國 民 教 育 研 究 學 報 ， 第 2 1 期 ： 1 1 5 - 1 3 4
2008 國立嘉義大學 國民教育研究所 教育行政與政策發展研究所

The Effects of Assessment-based Intervention on Body-rocking in one Preschool Child with Mental Retardation

Shu-Hui Lee

Doctor Student,
Department of Special Education
National Kaohsiung
Normal University

Jung-Chang Tang

Professor,
Department of Special Education
National Chiayi University

Abstract

The current study included three experiments that functionally analyzed body-rocking in one boy with mental retardation. An analogue functional analysis was conducted in Experiment 1 to assess the function of his body-rocking which might be maintained by social or sensory reinforcement. The results showed that high rates of his body-rocking occurred only in tangible and alone conditions suggesting that multiple functions may serve to maintain such aberrant behavior. An assessment of antecedent relevant to sensory modalities was further conducted in Experiment 2 to analyze the specific sensory feedback causing the boy's rocking behavior. Results indicated that body-rocking behavior could be maintained by tactile stimulation in this boy. Finally, interventions developed from prior functional analyses were gradually employed in Experiment 3 to treat the boy's body-rocking responses. Results of the current study demonstrated the non-contingent presentation of alternative tactile stimulation and functional communication training could be effectively employed to reduce this boy’s body-rocking responses.

Key words: body-rocking, tactile stimulation, mental retardation, functional communication training.

Body-rocking was exhibited most frequently in persons with mental retardation, autism, or severely visual impairment (Baumeister & Forehand, 1972; Berkson, Rafaeli-Mor & Tarnovsky, 1999; Bornstein & Smith, 1976; Dave, 1992; Felps & Devlin, 1988; Tustin, 1995). This rocking behavior occurred in short duration during infancy in typical children and children with developmental disabilities around the end of their first year of life (Berkson et al., 1999). Generally, such behavior decelerated and disappeared, but sometimes still retained in some few cases even beyond the period of infancy possibly due to a lack of typical interaction with the environment to build alternative behaviors that compete with this body-rocking (Brambring & Tröster, 1992; Thelen, 1981; Wehmeyer, 1991). Such rocking aberrant behavior is usually assumed to reflect superfluous patterns of movement coordination in that the motions appear unrelated to particular external or internal goals (Berkson, 1983; Cooper & Dourish, 1990). It can be stigmatizing and may interfere with learning (Jones, Wint & Ellis, 1990; Koegel & Koegel, 1989). Additionally, it might inversely relate to social integration in more inclusive settings for individuals with developmental disabilities (Berkson & Andriacchi, 2000). Therefore, it is necessary for parents and professionals to extinguish such body rocking behavior.

The function of body-rocking seemed ambiguous. Some proposed that body-rocking might be acquired through an operant learning process (e.g., Hollis, 1971). For example, in an earlier study Hollis (1971) showed that one non-rocking participant was shaped to rock by moving her body to and fro while delivering reinforcers on a continuous schedule. The participant then learned rocking as an operant behavior. Thus, it is reasonable to reduce this behavior via suitable behavioral techniques, such as withholding reinforcers. With similar stance, prior investigators often directly adopted intervention with behavior modified techniques to decrease such behavior (Bornstein & Smith, 1976; Ellis, MacLean & Gazdag, 1989; Steele & Jorgenson, 1971). For example, Steele and Jorgenson (1971) found music could be directly played to reduce body-rocking for one person with mental retardation in an institution setting. However, inconsistent with Steele and Jorgenson's (1971) findings, the results of Bornstein and Smith's (1976) study showed weak effectiveness affected on the rates of rocking behavior when presented music. They investigated body-rocking responses exhibited by one woman diagnosed with severely mental retardation, and found that flash light could be successfully used to decelerate the levels of her body-rocking. In addition to

music and light, Ellis et al. (1989) found exercise program could be used directly to reduce the levels of body-rocking for one boy with severely mental retardation. However, as some researchers pointed out, the treatment effect of direct applied behavior techniques seemed to be tentative and lasted merely a short period of time (Lovaas, Newsom & Hickman, 1987). Without detecting its functions and then applying appropriate intervention, repetitive body-rocking could be hard to cope with.

