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Special Education as Science, Applied Behavior Analysis, and Single Subject Research

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〈Abstract〉

Currently, no one will raise questions whether special education need to be scientifically-based or evidence-based. Then what does it mean by "Being scientific?". What are features of scientifically-based practices in special education? Research guides practices in special education and thus current conceptualization of research in special education is closely associated with those questions. Considering that special education is a problem-solving and special educators often serve for heterogeneous populations in nonuniversal settings, research methods which address these complexities are required. Single Subject Research (SSR) is experimental and units of analyses are individual. These features of SSR allow researchers and practitioners to evaluate effectiveness of interventions within contexts where the interventions are actually applied. SSR focuses on individual behavior changes within specifically manipulated conditions, which is closely tied to core dimensions of applied behavior analysis (ABA). This highlighted usefulness of SSR when special educators deliver scientifically-based practices within ABA approach. In the present study, features of scientifically-based practices and characteristics of applied behavior analysis are discussed in connection to special education. Next, advantageous characteristic in using SSR as a major tool for developing, evaluating, and adapting scientifically-based practices in special education is discussed in association with understandings about features of special education and ABA.

Keywords: applied behavior analysis, evidence-based practice, scientifically-based practice, SSR, special education

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I. Special Education as Evidence-Based or Scientifically-Based Practices

Practice is “a curriculum, behavioral intervention, systems change, or educational approach designed for use by families, educators, or students with the express expectation that implementation will result in measurable educational, social, behavioral, or physical benefit” (Horner et al., 2005, p. 175). Current practice in special education is geared toward evidence-based or scientifically-based one (Byiers, Reichle, & Symons, 2012; Cook & Odom, 2013; Freeman & Sugai, 2013; Hammond & Gast, 2010), which is supported by relevant legalization (e.g., The No Child Left Behind Act (NCLB) in 2001 and Reauthorization of IDEA in 2004) and professional efforts to establish criteria or standards for evidence-based or scientifically-based practice. In this study, terms “criteria” and “scientifically-based” are used to refer “standards” and “evidence-based” respectively as well.

Criteria to decide on whether an intervention or a procedure is evidence-based are established through scientific research (Horner et al., 2005; McDonnell & O'Neill, 2003). Scientifically-based research is “a process in which researchers use systematic methods and rigorous analyses of valid and reliable information derived from studies using methods that permit replication and result in dissemination” (Algozzine, 2003, p. 156). Different research questions require different types of methodologies (Tankersley, Harjusola-Webb, & Landrum, 2008). Council for Exceptional Children's (CEC) Division for Research established a task force identified with four types of research methodologies in special education: (a) control group, (b) correlational, (c) single subject, and (d) qualitative designs. Control group designs and single-subject designs are considered to be experimental and provide mostly criteria proposed for evidence-based practices (Robey & Wambaugh, 1999). In 2002, criteria for determining evidence-based practice in general education has been established by What Works Clearinghouse (WWC) (Odom et al., 2005). Research methodology associated with the criteria proposed by WWC was control group design, but SSR rarely appear in general education literature. SSR was often omitted when status of scientific research were reviewed (Honer et al., 2005; Odom & Strain, 2002). Target populations, focuses, goals, and methodologies in special education don't match to those of general education. It means that practitioners need separate criteria for evidence-based practice in the field of special education (Honer et al., 2005). High-quality SSR meets the criteria for scientific research and thus can replace the function of control group designs as measures for the criteria for evidence-based practices in special education (Honer et al., 2005; Odom & Strain, 2002; Tankersley et al., 2008).

Horner et al. (2005) reported description of the features and quality indicators of SSR, and criteria for evidence-based practices validated with SSR. The quality indicators proposed are description of participants and settings, dependent variable, independent variable, baseline data, experimental control/internal validity, external validity, and social validity. Further, they proposed five standards for SSR to be a measure for evidence-based practice, in accordance with recommendations by the Task Force on Evidence-Based Interventions in School Psychology (Kratochwill & Stoiber, 2002) and the Committee on Science and Practice, Division 12, American Psychological Association (Weisz & Hawley, 2002).

