

Practical Research

Functional Analysis and the Training of Self Management Behavior in a Student of Senior High School for Handicapped Student Participating as a Probationer in a Working Place¹⁾

OTA Takashi¹⁾, INAO Yumiko²⁾, MATSUDA Koichiro¹⁾ and
MOCHIZUKI Akira³⁾

(Hokusetsu Suginokokai¹⁾/ Kuretake General Support School of Kyoto City²⁾ /College of Letters, Ritsumeikan University³⁾)

This study was a practice of the Ritsumeikan Student Job Coach. In this study, they focused on the acquisition of self-management behavior including self confirmation, self evaluation of performance, and spontaneously stepping forward the next step of the job in a high school student with mental disability. The student job coach made functional analysis of the student behavior, and conducted the coaching including requesting the workplace to change the setting of physical environment, and the trainings of self-management skills using the operation checklist and “say-do” correspondence. The results showed the performance of the student improved after the intervention and the use of operations checklist was an effective method in the acquisition of the self-management skills.

Key words : student job coach, self-management skill, functional analysis

Issues and Purpose

In 2002, the Job Coach System was introduced under an amendment to the Handicapped Persons’ Employment Promotion Law. This was when the job coach assistance program was officially launched as a state policy in Japan. In 2005, job coach assistance was provided to a total of 3,050 disabled persons (including 305 physically

disabled, 2,263 intellectually disabled, 380 mentally disabled persons and 100 others) (Disabled Workers’ Affairs Division, Department of Employment Measures for the Elderly and Persons with Disabilities, 2006). In the midst of growing needs for assistance to persons with severe, job-related disabilities, such as the mentally disabled and the trend from welfare to general employment, job coach assistance has been expected as an ever more effective measure for the disabled to get and maintain a job (Sato, 2006). As one of the specific job coach assistance measures, “supported employment,” including the development of the workplace, support in the

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workplace, the creation and coordination of cooperative networks among workplaces, related institutions and families and follow-up support after getting a job, has borne some fruit (Haneda, 2003). In light of the fact that job coaches are supposed to seek and eventually establish support from colleagues in the workplace while gradually “fading away” (Ota, 2004) and that the autonomous work of disabled persons can also lead to the expansion of self-determination-based QOL in the workplace (Mochizuki, 2000), it seems necessary to provide the assistance required for the acquisition of the self-management skills that will enable them to actively monitor and control their own behavior. Regarding self-management, which is comprised of the three stages of self-monitoring, self-evaluation and self-reinforcement, it is commonly understood that self-monitoring is a prerequisite for self-evaluation and self-evaluation is a precondition for self-reinforcement (King-Sears & Carpenter, 1997).

The following are some specific study examples related to self-management skills. Yamamoto (1999) divided self-management skills into the four behavioral elements of self-teaching, task implementation, selection of the next task and completion and reporting and showed that by learning each of these elements, the behavior of performing more than one task with minimum instruction from a third party was developed, which was eventually generalized into different tasks, different amounts of tasks, various scenes, various persons and a home situation.

Moreover, Christian & Poling (1997) reported that two female adults with mild intellectual disabilities working at a restaurant were able to attain 80% of the productivity of their non-disabled colleagues via supported employment that leveraged self-management procedures comprised of self-teaching, self-monitoring and self-reinforcement.

Moreover, Hughes & Rush (1989) reported that combining self-instruction and training by more than one model was effective in eliminating work-related problematic behavior and forming self-teaching behavior in two adults with severe developmental disabilities, leading to enhanced autonomy at work. Thus, these studies suggest that in terms of both the workplace and education, learning and attaining self-management skills by disabled individuals can be an important means that enables them to lead an autonomous social life while reducing the burden on family members and assistance providers.

Based on these study results, the authors of this study participated, as student job coaches, in practical training that was conducted from mid-October to mid-November 200X at the H recreation center by N special education school, which opened a life science (occupational) course in 2004. The study targeted the acquisition of self-management skills, namely skills to implement work in an autonomous manner, confirm and evaluate the work done and reinforce one’s own behavior, instead of using evaluations by others as discriminative stimuli for the next step.