Recently, behavioral analysts usually employed functional analysis to assess the functions of rocking behavior and then designed appropriate intervention to reduce such behavior (Pyles, Riordan & Bailey, 1997; Singh, Landrum, Ellis & Donatelli, 1993; Wilder, Kellum & Carr, 2000). Interventions developed from the results of prior functional analysis could be more effective than those traditional behavioral techniques (Carr, 1994). If repetitious rocking was relevant to sensory reinforcement, presenting alternative sensory items or demanding to do something could be employed to reduce this behavior (Pyles et al., 1997; Wilder et al., 2000). For example, Pyles et al. (1997) employed functional analysis in naturalistic settings to investigate two persons with developmental disabilities and found that their body-rocking was frequently displayed in alone conditions, and less appeared in demand conditions. High levels of their body-rocking occurred merely in alone conditions possibly due to a lack of stimulation in such impoverished settings. The results of the findings suggest that sensory self-stimulation may be a determined factor in their rocking behavior. Instead of manipulating body-rocking in alone conditions, Pyles et al. (1997) demanded and prompted the participants to find appropriate vocabularies from books, and then effectively decelerate the levels of their body-rocking responses. Wilder et al.'s (2000) findings were also in accord with those from Pyles et al.'s (1997) that demonstrated the assessing effectiveness of employing functional analysis. Wilder et al. studied one woman with mental retardation using functional analysis and also found that sensory reinforcement contribute to the occurrence of persistent rocking responses in this woman. Alternative sensory preference objects derived from prior functional analysis could be successfully used to decelerate such aberrant behavior in their study. Additionally, provision of visual screening or medicine, such as Thioridazine is another intervention to block rocking response which may be maintained by self sensory stimulation. For instance, Singh et al. (1993) used functional analysis to assess body-rocking of two adolescents with severely

mental retardation in institutions and found that such behavior occurred across all experimental conditions. Sensory self-stimulation could be one of determined factors to their body-rocking. Visual screening or Thioridazine could be effectively adopted to block such stimulation and decelerate the levels of rocking responses.

In contrast, if rocking behavior was relevant social reinforcement, functional communication training could be used to reduce such aberrant behavior (Durand & Carr, 1987). In the study of four persons with developmental disabilities, Durand and Carr found that two out of the participants persistently exhibited high rates of body-rocking responses only in demand conditions. Results of this study suggest that repetitious body-rocking serves to avoid or escape from task demands. Functional communication skills were successfully taught to these two participants to request for a break from tasks to substitute their rocking behavior, and finally extinguished the levels of this aberrant behavior.

Purpose of the Study

The first purpose of this current study was to examine possible functions of repetitive body-rocking which might be relevant to sensory reinforcement or social reinforcement. An analogue functional analysis was used in Experiment 1 to assess the functions of this aberrant behavior.

Second, if body-rocking was related to self-stimulation, this study would seek to identify specific sensory reinforcers that maintain this rocking behavior. To conduct experimental analysis of possible visual, auditory, or tactile consequences that might maintain this behavior, modality analysis in Experiment 2 was used to mask the possible sensory consequences causing such stereotypic rocking.

Third, if the functions of rocking responses may be relevant to sensory or social reinforcement, this study would test functional analysis findings via a concurrent operant procedure. Experiment 3 would be used to evaluate the effect of interventions derived from prior functional analysis on this rocking behavior.

General Method

Participant and Setting

The target boy, Gary who enrolled in a day care center for developmental disabilities was selected because he was known to engage frequently in body-rocking responses and was not on a regimen of medication. He studied with other preschoolers in classroom settings with one supervisor and two teacher assistants. Gary was 5 years old and classified as having severely mental retardation. He was able to walk and required assistance with toileting and eating. He responded to certain music sounds and liked to touch textured items during leisure time. Gary was nonverbal and often communicated with others by vocalizing and touching. He usually displayed high levels of body-rocking behavior during snack time.

Assessment and intervention for Gary's body-rocking was conducted in one 4m by 3m separate room near his classroom that allowed for uninterrupted observations and minimal distractions. There were one table and several chairs in the room.

Measures

The dependent variables were body-rocking and communication responses. Body-rocking response was defined as rhythmic, repetitive, and two or more consecutive back-and-forth torso movements, with his shoulders having moved from the back of his chair. Communication response was defined as exhibiting a sign of requesting for food (addressed in Experiment 3). The experimenter videotaped each condition using a videocassette recorder and a stopwatch. Two observers recorded the frequency of rocking responses by employing a 15-s partial interval time sampling method. All data were converted to percentage of 15-s intervals during which his rocking behavior and communication response occurred.

Interobserver Agreement

Before conducting the functional analysis, two graduate students in special education were trained for 4 hr to use the observational system and reached a 90% agreement criterion, and then served as observers for all sessions. These two observers recorded data independently and compared with data sheet simultaneously. Across experiments an average

of 27% sessions (range, 20% to 35%) were scored for interobserver agreement. An agreement was computed using an interval-by-interval agreement method to assess percentage agreement for the frequency of body rocking (Kazdin, 1982). Interobserver agreement was computed by dividing the number of agreements by the number of agreements plus the number of disagreements and multiplying by 100%. The interobserver agreement for Gary's body-rocking is 93% (90% to 100%) in Experiment 1, 88% (85% to 100%) in Experiment 2, and 92% (90% to 100%) in Experiment 3, respectively. In contrast, the interobserver agreement for Gary's communication response is 96% (90% to 100%) in Experiment 3.