> Single-subject Research documents a practice as evidence based when (a) the practice is operationally defined; (b) the context in which the practice is to be used is defined; (c) the practice is implemented with fidelity; (d) results from single-subjects research document the practice to be functionally related to change in dependent measures; and (e) the experimental effects are replicated across a sufficient number of studies, researchers, and participants to allow confidence in the findings. (p.175)

According to Horner et al. (2005) a practice is considered to be scientifically based when the practice is proven to be effective with five high-quality SSR that at least of three different researchers in at least three different locations and included a total of at least 20 participants. Needs for utilizing SSR as tools for establishing criteria was recognized and a panel of experts in SSR were assembled by WWC in 2010. The criteria proposed by Honer et al. in 2005 are expanded by the panel (Kratochwill et al., 2010).

Ⅱ. Applied Behavior Analysis and Single-Subject Research

Cooper, Heron, and Heward (2007) defined applied behavior analysis as “a science devoted to the understanding and improvement of human behavior (p. 3)” and then they defined science as “a systematic approach to understand natural phenomena-as evidenced by description, prediction, and control-that relies on determinism as its fundamental assumption, empiricism as its prime directive, experimentation as its basic strategy, replication as its necessary requirement for believability...”(p. 7).

Their definition of science is closely connected to dimensions of ABA proposed by Baer et al. in the first issue of JABA in 1968: applied, behavioral, analytic, technological, conceptually systematic, effective, and generality. Based on these definitions, we can say that ABA is a behavioral science of which focuses are describing, predicting, and controlling behaviors through application of principles of behavior for practical purposes in real environments.

'Applied' denotes its focus on improving individual's behavior in natural social settings (Hammond & Gast, 2010) which are immediately important to the individual (Baer, Wolf, & Risley, 1968). Another key dimension is 'behavioral.' "Applied research is eminently pragmatic; it asks how it is possible to get an individual to do something effectively." (p. 93). "'Analytic' is believable demonstration of the events that can be responsible for the occurrence or nonoccurrence of that behavior. An experimenter has achieved an analysis of a behavior when he can exercise control over it." (p. 94). In the process of the demonstration, quantification of behavior through precise measurement is required. In other words, ABA is behavioral science of which purpose is improving socially significant human behaviors and target behaviors as natural phenomena should be observable and quantifiable.

Theoretical foundation of current ABA is an operant theory conceptualized in Skinner's laboratory research where Skinner analyzed the effects of consequences on behavior. The core underpinning of the operant theory is that behavior occurs at an individual level and the specific behavior is a momentary representation of interaction with environment. These assumptions are closely tied to underpinning of SSR. That is SSR focuses on studying behavior change at individual level as an analysis of human operant behavior. Temporality is a critical aspect of behavior under investigation (Horner et al., 2005; Robey & Wambaugh, 1999).

One of core features of SSR that make it fit to ABA is that each participant serves as his/her own control. Obtaining complete description of behavior changes across experimental conditions via repeated measurement is another feature, which entails demonstration of experimental control (Kratochwill et al., 2010). Lastly, depending on the participant's response, researchers or practitioners can change some element of intervention to maximize the effects of the intervention without sacrificing experimental control. These core features allow researchers to determine when and how the intervention will change, and thus to have flexibility in evaluating and in-depth examination of target operant and thus to use SSR as a practical tool for developing and testing treatment (Byiers et al., 2012; Cakiroglu, 2012; Tankersley et al., 2008). In order words, the operant principles of behavior

have been experimentally demonstrated with SSR and effective interventions in special education are developed through SSR methodology within an ABA tradition (Horner et al., 2005).

