Meichenbaum & Goodman, 1971; Wang & Ho, 2003). Such self-instruction approach has been effectively applied to reduce aggressive behavior for students with emotional and behavior disorders (Li, 2005) and to decrease stereotypical behavior for students with visual impairment (Chiu, 2005). Moreover, such strategies have been successfully employed to promote reading comprehension for children with learning disabilities (e.g., Mahn & Greenwood, 1990; Zafiropoulou & Karmba-Schina, 2005) and mental retardation (Lin, 1997), handwriting (e.g., Blandford & Lloyd, 1987; Zafiropoulou & Karmba-Schina, 2005), and mathematics (e.g., Goldman, 1989; Kroesbergen & Van-Luit, 2003; Zafiropoulou & Karmba-Schina, 2005) for children with learning disabilities. In addition to performance improvement in children with learning disabilities, previous researchers have also indicated that such self-instruction can be beneficial for preschool-age children in increased performance accuracy, particularly with complex tasks, such as object sorting, matching, academic tasks, and gross-motor tasks (Guevremont, Osnes, & Stokes, 1988; Keller & Schoenfeld, 1995; Vintere, Hemmes, Brown, & Poulson, 2004). However, little is known with regard to this approach used in personal skill training for children with other disabilities.

Recently, only few studies used such approach to improve personal skills for people with developmental disabilities (e.g., Stokes, Cameron, Dorsey, & Fleming, 2004). For example, Stokes et al. (2004) studied three adults with developmental disabilities and found that self-instruction approach could be successfully taught to these adults to improve their performance on personal hygiene skills after bowel movements. Nevertheless, the dependent variables measured in their study were the level of assistance required on each step of the task analysis of hygiene skills. Without further examining the time spent on steps of engaging in hygiene skills, it seems insensitive to detect the real change caused by self-instruction. As some investigators (e.g., Keller & Schoenfeld, 1995) pointed out that response effort (e.g., time spent on responding) should be included in studies while analyzing response acquisition with and without self-instruction. Therefore, the purpose of this study was to assess the efficacy of a self-instruction program for teaching one child with cerebral palsy putting on his shoes in terms of time spent on steps to further examine the degree of response effort. Additionally, this present study also aimed to test the maintenance effects of such intervention after withdrawing the self-instruction program.

Method

She does walk with a somewhat wide based gait. She has some balance deficits. Gait is not smooth. Running is more difficult. She does fall frequently.

Subject and Settings

One student, Michael with cerebral palsy diagnosed as multiple disabilities, participated in this study. Michael was enrolled in a self-contained class at a general elementary school located in central Taiwan. One teacher and one teacher assistant taught in the self-contained classroom. He could do things well with gross-motor, but could not do things with fine-motor without assistance. Michael was selected because of his problem with putting on shoes at times. He was a seven-year-old boy who could take care of himself under intensive supervision. His gross motor movements were quite dexterous while his fine motor movements were awkward. He often walked with a somewhat wide based gait, and had some balance deficits. Gait was not smooth, and running was usually more difficult. He was capable of making a reach and grasp and had an understanding of task demands. Besides, he did best with one step instructions. However, with serial instructions, he would need things repeated. He preferred to join music and dance classes in spite of poor expressive ability. His attention paid to teachers or classmates was deficient at times. On teacher's praise and prompt conditions, he could get things done well.

Measures

The independent variable in this study was self-instruction program (SIP). On the other hand, the dependent variable in this study was the time spent on putting-on-shoes responses. Michael's putting-on-shoe responses were defined as all procedure steps from taking shoes from shoe counters, sitting down, to completing put shoes on and then stand up behavior. The investigator videotaped each putting-on-shoe session using a videocassette recorder and a stopwatch. Two observers recorded the time spent on putting-on-shoe responses by real time method.