Experiment 1: Analogue Functional Analysis.

Method

Procedure

Before functional analyses were conducted, Gary was observed in his classroom settings to analyze possible antecedent and consequence events relevant to body-rocking. He was observed about 8 hr across settings and activities for several days.

A multielement design (Sidman, 1960) was employed to assess the occurrence of body-rocking across five conditions: (a) attention, (b) demand, (c) alone, (d) play, and (e) tangible (modified from Iwata, Dorsey, Slifer, Bauman & Richman, 1982/1994). During the Alone condition, Gary was seated in a chair. No social interaction or activities occurred during this condition. During the Attention condition, the experimenter and Gary were seated next to each other. When seated the experimenter read a magazine, while Gary was provided with toys. If body-rocking occurred, the experimenter provided 5 seconds of social comments to him, telling him not to engage in rocking responses, and provided physical contact. After the 5 seconds of social comments elapsed, the next occurrence of rocking responses occasioned a similar consequence. All other responses exhibited by Gary were ignored. During the Demand condition, the experimenter and Gary were seated next to each other. The experimenter delivered a verbal demand every 10 seconds (e.g., "Gary, put in the

box"). Correct responses were immediately praised and incorrect or no responses resulted in a partial physical prompt after 10 seconds elapsed. Any occurrence of rocking responses resulted in 30 seconds cessation of task demands. During the Play condition, the experimenter and Gary were seated next to each other. Gary was provided with several toys identified by his teachers as being preferred and was praised every 30 seconds in the absence of body-rocking (occurrences of rocking responses were ignored). At the beginning of the Tangible condition, the experimenter either showed preferred food to Gary or delivered a small portion of preferred food for him non-contingently. Thereafter, the experimenter delivered such food to Gary contingent on exhibition of his body- rocking. Occurrences of all other behaviors were ignored.

Each condition was presented once per day for 5 min with a random sequence occurring each day about 10 a.m. in the morning. Sessions were conducted at the same time each day. All sessions were videotaped by a graduate student and recorded by two graduate students using data sheets. The graduate student positioned video camera facing the student from approximately 2 m, repositioning it if the participant moved.

Results

The results of direct observation showed that antecedent events, such as snack time or lunch time seem to connect to occurrences of his body-rocking. In addition, his rocking responses intermittently occurred across daily activities and settings. In Experiment 1, throughout 45 sessions Gary exhibited a high frequency of body-rocking only in alone and tangible conditions (see Figure 1). For all of the sessions for body-rocking responses a mean of 78% (range, 60% to 90%) of intervals contained rocking in the Alone condition, a mean of 91% (range, 75% to 100%) of intervals contained body-rocking in the Tangible condition, a mean of 14% (range, 0% to 35%) of intervals contained body-rocking in the Demand condition, a mean of 4% (range, 0% to 20%) of intervals contained body-rocking in the Play condition, and a mean of 3% (range, 0% to 10%) of intervals contained rocking responses in the Attention condition. Gary's repetitive rocking behaviors exhibited higher rates in the

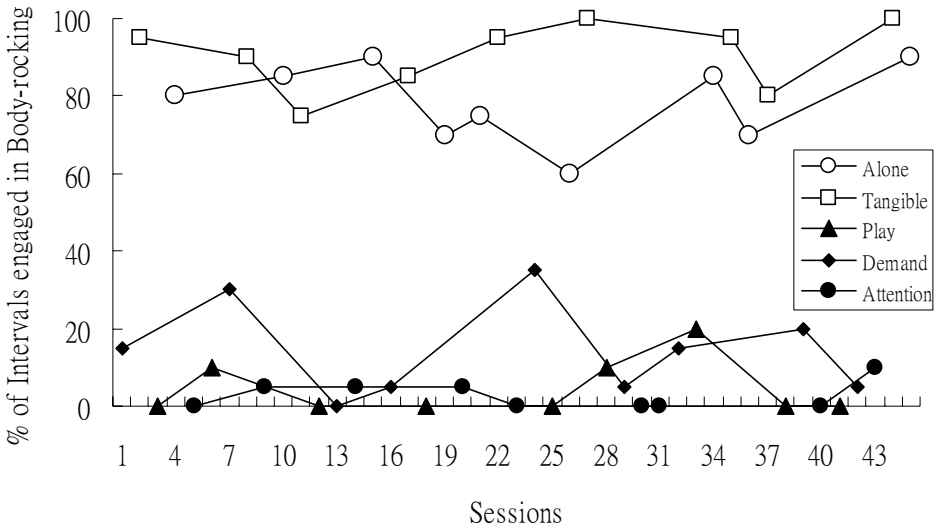

Figure 1. Percentage of intervals engaged in body rocking in analogue functional analysis.