Method

1) Target student

The target student (hereinafter referred to as "T") was a 16 year-old boy at the start of training and a freshman enrolled in the life science course at N special education school. He had been diagnosed by a medical institution as having intellectual disabilities and autistic tendencies and was taking medication on a daily basis for epileptic seizures. His teacher said that while he said "Yes" or "I see" in response to questions or instructions, he was not sure whether or not he really understood these instructions since these answers did not accompany corresponding actions. Moreover, in maintenance and cleaning tasks (on-campus practical training), although he reported to the teacher after he finished these tasks by saying "Finished," it was difficult for him to thoroughly remove dust and trash or smooth out wrinkles in clothing. In class, he did not voluntarily write down the teacher's explanations or copy what the teacher wrote on the whiteboard in his notebook, but drew pictures in his notebook or did something else. When the teacher instructed T to copy what was written on the whiteboard or take notes of his explanations, however, T was able to copy words or sentences or ask questions about words he did not know. With respect to daily communication, he was able to respond to what the student job coaches said or asked in an appropriate manner.

2) Training place

Job training was conducted at the H recreation center (accommodations with hot spring facilities) in the sightseeing district of K City. T's work involved the cleaning of two changing rooms next to large baths, one for men and the other for women, within two hours. The reason the H recreation center was selected as the place for the practical training was that compared with other training places, the working hours were relatively short and the work involved was simple, which seemed to make it an ideal place for T, for whom this was the first practical training experience. Moreover, since the H recreation center had accepted other students from N special education school as trainees in the past, the staff seemed to have a good understanding of students with disabilities.

3) Work description

The main tasks included the following: straightening up the changing rooms for men and women, sorting out towels (take out one yellow bath towel out of a drawer and spread it on the floor. Take all used towels to the linen room by ten o'clock), cleaning mirrors (dust and wipe off stains such as fingerprints and soap deposits on the mirrors installed in front of the sinks), wiping the sinks (remove hair in the sink and wipe off water splashes and stains; remove water drops from the faucets and polish them), wipe shelves (remove trash out of the clothes baskets and wipe the shelves), wipe lockers (open each locker and wipe the inside with a white towel and put any articles left behind, if any, on a

shelf) and cleaning the floor (vacuum the floor and the rugs and remove all trash including hair and dust). He was supposed to finish all these tasks within the allotted time frame.

4) Practical training period

The on-site training was conducted three days a week (excepting Saturdays and Sundays) from 9:00 a.m. to 11:00 a.m., for a total of 15 days in mid-October to mid-November 200X.

5) Trainers

Except the first day, when the teacher in charge of training instructed T, three student job coaches recorded observations and provided direct assistance. As a rule, two student job coaches stayed with T at all times during the training. While one coach provided direct assistance, the other recorded observations. The authors accompanied T for 13 days during the 15-day training period and provided direct support. After the cleaning work was over, the staff members of the H recreation center evaluated T on his cleaning work. The prompts given as direct assistance were, in the ascending order of intervention, verbal instructions, modeling, physical assistance and substituting for T. Specifically, verbal instructions, such as "Please bring towels," were given when T stood still before going to the next activity or asked, "What should I do?" For modeling, when T's manner of winding the cord of a hair dryer was wrong, a student job coach demonstrated it after first pointing out what was wrong. Regarding substituting for T, a student job

coach took over and completed T's work only when he could not finish the work within the allotted time frame (physical assistance was omitted from this paper since it was not implemented during the training period).

6) Procedures

1. Key events leading up to the final form of assistance: The issue that surfaced one week after T began the training was that he could not finish the cleaning of the two changing rooms (one each for men and women) within the allotted time frame. The reasons seemed to be that since T did not understand the work flow and method to do each task, a prompt had to be given after each task and that T's work speed was slow. After discussing the issue among the student job coaches, the teacher in charge of training and the staff members in charge, a new goal of cleaning one changing room in an autonomous and thorough manner was set and a request was made to the H recreation center to change the cleaning assignment from two changing rooms to only one room starting the following week.

The issues that became evident in the second week after the beginning of the training were that T repeatedly reported the completion of a task saying, "Finished," to the student job coaches after each task in a needlessly frequent manner and that since T did not clean thoroughly enough, the job coach had to check the task result and give necessary instructions to T each time T reported task completion.

2. Intervention policy: It was inferred that this frequent reporting and incomplete task

performance must have been maintained by the same contingency (function) that existed in the relationship between the job coach and T in respect to T’s cleaning behavior. Specifically, T’s cleaning behavior was not an autonomous one in that he did not use the result of his own behavior as a discriminative stimulus to proceed to the next task, but rather there seemed to be an established contingency where evaluations and instructions from others served as an establishing operation to proceed to the next task regardless of the result of a task (refer to Table 1). Based on these points, a work checklist was created so that T could proceed to the next task via his own discriminative stimulus after finishing one task and report the completion of a task only when there was no trash or dust left. The following eight items were selected to be included in the checklist: (in the order derived from the results of a task analysis) move lotion bottles, clean mirrors, sinks, put lotion bottles back in a neat manner, wipe shelves, wipe lockers, vacuum the floor and wipe the floor with a wiper.