Ⅲ. Special Education and Single-Subject Research

Population with special needs are often heterogeneous in cognitive, adaptive, behavioral, and socio-communicative areas, mainly in rates of skill acquisitions, patterns of information processing, and maintenance and generalization of learned skills. Practitioners in special education field serve for this heterogeneous population often with idiosyncratic behavioral patterns within a continuum of special education contexts (e.g., home, school, community living, vocational setting), which is broader than that of general education (Honer et al., 2005; Odom et al., 2005). Often special educators provide active intervention with rigorous and moment-to-moment monitoring of the effectiveness of an intervention which is implemented for individual student (Horner et al., 2005; McDonnell & O'Neill, 2003). Odom et al. (2005) pointed out implication of above-mentioned factors on research methodology in special education. “Researchers cannot just address a simple question about whether a practice in special education is effective; they must specify clearly for whom the practice is effective and in what context” (p. 139). Group design research focuses on generality of treatment effects which mostly related to group means, not performance of specific individuals or even “non-responders” or “out-liers.” In reality, practice in special education is for those non-responders or outliers and researchers and practitioners require empirically rigorous method for analyzing effects of intervention (Horner et al., 2005). For this reason, SSR are the most frequently reported in the field of special education (Cakiroglu, 2012; Hammond & Gast, 2010).

Repeated measurement, manipulating variables, and analyzing effects of the manipulation allow researchers to identify whether the intervention is effective with specific individuals within specific contexts (Byiers et al., 2012; Cakiroglu, 2012; Hammond & Gast, 2010). Another merit of using SSR is that ethical issues which stem from withholding effective intervention to a control group is irrelevant (Cakiroglu, 2012). These features of SSR work for the special educators who serve for small or/and heterogenous populations in real-life settings because these are closely aligned with special education's core principles of individualized and data-driven instructional decisions (Tankersley et al., 2008).

So far, features which allow practitioners to use SSR as a reliable tool are discussed. However, there are drawbacks in using SSR as measure for evidence-based practices. Those include limited generalisability of research findings due to small number of participants. The limitation, in turn, creates a threat to external validity in SSR and this is an issue which researchers and practitioners need to pay close attention to. Direct or systematic replications of SSR by different researchers in different sites are keys to a solution of the issue. Possible weaker validity of interpretation of data via visual analysis is another issue which calls for attention (Tankersley et al., 2008). Incorporating statistical analysis procedures can mitigate disadvantage of visual analysis of data.

Key features of SSR, ABA, and special education as scientifically-based practices are closely associated with the terms 'applied,' 'behavioral,' and 'analytic' of which relevant unit is individual. For example, through evidence-based and scientifically-based practices, special educators focus on behavior changes for an individual student with special needs targeting improvement of habilitation and normalization of the student within his/her community. In this process, special educators are required to individualize the practice to fit for the unique needs of the student. During the practices, the special educators should monitor effectiveness of intervention procedures and analyze whether the evidence-based practice is functionally related to the targeted behavior changes through SSR.

In short, ABA guides special educators in selecting educational goals and provides a methodological framework for individualized practices; SSR, as an analytic tool, is a measure for evidence-based scientifically based practices. Focuses and characteristics of SSR and special education practice within ABA approach match, which explain usefulness of SSR for practitioners in developing, evaluating effectiveness, and modifying the intervention if necessary. In order words, there shouldn't be a difference in principles and attributes between SSR and daily scientifically-based practice in special education within ABA approach.

Ⅳ. Preparation Programs of Special Educators and Single-Subject Research

SSR is a reliable tool for scientifically-based practice in special education. For the practitioners in special education, having knowledge about research and be a good consumer of research are critical to identifying scientifically-based intervention and to gain information on developing individualized instruction (Tankersley et al., 2008). The concern is "how can educators of teachers in special

education train the teachers to actively utilize SSR in their everyday practice in real settings?" McDonnell and O'Neill (2003) proposed to design personnel preparation programs to require teacher candidate to "not only demonstrate the implementation of effective practices with students in typical school settings, but also show that they are knowledgeable about the research foundations upon which these practices are based (p. 141)." Requiring teacher candidates to demonstrate understanding SSR and competency of utilizing SSR to improve behavior of interest in real settings is a critical component of preparation programs of special educators. This empowers practitioners to provide scientifically-based special education services for heterogenous and/or small size populations in educational conditions where idiosyncrasy and individuality should be addressed.