Alone and Tangible conditions, but lower rates in all other conditions suggesting that his body-rocking may be relevant to multiple sources of functions. In other word, Gary's body-rocking may be functioned to produce self-stimulation or to obtain preferred food from naturalistic environments.

Experiment 2: Antecedent Assessment

Method

Because high rates of rocking behavior occurred in the Alone condition, antecedent assessment was further employed to detect effective treatment strategy in the environment. The second study analyzed high levels of repetitive body-rocking occurring in the Alone condition identified in Experiment 1 to evaluate possible specific sensory stimulation that caused these behaviors. The same definitions of body-rocking responses, measures, settings, and interobserver agreement in Experiment 1 were conducted through this study.

Procedure

The purpose of this phase was to examine the relationship between body rocking and various antecedent conditions. A multielement design was used to assess the occurrence of rocking behavior across four conditions: (a) Reduced-light, (b) Noise, (c) Massage, and (d) Alone conditions (modified from Wilder et al., 2000). These conditions were based on hypotheses (which were derived from assistant teachers' report) of the variables that were relevant to the body rocking. During the reduced-light condition, minimal light was present in the room while Gary was seated and observed. Gary received no social interaction during this condition. The purpose of this condition was to examine the hypothesis that body rocking was correlated with visual stimulation. A reduction in the levels of body rocking during this condition, possibly because of sensory extinction, would suggest that visual stimulation was correlated with behavior maintenance. During the noise condition, a stereo was played with about 70 Decibels in the room while Gary was seated and observed (i.e., Gary did not receive any social interaction). The purpose of this condition was to examine the hypothesis that the target behavior was correlated with auditory stimulation. A change in the level of body rocking in the presence of a fixed sound source would suggest that auditory stimulation was correlated with behavior maintenance. During the massage condition, Gary was seated in an electrical back massage chair noncontingently provided with vibration every 5s for the entire session. Other than sitting in the massage chair, Gary received no social interaction during this condition. The purpose of this condition was to examine the hypothesis that the target behavior was related to tactile stimulation. During the alone condition, Gary was merely seated and observed. No items were available and there were no programmed consequences for body rocking. The purpose of this condition was used to serve as a methodological control to make comparison with other conditions with regard to the levels of body-rocking.

Each condition was presented once per day for 5 min duration with a random sequence occurring each day. Sessions were conducted about the same time each day.

Results

Figure 2 displays the results for Gary's assessment of antecedent sensory consequences of body-rocking. Throughout 20 sessions Gary exhibited a high frequency of body-rocking within the alone, noise, and reduced-light conditions but a low frequency of rocking behavior in the massage condition. The results suggest that back tactile stimulation could be functioning as reinforcer for Gary's body-rocking. For all of the sessions a mean of 90% (range, 80% to 95%) of intervals contained body rocking in the alone condition, a mean of 89% (range, 80% to 95%) of intervals contained body rocking in the noise condition, a mean of 84% (range, 70% to 95%) of intervals contained body rocking in the reduced-light condition, and a mean of 11% (range, 5% to 25%) of intervals contained body rocking in the massage condition.