7) Target behavior

The following were set as target behaviors: the enhancement of T’s work performance via the direct assistance of the student job coaches and an appropriate physical environment setting and the development of

self-management skills that would enable T to proceed to the next task, not by using the evaluations of others as a discriminative stimulus, but by his own self-monitoring, self-evaluation and self-reinforcement.

8) Experiment design

For the experiment design, the changing condition design (ABC design) comprised of the baseline, intervention period 1 and intervention period 2 were adopted.

1. Baseline: On the first day of the training (the 17th of October), the teacher in charge of training gave T instructions about all the tasks with prompts. Three days from the 18th, when the direct assistance by the student job coaches started, to the 24th, was set as the baseline period, where T’s autonomous behavior and prompts were recorded.

2. Intervention period 1 (physical environment setting): While cleaning two changing rooms (one for men and the other for women) was required during the baseline period, the physical setting was changed in intervention period 1 to clean only one changing room and a request was made accordingly to the staff member in charge.

3. Intervention period 2 (introduction of a work checklist): Two days before the introduction of the work checklist was set as the baseline period toward the correspondence between T’s completion

Table 1 ABC assessment in the baseline period

A: Antecedent Condition	B: Behavior	C:Consequence
Finishes one task	Reports to a job coach	Receives work evaluation (confirmation) from the job coach

Table 2 ABC assessment in intervention period 2

A: Antecedent Condition	B: Behavior	C: Consequence
Finishes one task	Enters a circle in each of the "finished" and "confirmation" columns in the work checklist (self-monitoring and self-evaluation)	Receives work evaluation from the job coach and affixes a sticker (self-reinforcement)

reporting and his actual work performance, where his behavior was recorded as a baseline. During this baseline period, student job coaches instructed T not to report. In intervention period 2, a work checklist was introduced with the dual aims of enabling T to proceed to the next task based on his own work evaluation and discriminative stimulus and establishing a contingency (a correspondence between his words with his actions) where he was to report only when there was no dust or trash left. For specific procedures, T was instructed to draw a circle in the column under the "finished" heading in the work checklist (self-monitoring record) after one task was finished and then draw a circle in the column under the "confirmed" heading after he confirmed that there was no hair or trash left and that the task was completed (self-evaluation). Next, the student job coach checked to see if there was no hair or trash left and if there was none found, he drew a circle in the column under the "JC confirmation" heading (if there was some left, he entered a triangle). If there was a circle in the "JC confirmation" column, T was allowed to select his favorite sticker (including big ones) out of a variety of stickers prepared in advance and affix it to the checklist (self-reinforcement). If there was a triangle in the "JC confirmation"

column, he was allowed to select a small sticker and affix it to the checklist (Table 2). The work checklist was placed on a table in the center of the bathroom so that T could fill in the "finished" and "confirmation" columns after he finished each task.

9) Dependent variables

The dependent variables were set as follows: T's cleaning task achievement rate, the frequency of reporting and confirming behavior with statements of "Finished," "I'm through" or "May I go to the next task?" and the rate of correspondence between T's completion reporting of "Finished" and his actual performance (the rate of correspondence between evaluations by T and those by the student job coaches). The criteria for the achievement of each task were set as follows: For the mirror cleaning task, wipe off all dust, fingerprints and detergent stains; for the task of wiping sinks, remove hair, wipe water splashes and water drop stains, wipe off water drops and fingerprints on faucets and polish them; for the task of wiping shelves, dust the baskets and wipe the shelves; for the task of wiping lockers, open the locker, wipe out the inside with a white towel and put articles left behind, if any, on a shelf and for the task of cleaning the floor, vacuum the floor and rugs and remove all the trash, including hair and dust, thoroughly.