Interobserver Agreement

Before conducting the self-instruction Program (SIP), two graduate students in special education were trained for 3 hours to use the observational system and reached an 85% agreement criterion, and then served as observers for all sessions. These two observers recorded data independently and compared with data sheet simultaneously. Across settings an average of 20% sessions (range, 18% to 23%) were scored for interobserver agreement. An agreement was computed using a duration ratio agreement method to assess agreement for the time spent on put-on-shoe behaviors (modified from Kazdin, 1982). Interobserver agreement then was computed by dividing the smaller duration by the larger duration and then multiplying by 100%. The interobserver agreement for Michael's putting on shoe behavior in school and home settings was 86% (80% to 93%) and 77% (65% to 85%), respectively.

Research Design

A multiple baseline design across settings was used to evaluate the effects of SIP instructions on the student's putting on shoe behavior. The time spent on putting-on-shoe behavior was the dependent variable. The self-instruction program (SIP) was the independent variable. All sessions were taken across three phases including Baseline, Intervention, and Maintenance phases. Thus, through observation and data collection, the effects of SIP treatment procedure on the time spent on putting-on-shoe behaviors were examined.

Procedures

The self-instruction program (SIP) was developed based on the principle from Meichenbaum and Goodman (1971) which addressed on the definition of the target behavior, focused attention, response guidance, self-reinforcement, self-evaluation, and error-correction skills in self-instructional statements. The SIP was used to teach the participant's self-instruction responses. It included four major steps modified from Meichenbaum and Goodman (See Appendix 1). Michael's assistant teachers administrated the SIP program before observation in his put-on-shoe behavior. The session duration provided for SIP was 25 minutes. Each session was presented once per day, and was conducted about the same time each day. All sessions were videotaped by a graduate student and recorded by two graduate students using data sheets.

Baseline. Michael has not yet received any SIP training during the baseline phase. Investigators only observed and recorded Michael's put-on-shoe responses via videotapes without any intervention.

Intervention. Michael has 25 minutes to practice and engage in these put-on-shoe activities and receive self-instruction training during this phase. First of all, teachers or parents modeled the self-instruction statements and procedures aloud, and Michael followed overtly at school and home settings, respectively. Secondly, Michael made the self-instruction statements and procedures by himself loudly and overtly. If Michael performed appropriate self-instruction statements, teachers or parents gave him praise. If Michael exhibited inappropriate self-instruction statements or no responses, teachers or parents used systematic prompt to redirect their behaviors at school and home settings, respectively. Finally, Michael practiced the self-instruction statements gradually covertly. Michael was received SIP after his time spent on put-on-shoe responses was stable in the baseline. After 5 sessions of the baseline observation at school settings, Michael began to receive SIP because his time spent on put-on-shoe responses remained stable in the baseline phase at school settings. In contrast, Michael began to receive SIP at home settings because both his time spent on putting-on-shoe responses remained stable in the baseline phase at home settings and in the intervention phase at school settings, respectively.

Maintenance. The SIP was withdrawn from Michael during maintaining phases. Again, investigators only observed and recorded his putting-on-shoe responses via videotapes without any intervention. After intervention for 9 sessions at school settings and 6 sessions at home settings, maintenance began respectively. The durations for assessing maintenance in school and home

settings for Michael were 8 and 5 sessions, respectively.

Social validity. At the end of self-instruction program, teachers and parents were interviewed to examine social validity of these treatment effects.

Results

Figure 1 shows the results for Michael's time spent on putting-on-shoe behaviors across baseline, SIP intervention, and maintenance phases. With regard to the school settings, Michael's mean time spent on putting-on-shoe responses occurring during the baseline was 512 s (range, 423 s to 631 s). After 9 sessions of teaching Michael to engage in "self-question and self-answer and check" activities, his time spent on putting-on-shoe behavior was reduced to a mean of 206 s (range, 177 s to 255 s). Withdrawing from the intervention of self-instruction again, his time spent on putting-on-shoe behavior was little increased to a mean of 275 s (range, 178s to 306 s) after maintaining 8 sections.

In contrast, in home setting, Michael's mean time spent on putting-on-shoe responses occurring during the baseline was 359 s (range, 234 s to 497 s). After 6 sessions of teaching Michael to engage in "self-question and self-answer and check" activities, his time spent on putting on shoe behavior was further increased to a mean of 408 s (range, 257 s to 552 s). Withdrawing from the intervention of self-instruction again, his time spent on putting-on-shoe behavior was reversed to a mean of 330 s (range, 298s to 375 s) after maintaining 5 sections.