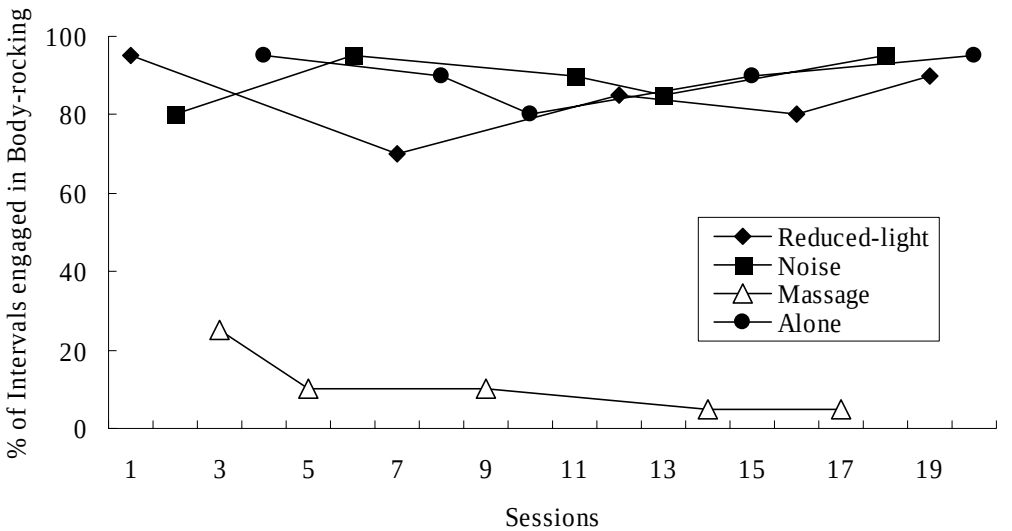

Figure 2. Percentage of intervals engaged in body rocking in antecedent assessment.

Experiment 3: Functional-based Intervention

Method

Because high rates of rocking behavior exhibited both in the Alone and Tangible conditions, intervention was conducted based on the findings of Experiment 1 and 2. The third study further examined alternative sensory stimulation and functional communication training as a means to decelerate body-rocking responses and to further test the sensory and social consequences as identified in Experiment 1 and Experiment 2.

Research Design

A multiple baseline design across operant functions was used to assess the effects of non-contingent presentation of sensory stimulation and functional communication training on body-rocking responses. The percentage of intervals engaged in rocking and communication response was the dependent variables. Non-contingent reinforcement and functional communication training developed from Experiment 1 and Experiment 2 was the independent variable. All sessions were conducted across two conditions including Alone and Tangible conditions. Therefore, through observation and data collection, the effects of treatment procedure on the body- rocking behaviors were assessed.

Procedure

Baseline. Potential operant functions identified in Experiment 1 and 2 were incorporated into the baseline phase. Body-rocking responses were assessed via the Tangible and the Alone conditions in this phase. These two conditions were further used to assess the possibly multiple functions which Gary's rocking behavior served. The procedures of the Alone and Tangible conditions conducted were the same as those in Experiment 1. The same definition of body-rocking and measures as Experiment 1 were conducted.

Treatment evaluation. A multiple baseline design across operant functions was used to evaluate the treatment effects of assessment-based intervention on Gary's body-rocking behaviors. Gary was exposed to baseline condition until his data were stable. During treatment evaluation in the Alone condition, a massage chair used in Experiment 2 was presented. Gary was seated in this chair, and noncontingent vibration was provided every 5 s throughout all 5 min sessions. Outside sitting in the vibrating chair, no social interaction or

activities occurred during this condition. In contrast, during treatment evaluation in the Tangible condition, the experimenter and Gary were seated next to each other. Because high levels of body-rocking occurred in the Tangible condition as showed in Experiment 1 suggesting getting preferred food could be the main reason contributed to rocking behavior. The experimenter further adopted functional communication training to teach Gary to request preferred food. At the beginning of this condition, the experimenter either showed favorite food to Gary or delivered a small portion of favorite food for him non-contingently. Thereafter, the experimenter would physically and verbally prompt him to request such food with the sign of raising his hand while Gary exhibited rocking responses. After Gary signed for wanting favorite food, the experimenter would give him a small portion of food to taste. The physical prompts were faded until Gary's percentage of intervals with sign communication was 40% higher than the average of those in baseline lasting three sessions. In addition, any occurrence of rocking responses resulted in no food provided.

Results

Figure 3 displays the results for Gary's treatment evaluation data. His baseline data of body-rocking responses in the Alone condition had little variability and produced an upward trend (a mean of 85%, range, 75% to 95%). During the noncontingent vibration assessment, sitting in the massage chair produced low levels of rocking responses throughout the phase (a mean of 12%, range, 5% to 25%). The results showed that alternative sensory stimulation could be used to decelerate the level of body-rocking which may serve to produce self-stimulation. In contrast, Gary's baseline data of body-rocking responses during the Tangible condition showed a horizontal trend with stability (a mean of 93%, range, 85% to 100%). The functional communication training for requesting for food then was introduced to Gary. After 14 sessions of teaching Gary use sign to ask for favorite food, the mean percentage of his body-rocking response was 9% (range, 0% to 45%) with zero-level in the last four sessions. On the other hand, Gary's communication responses indicated an inverse pattern to those of body-rocking in the Tangible conditions. In this condition, Gary's mean percentage of communication responses occurring during baseline was 2% (range, 0% to 10%). After 14 sessions of teaching Gary to sign for favorite food, his communication responses was increased to a mean percentage of 80% (range, 35% to 95%). The results

indicated that functional communication training could be successfully taught to reduce body-rocking responses possibly maintained by positive social consequences.