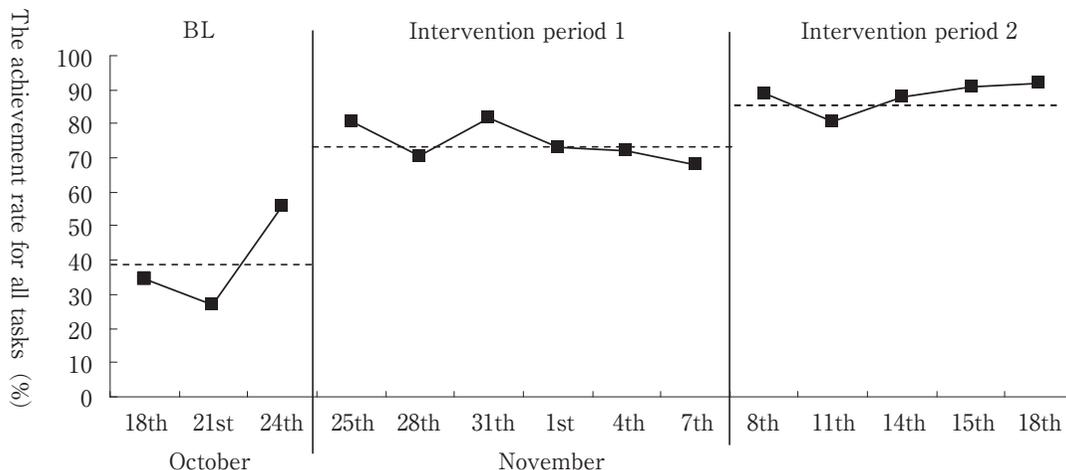


Figure 1 T's achievement rate for all tasks in the cleaning of changing room(s)

On the 24th in the BL (baseline) period, the cleaning work was changed from two rooms to one room due to reasons on the part of H recreation center (dashed lines indicate the average achievement rate of requirements in each period).

Results

(1) The achievement rate for all tasks

Figure 1 shows that T's achievement rate for all tasks on the 18th, when the cleaning of changing rooms began, was 34%, which declined to 27% on the 21st. While the rate rose to 55% on the 24th, it is the achievement rate not for two rooms, but for one room and therefore does not indicate an improvement in T's performance. The average achievement rate for all tasks during the baseline period from the 18th to 24th was 39%. During intervention period 1, when the physical environment setting was changed from the cleaning of two rooms to that of one room, the achievement rate for all tasks rose to 81% on the 25th. While it dropped to 70% on the 28th, the rates in intervention period 1 were higher than those in the baseline period, boosting the average achievement rate for all tasks to 74%. After marking the highest level of 82% on the

31st, however, the achievement rate for all tasks continued to decline, from 73% on the 1st, 72% on the 4th and 68% on the 7th, which seemed to suggest a failure in forming autonomous behavior.

During intervention period 2, when the work checklist was introduced, the achievement rate for all tasks was 89% on the 8th, 81% on the 11th, 88% on the 14th, 91% on the 15th and 92% on the 18th. The average achievement rate for all tasks rose to 88%. Compared with intervention period 1, intervention period 2 showed higher achievement rates for all tasks, suggesting that the introduction of the work checklist had served to promote T's autonomous work performance.

(2) Changes in the proportions of autonomous reactions and prompts

Figure 2 shows changes in the proportions of autonomous reactions and prompts. As