Ⅴ. Brief Reports of Single-Subject Research

The followings are brief reports of SSR conducted by master's students of an ABA program who were also practitioners in the field of special education. Common features of the following SSR are 1) targeted behaviors were defined operationally, which in turn allowed the practitioners to quantify behavior changes, 2) behaviors were measured within participants, thus behavior changes targeted were in individual levels, 3) the target behaviors were measured repeatedly across experimental conditions which produced overall pictures of behavior changes across specific and temporal environmental contexts demonstrating functional relations between behavior changes and implemented intervention, and 4) target behaviors and implemented interventions were selected based on the participants' needs and characteristics as learners.

1. Fluency Training on Textual Responding to Words and Reading Comprehension (Hong, Kim, & LeePark, 2014)

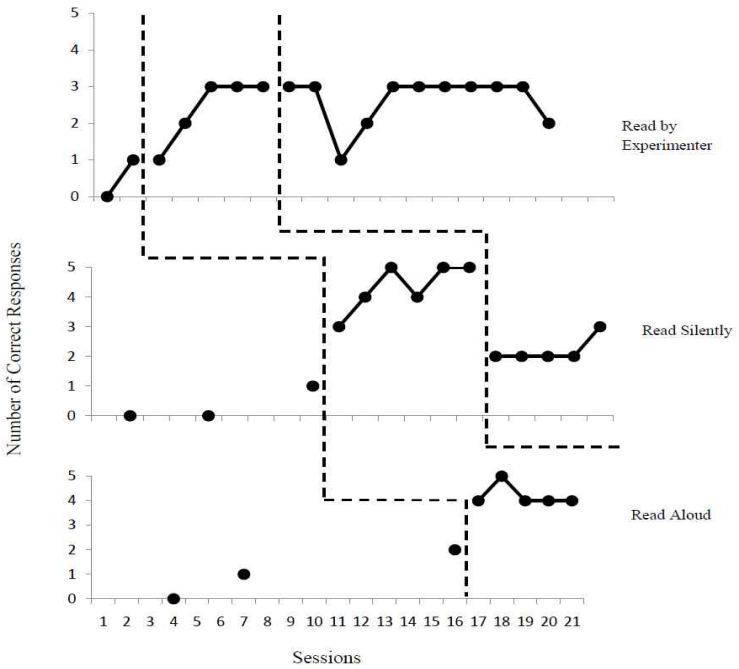
The study in concern examined whether fluency training on textual responding to words would improve reading comprehension. The participant was an 8-year old boy with autism spectrum disorders. The study was conducted in a private after-school program where the participant was receiving supplementary service on academic areas. The dependent variables were numbers of correct answers to questions on a paragraph the participant read. One paragraph was given during each

session. Each paragraph was composed of 110 to 130 Korean words and the paragraphs were similar in levels of difficulty. A delayed multiple baselines across the following three behaviors was utilized for the study: answering questions after listening a paragraph read by the experimenter, answering questions after the participant read a paragraph aloud, and answering questions after the participant read a paragraph silently.

During the accuracy phase as baseline phase, the participant was required to emit textual responses to 20 words which were selected from a paragraph with 90% of accuracy for two consecutive sessions. Then the participant was required to read the paragraph. Lastly, he was given five wh-questions about the content of the paragraph he read. During the fluency phase as the intervention phase, the participant was required to emit textual responses to words from a paragraph up to a fluency criterion (reading 20 words correctly for 1 minute for two consecutive trials). All other aspects of procedure during intervention phase were the same as those of baseline conditions. The results indicated that the participant provided more correct answers during fluency training conditions than he did during the accuracy training conditions, and thus demonstrated that fluency training improve reading comprehension of the participant with autism. The results are shown in <Figure 1>.