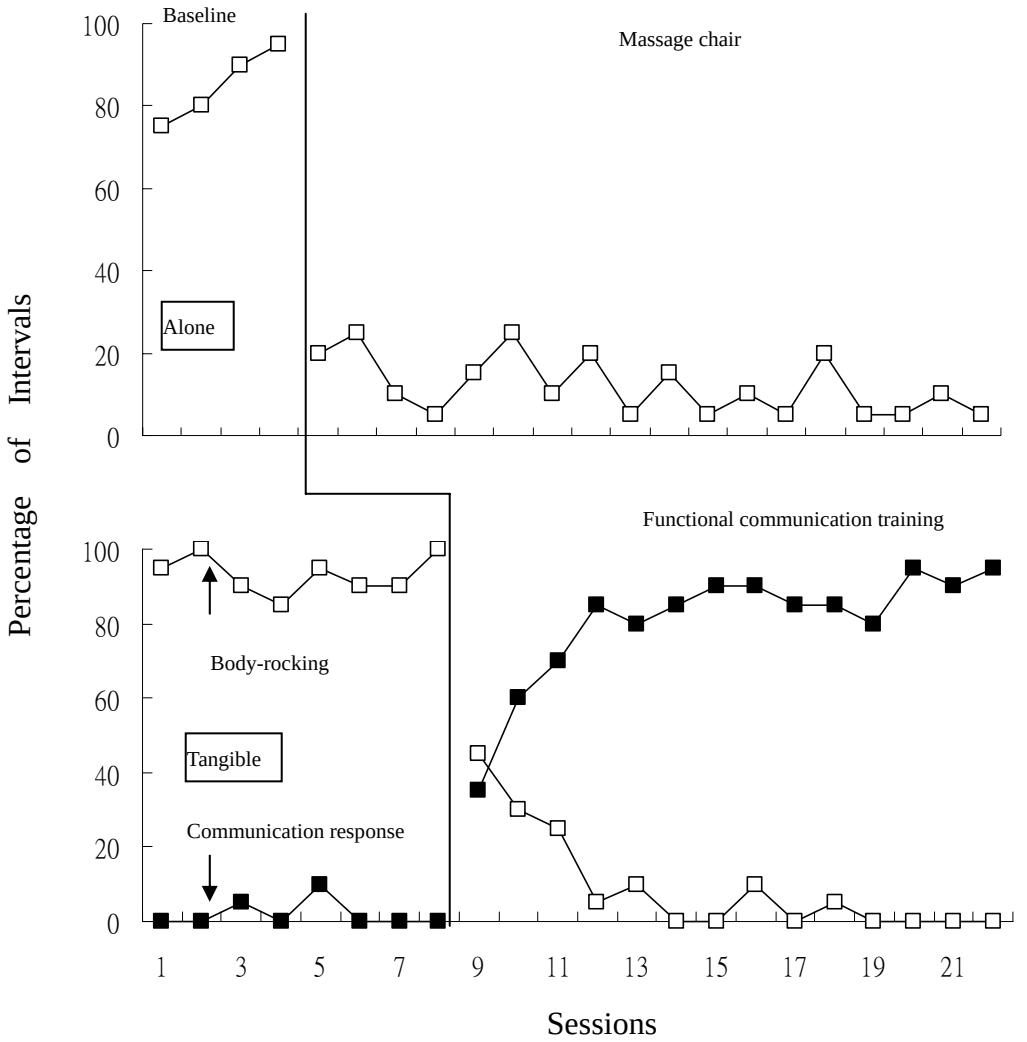

Figure 3. Gary's percentage of body-rocking and communication responses during baseline and assessment-based intervention.

Discussion

Results of the current study showed that multiple sources of reinforcement contributed to the exhibition of Gary's body- rocking behavior. In other word, Gary's rocking behaviors sometimes displayed to produce sensory reinforcement in a lack of environmental stimulation, and to get positive social reinforcement via obtaining from favorite food at times. Specifically speaking, the sensory functions of his body rocking could be relevant to back-tactile stimulation. The findings of present study partially supported the position that rocking could be maintained by sensory feedback (Pyles et al., 1997; Wilder et al., 2000). Previous studies have shown that high rates of rocking responses occurred in alone conditions may serve to produce self-stimulation from impoverished environments (Pyles et al., 1997; Wilder et al., 2000). Nevertheless, these studies merely verified the hypothesis that rocking response was maintained by perceptual reinforcement, particularly by sensory reinforcement (Lovaas et al., 1987), and made no suggestion as how to present precise enriched stimulation to reduce such aberrant behavior in the environment. On the contrary, the present study designed to further assess the specific antecedent stimulation relevant to rocking responses could be more useful to develop appropriate intervention to decrease this rocking behavior. Therefore, researchers should consider antecedent assessment used to detect specific sensory feedback from rocking after conducting an analogue functional analysis in order to develop more effective treatments in future studies.