Both teachers and parents interviewed showed positive attitude toward the self-instruction, and confirmed the improvement on performance of putting on shoes in this student. After the experiment, teachers promised they would continue to employ such self-instruction training to promote this student's self-care abilities.

The results from SIP training suggest that such interventions are very effective for Michael at school settings. In addition, the maintaining effects remain good for him even after withdrawing SIP training. However, this self-instruction intervention is not work on putting-on-shoe behavior for Michael at home settings. Finally, teachers and parents are satisfactory with the results of treatment effects.

Discussion

Results of the present study demonstrated that SIP program modified from Meichenbaum and Goodman (1971) could effectively reduce Michael's time spent on putting on his shoes in school setting. The treatment effects could be maintained over time. However, the training effect and maintenance effect in self-instruction was not significant at home settings. The results of this current study supported the findings of Stokes et al. (2004). After investigated three persons with developmental disabilities, they found that self-instruction strategies could be effectively taught to these participants to enhance the levels of their personal hygiene skills after bowel movements. In contrast, the results of current study also showed that self-instruction strategies could improve the performance of a student with developmental disabilities on personal skills. However, the dependent variables measured in Stokes et al.'s (2004) study were the levels of assistance required

on each step of the task analysis of hygiene skills. Compared with their study, our present study indicated that time spent on put-on-shoe responses could be decreased after self-instruction training. Therefore, more studies conducted to examine effectiveness of self-instruction on personal skills, especially from the dimension of duration are indeed needed.

Another issue raised by this study is whether the effect of self-instruction could be generalized from school settings to home settings. Self-instruction program was effective for Michael to enhance performance of putting on shoes in school settings, but seemed to be ineffective for him in home settings as showed in aforementioned results. It could be that the intervention of self-instruction program should be still hold good during this home setting, but low implement integrity of SIP from Michael's parents at home may contribute to this ineffectiveness. This speculation is further supported from data in maintenance phases in home settings which showed stable data and a horizontal trend during all sessions, suggesting behavior was unchangeable at all while comparing with the data in the baseline. On the other hand, the height of shoe counter may also influence Michael's put-on-shoe responses. His parents repetitively reported that shoe counter at home is higher than that in school. It is unclear whether the high shoe counter made Michael's performance of putting on shoes more difficult or not. Without the data regarding what to execute this SIP program at home, it is still premature to draw any definite conclusion at this moment.

Conclusions and Suggestions

The results of this current study demonstrated that the self-instruction strategies could be effectively taught to reduce the time spent on putting-on-shoes behavior for a student with cerebral palsy at school settings. In additions, the treatment effects of such strategies could be maintained over time even when withdrawing self-instruction training. In contrast, the treatment effects and maintenance effects of such strategies seemed insignificant to decrease the time spent on putting-on-shoes behavior at home settings. After experimental treatment, both teachers and parents interviewed showed positive attitude toward the self-instruction, and satisfied with the improvement on performance of putting-on-shoe behavior in this student.

On the other hand, it is necessary for future studies to moderate and monitor the experimental processes while executing SIP, especially at home settings in order to promote implemented integrity. Maybe provision of more intensive parental training programs before intervention is needed. Additionally, to modulate and arrange physical environments appropriately in future studies to let participants easily access to shoe counters is warrantee as well.