2. Teaching Listener Reinforcement Component and Increase in Responding to Name and Engaging in Conversation (Seh, Youck, Kim, & LeePark, 2014)

This study investigated whether an instruction on listener reinforcement component of social exchange would increase responding to the name by orienting toward or looking at others when called by the name and/or engaging in conversation with others. The participant was a 5-year old boy with autism spectrum disorders in an integrated kindergarten classroom. The intervention was implemented due to his poor responsiveness when called by the name. 10-trial probes for responding to his name and conversational exchange was conducted during 20-minute free play sessions before, during, and after the intervention. 10-trial instructions on listener reinforcement component during 30-minute sessions were conducted as the intervention phase. A reversal design was utilized to monitor the targeted behavior changes. During the 20-minute probe sessions across the experimental phases, the experimenter called his name first and continued to conversational exchanges if he responded to his name. During the 30-minute intervention sessions, the experimenter told him

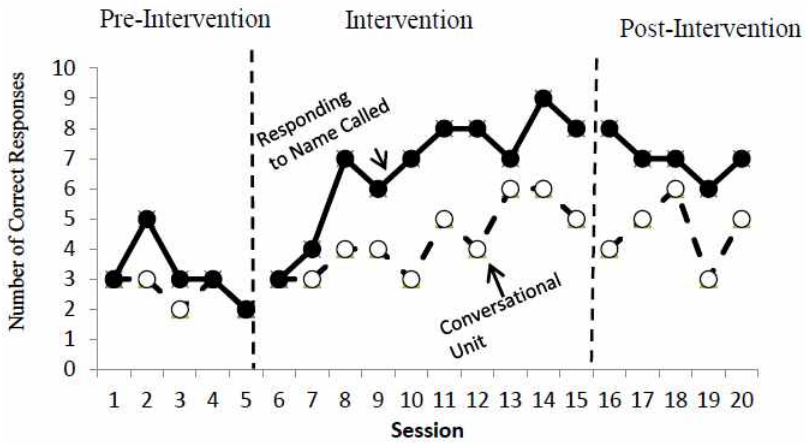


〈Figure 1〉 Fluency Training on Textual Responding to Words and Reading Comprehension

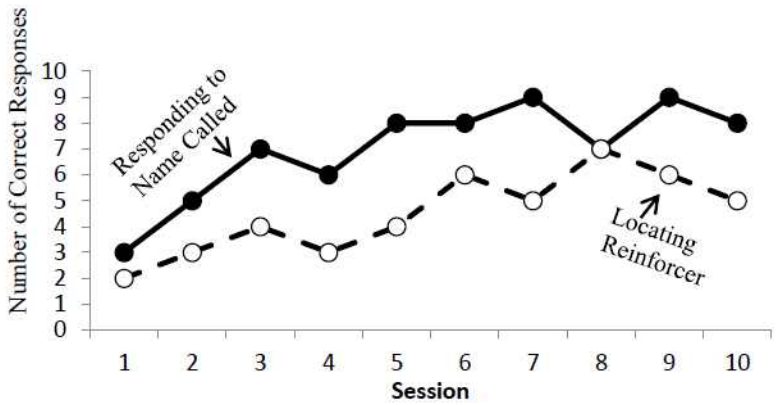
information about the locations where his preferred items were hided when the participant responded to his name. The mean inter observer agreement (IOA) obtained during free play probes were 81.7%. The results showed that the frequencies of responding to his name and engaging conversational exchange increased during and after the intervention sessions. The results are shown in <Figure 2> and <Figure 3>.