On the other hand, the findings of the present study were also partially consistent with those of prior study (Durand & Carr, 1987). In conducted with body-rocking exhibited by two persons with developmental disabilities, Durand and Carr (1987) found that aberrant rocking behavior was maintained by social reinforcement, and functional communication training could be effectively taught to decelerate the frequency of such rocking responses. Similarly, the experimenter in present study also taught Gary to sign by raising his hand as functional equivalent to rocking, and demonstrated that this equivalent could be successfully substitutable for the aberrant rocking responses to obtain favorite food. After Gary learned how to sign his communication needs and then his aberrant rocking behavior was dramatically decreasing. Figure 3 indicated that treatment effects of the first three interventional sessions were weak. It could be that Gary was not familiar with such

communication training at the beginning. After three sessions of teaching Gary functional communication, he made big progression and requested food via signs frequently. However, it should be noted that despite social reinforcers controlling rocking behavior in both current study and Durand and Carr's study, the mechanism of reinforcement in both studies could be different. Compared to negative social reinforcement (escape or avoid from task demands) serving to maintain rocking behavior found in Durand and Carr's, the present study showed positive social reinforcement (getting preferred food) strongly connected to this behavior. It could well be that one single factor may not account for all functions of body-rocking responses. Body-rocking behavior might be maintained by negative social reinforcement in some individuals with developmental disabilities, but for other cases, positive social reinforcement, sensory reinforcement, or even multiple sources of reinforcement might reasonably account for its functions.

Another interesting issue is about Gary's source of self-stimulation derived from rocking responses. The results of current study indicated that sensory stimulation could contribute to rocking behavior due to high rates of such behavior occurred in the Alone condition as showed in Experiment 1. Furthermore, results of Experiment 2 demonstrated that providing Gary's back with vibration in a massage chair decelerated his body-rocking responses, suggesting that back stimulation could be one major factor controlling his rocking response. In brief, the source of self-stimulation from rocking for Gary may be his back due to decreases in the rates of rocking after providing back vibration massage in Experiment 2. Long periods of provision of a back massage chair in Experiment 3 to substantially decelerate the rates of rocking behavior in Gary further verified such speculation. However, the levels of rocking behavior could not be eliminated completely while presented with such a massage chair. Thus, sources of stimulation derived from body-rocking could not be traced entirely to Gary's back of body. It is highly possible that other stimulation, such as feet stimulation may maintain such behavior as well because so far other parts of body stimulation were never provided to compete or substitute Gary's rocking in this study. Without further thoroughly examining the specific antecedent stimulation, drawing any other definite conclusion seems impossible.

In summary, to select appropriate functional equivalent derived from the results of prior functional analyses is the critical points to reduce this aberrant behavior. For Gary, back

stimulation from a vibration chair could be largely substitutable for stimulation derived from body-rocking. Similarly, consequences of functional communication responses could be equivalent to those of body-rocking to request favorite food. Therefore, more studies conducted in functional analysis and developed appropriate intervention accordingly to extinguish rocking behavior are needed in the future.

References

Baumeister, A. A., & Forehand, R. (1972). Effects of contingent shock and verbal command on body rocking of retardates. *Journal of Clinical Psychology*, *28*, 586-590.

Berkson, G. (1983). Repetitive stereotyped behaviors. *American Journal of Mental Deficiency*, *88*, 239-246.

Berkson, G., & Andriacchi, T. (2000). Body-rocking in college students and persons with mental retardation: Characteristics, stability, and collateral behaviors. *Research in Developmental Disabilities*, *21*, 13-29.

Berkson, G., Rafaeli-Mor, N., & Tarnovsky, S. (1999). Body-rocking and other habits of college students and persons with mental retardation. *American Journal on Mental Retardation*, *104*, 107-116.

Bornstein, E., & Smith, D. W. (1976). Effect of visual and auditory stimuli on self-stimulatory behavior: A case study. *Research and the Retarded*, *3*(2), 40-44.

Brambring, M., & Tröster, H. (1992). On the stability of stereotyped behaviors in blind infants and preschoolers. *Journal of Visual Impairment and Blindness*, *7*, 105-110.

Carr, E. G. (1994). Emerging themes in the functional analysis of problem behavior. *Journal of Applied Behavior Analysis*, *70*, 393-399.