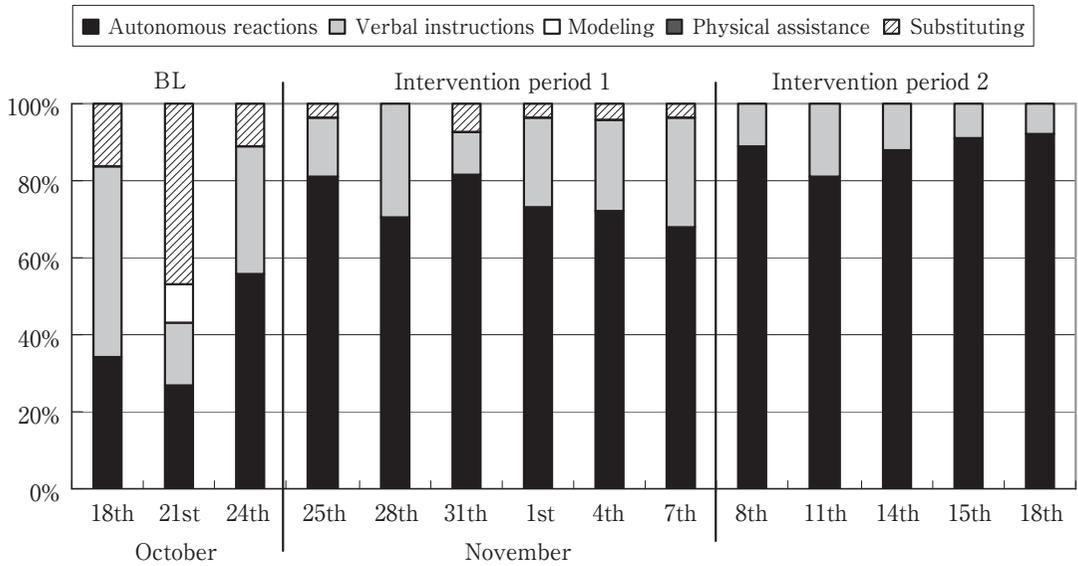


Figure 2 Changes in the proportions of autonomous reactions and prompts

While the prompts of verbal instructions and substituting dominated in the BL (baseline) period, they declined to a total of about 30% in intervention period 1. In intervention period 2, substituting disappeared and T became able to implement all of the tasks on his own.

shown in figure 2, the percentage of verbal instruction was 49% and that of substituting was 16% on the 18th in the BL period. On the 21st, the percentage of verbal instruction declined to 17% and that of substituting rose to 47%, an increase of more than 30% in substituting by the student job coaches. Even on the 24th, when the cleaning work was changed from two rooms to one room due to reasons on the part of H recreation center, the percentage of prompts reached almost 50% with 33% of verbal instruction and 11% of substituting. In intervention period 1, the percentage of verbal instruction was 15% and that of substituting was 4%. On the 28th, substituting disappeared and verbal instructions were the only prompt required, for which the percentage was 30%. On the

31st, while the percentage of verbal instruction was 11% and that of substituting was 7%, autonomous reactions showed a high rate (82%). Since the prompt of substituting by the student job coaches did not disappear from the 1st to the 7th, however, T's tendency to depend on student job coaches as his substitutes lingered on. In intervention period 2 when the work checklist was introduced to promote T's autonomous work performance, the percentage of verbal instruction was 11% on the 8th, 19% on the 11th and 12% on the 14th and declined to 9% on the 15th. From the 8th to 18th, there was no substituting, suggesting that T became able to finish all tasks within the allotted time frame without depending on the student job coaches substituting for him.

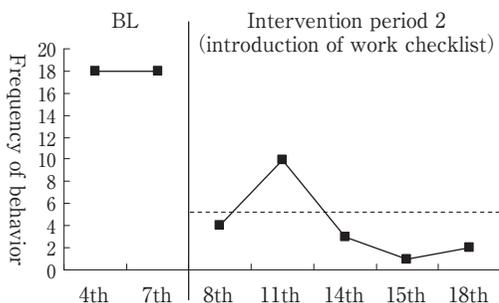


Figure 3 Changes in the frequency of T's reporting and confirming behavior

While the average frequency of T's reporting and confirming behavior during the BL (baseline) period was 18, it declined to 4 after the 8th when the work checklist was introduced (the dashed line indicates the average frequency of T's reporting and confirming behavior in intervention period 2).

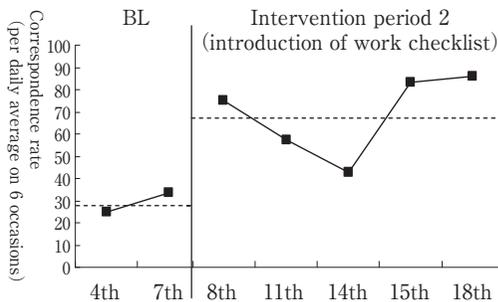


Figure 4 Correspondence between saying and doing reporting of "Finished" and the actual work performance (the work evaluation correspondence rate)

The correspondence rate between the work evaluations by T and those by the student job coaches increased during the last two days (dashed lines indicate the average correspondence rate in each period).

(3) Changes in the frequency of reporting and confirming behavior and the correspondence rate between completion reporting and actual performance

Figure 3 shows changes in the frequency of T's reporting behavior and Figure 4 shows the correspondence rate between T's completion reporting and actual performance.

As shown in Figure 3, the introduction of the work checklist reduced the average frequency of reporting behavior from 18 to 4. In intervention period 2, while the frequency of reporting behavior was 4 on the 8th and increased to 10 on the 11th, it declined again to 3 on the 14th, 1 on the 15th and 2 on the 18th. The frequency of reporting behavior drastically declined in intervention period 2 compared with that in the baseline period.