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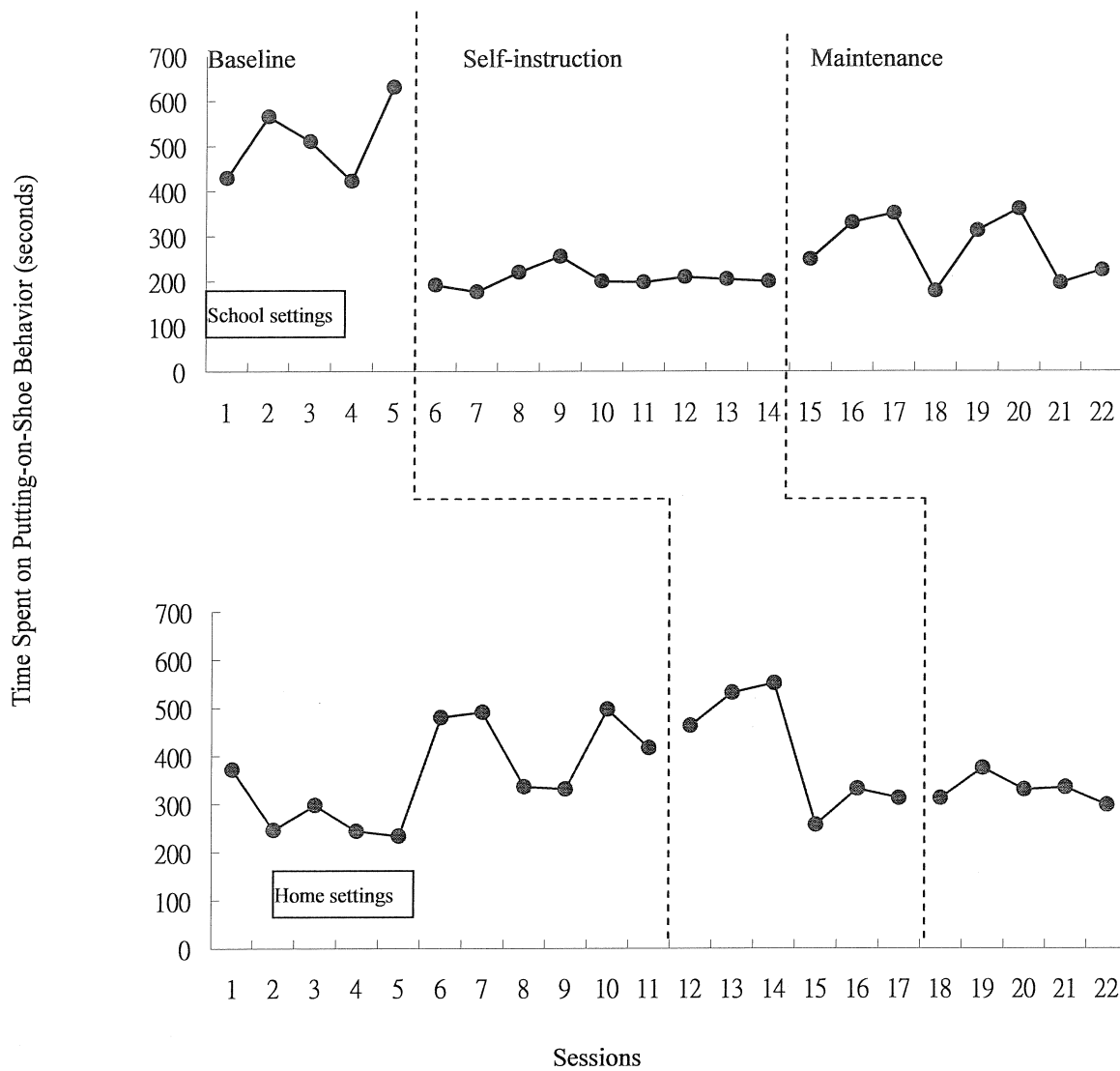


Figure 1. Michael's time spent on putting-on-shoe behavior across baseline, self-instruction, and maintenance phases

Appendix 1 : Self-instruction Procedure

	Content	Self-instruction statements	Situations
1	Define the target behavior	Right now, I am and will paying attention to put on shoes.	Prepare to put on shoes in school or home settings.
2	Focused attention & Response guidance	I should look at shoes while putting on them.	The participant provided solutions about how to pay attention to it.
3	Self-monitor Self-evaluation	1. Because I pay attention to it! I succeed! 2. Because I don't pay attention to it. I fail.	Self-assess the results of putting on shoes.
4	Self-reinforcement Error-correction	1. I just succeed in putting my shoes on. Good job! 2. I fail to put on my shoes, because I don't pay attention to it. Never mind! I will look at my shoes all the time while putting on them next time.	Give self-feedback after practicing putting on shoes. Provide alternative solution after failing to put on shoes.