Cooper, S. J., & Dourish, C. T. (1990). An introduction to the concept of stereotypy and a historical perspective on the role of brain dopamine. In S. J. Cooper & C. T. Dourish (Eds.), *Neurobiology of stereotyped behavior* (pp. 1-24). Oxford: Clarendon Press.

Dave, C. A. (1992). Effects of linear vestibular stimulation on body-rocking behavior in adults with profound mental retardation. *American Journal of Occupational Therapy*, *46*, 910-915.

Durand, V. M., & Carr, E. G. (1987). Social influences on self-stimulatory behavior: Analysis and treatment application. *Journal of Applied Behavior Analysis*, *20*, 119-132.

Ellis, D. N., MacLean, W., Jr., & Gazdag, G. (1989). The effects of exercise and cardiovascular fitness on stereotyped bodyrocking. *Journal of Behavior Therapy and Experimental Psychiatry*, *20*, 251-256.

Felps, J. N., & Devlin, R. J. (1988). Modification of stereotypic rocking of a blind adult. *Journal of Visual Impairment and Blindness*, *82*, 107-108.

Hollis, J. H. (1971). Body-rocking: Effects of sound and reinforcement. *American Journal of Mental Deficiency*, *75*, 642-644.

Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1994). Toward a functional analysis of self-injury. *Journal of Applied Behavior Analysis*, *27*, 197-209.

Jones, R. S. P., Wint, D., & Ellis, N. C. (1990). The social effects of stereotyped behavior. *Journal of Mental Deficiency Research*, *34*, 261-268.

Kazdin, A. E. (1982). *Single-case research designs*. New York: Oxford University Press.

Koegel, R. L., & Koegel, L. K. (1989). Community-referenced research on self-stimulation. In E. Cipani (Ed.) *The treatment of severe behavior disorders* (pp. 129-150). Washington, DC: American Association on Mental Retardation.

Lovaas, I., Newsom, C., & Hickman, C. (1987). Self-stimulatory behavior and perceptual reinforcement. *Journal of Applied Behavior Analysis*, *20*, 45-68.

Pyles, D. A., Riordan, M. M., & Bailey, J. S. (1997). The stereotypy analysis: An instrument for examining environmental variables associated with differential rates of stereotypic behavior. *Research in Developmental Disabilities*, *18*, 11-38.

Sidman, M. (1960). *Tactics of scientific research*. New York: Macmillan.

Singh, N. N., Landrum, T. J., Ellis, C. R., & Donatelli, L. S. (1993). Effects of Thioridazine and visual screening on stereotypy and social behavior in individuals with mental retardation. *Research in Developmental Disabilities*, *14*, 163-177.

Steele, A. L., & Jorgenson, H. A. (1971). Music therapy: An effective solution to problems in related disciplines. *Journal of Music Therapy*, *8*(4), 131-145.

Thelen, E. (1981). Rhythmical behavior in infancy: An ethological perspective. *Developmental Psychology*, *17*, 237-257.

Tustin, R. D. (1995). The effects of advance notice of activity transitions on stereotypic behavior. *Journal of Applied Behavior Analysis*, *28*, 91-92.

Wehmeyer, M. L. (1991). Typical and atypical repetitive motor behaviors in young children at risk for severe mental retardation. *American Journal on Mental Retardation*, *96*, 53-62.

Wilder, D. A., Kellum, K. K., & Carr, J. E. (2000). Evaluation of satiation-resistant head rocking. *Behavioral Interventions*, *15*, 71-78.

文稿收件：2008 年 03 月 18 日
文稿修改：2008 年 05 月 17 日
接受刊登：2008 年 07 月 15 日

The Effects of Assessment-based Intervention on
Body-rocking in one Preschool Child with Mental Retardation

功能本位介入方案對處理智能障礙兒搖擺身體行為的成效之研究

李 淑 惠
國立高雄師範大學特教系博士生

唐 榮 昌
國立嘉義大學特教系教授

摘　　要

本研究包括三個子研究，以功能分析來瞭解一位智能障礙幼兒搖擺身體的功能。研究一，使用類比功能分析來評估該幼兒搖擺身體的功能，是否是社會增強或是感官增強所造成的。結果顯示，其高頻率的搖擺行爲只有出現於獨處與實物情境，可能與多重增強有關。研究二，進一步地使用前因事件的評量，來分析與該幼兒擺動身體行爲有關的感官形式。研究結果指出，該幼兒的搖擺行爲可能與觸覺刺激有關。研究三，使用功能本位介入方案來處理該智能障礙幼兒搖擺身體的行爲。結果發現，替代觸覺刺激的呈現以及功能溝通訓練，可以有效地減低該幼兒擺動身體的行爲。

關鍵詞：搖擺身體、觸覺刺激、智能障礙、功能溝通訓練