According to Figure 4, the correspondence rate in the BL (baseline) period was 25% on the 4th and 33% on the 7th, leading to the average correspondence rate of 29%. In

intervention period 2, when the work checklist was introduced to promote T's autonomous behavior, the correspondence rate showed a downward tendency for the first three days: 75% on the 8th, 57% on the 11th and 43% on the 14th. It rose to 83% on the 15th and 86% on the 18th, however. This result shows that the criteria for work evaluations between T and the student job coaches, which did not match at the beginning of the introduction of the work checklist, gradually began to converge to the same level. While the results did not show a stable tendency, it can be said that compared with the baseline period, the second intervention did have some effect on T's behavior.

Discussion

In this study, the authors intended to elucidate the support method and physical

environment settings required for T by participating in the practical on-site training as student job coaches and thereby enhance T's work performance. Specifically, the study was conducted with the following target behaviors: T's acquisition of self-management skills that promote his autonomous behavior, such as the autonomous implementation of tasks, confirmation and evaluation of the results and reinforcement of his own behavior, instead of using the evaluations of others as discriminative stimuli for the next task; and making his completion reporting ("Finished") contingent upon thorough cleaning with no dust or trash left behind (correspondence between saying and doing). The reason that such target behaviors were set was that as a result of an analysis of the task analysis list and the functional assessment, it was assumed that T's completion reporting, "Finished," which became frequent in the training process, was not an indication of his autonomous work performance, but to elicit the evaluations of others that he used as discriminative stimuli to proceed to the next task. Consequently, a work checklist was introduced to form adaptive behavior, which is equivalent in function to T's reporting behavior and can replace it and thereby build self-management skills that enable T to implement his work in an autonomous manner.

As a result, while T's average achievement rate for all tasks was 39% in the baseline period, it rose to 74% in intervention period 1 and 88% in intervention period 2. From these results, it can be said that the first intervention of changing the physical

environment setting from cleaning two changing rooms to cleaning one and the second intervention of the introduction of the work checklist both had some effect on T's behavior. Moreover, while substituting occupied the majority of the prompts in the baseline period, it disappeared in intervention period 2, suggesting that the work checklist served to promote T's autonomous work performance.

Based on the results obtained in this practical training, namely, the stable maintenance of a high achievement rate for all tasks, the increased correspondence rate between work evaluations and the reduced confirmation and reporting behavior, it can be said that the introduction of the work checklist has enabled T to acquire self-management skills to perform work in an autonomous manner instead of using the instructions or evaluations of others as discriminative stimuli to proceed to the next task. Moreover, this study has suggested that if a support tool (Takahata, 2004) like a work checklist is given, such self-management skills that facilitate the implementation of work via monitoring, evaluating and reinforcing one's own behavior may be acquired without taking a step-by-step approach that requires the establishment of self-monitoring as a prerequisite of self-evaluation and that of self-evaluation as a prerequisite of self-reinforcement. For the introduction of a work checklist that promotes self-management, however, it is essential to provide an environmental setting that allows for cleaning while using the work checklist and advocacy activities of requesting the

training facility to maintain the environmental setting. Moreover, in light of the fact that any behavior that has been maintained by self-reinforcement always needs to be supported by the external social reinforcement of third parties if it is to be firmly established (Thoresen & Mahoney, 1974), work evaluations from the student job coaches or the staff of the training facility is indispensable for T to maintain his autonomous behavior.

The reasons for the successful functioning of the work checklist seem to be threefold: 1) While T's reporting of the completion of a task with "Finished" and entering a circle in the "finished" and "confirmation" columns in the checklist are different in mode, specifically, verbal behavior and writing, they were functionally equivalent and both served as completion reporting; 2) A photo (visual stimuli) of each task on the work checklist facilitated the creation of a visual structure, which is an effective support measure for autistic children and adults and served as a discriminative stimulus to proceed to the next step; and 3) Discriminating the feedback to the correspondence between T's reporting and the actual work done by affixing a large sticker (a sticker T likes and selected) when there was an agreement between T's work evaluations and those of the student job coaches and a small sticker when there was no agreement, seemed to have established a contingency to reinforce T's confirmation behavior (Kashiwagi, 1977).

In the future, more studies need to be conducted on the generalized procedures for the acquisition of self-management skills via a

work checklist. Specifically, further studies are expected to verify whether or not it is possible to perform work in an autonomous manner via a work checklist at a different training facility and whether or not it is possible to maintain work performance based on self-monitoring, self-evaluation and self-reinforcement without a work checklist at the same training facility.

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