3. Peer-Yoked Contingency and Emergence of Observational Learning (Kwack, Bang, Lee, & LeePark, 2014)

This study examined effects of peer-yoked contingency on acquisition of observational learning. A 12-year old boy with Autism and a 12-year old boy with brain injury participated in the study. Five picture sets of five unknown items were used as stimuli. During the Pre-intervention session, participants were required to sit next to a peer who was receiving direct instruction on vocal labeling of stimuli, Set 1 and Set 2 presented in flash cards. First, the experimenters provided three learning trials during which reinforcement was delivered to correct responses or modeling of correct

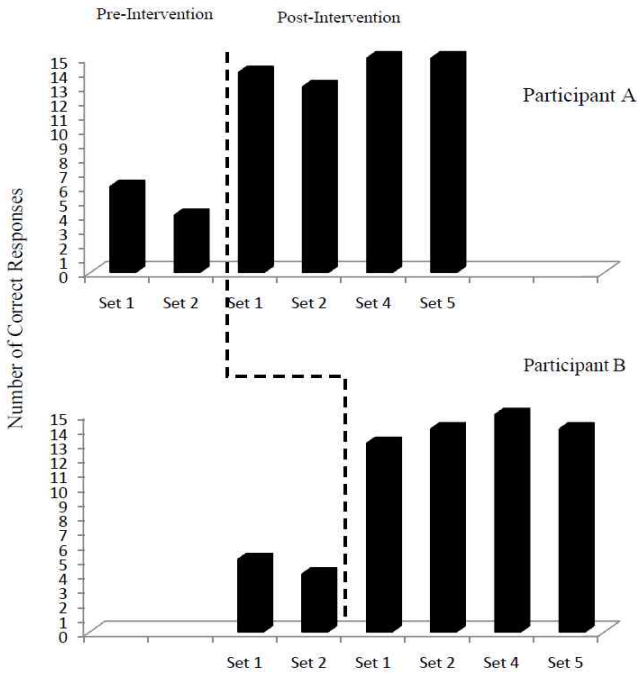


〈Figure 2〉 Instruction on Listener Reinforcement Components of Social Exchanges and Increasing Responding to the Name and Conversational Exchange



〈Figure 3〉 Instruction on Listener Reinforcement Components of Social Exchange

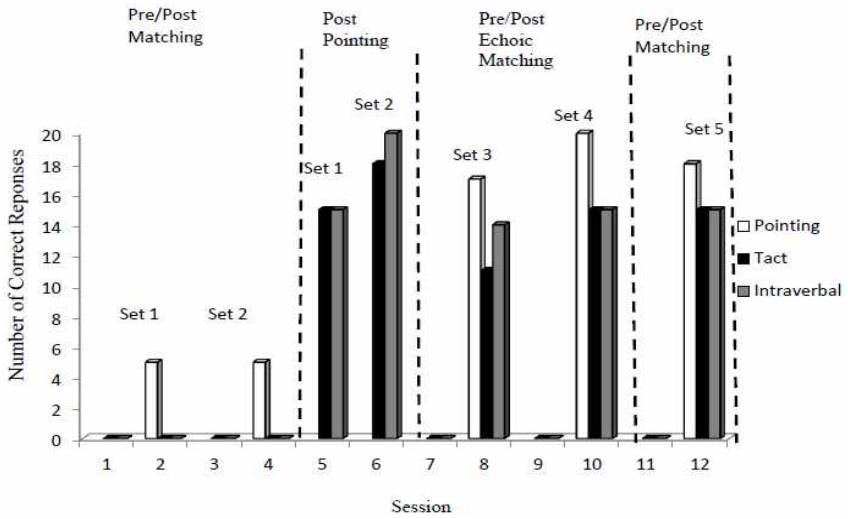
responses to incorrect responses. And then the experimenter tested if the participants learned the same new items through observing the peer receiving instruction. Both of the participants didn't show observational learning during the pre-intervention sessions. During intervention sessions, a yoked contingency was in effect: Both of the participant and the peer should emit correct responses in order to gain an access to reinforcers. Both of the participants demonstrated observational learning with Set 1 and Set 2 after the intervention with Set 3. The participants showed generalization of the behavior with Set 4 and Set 5. The results are shown in <Figure 4>.



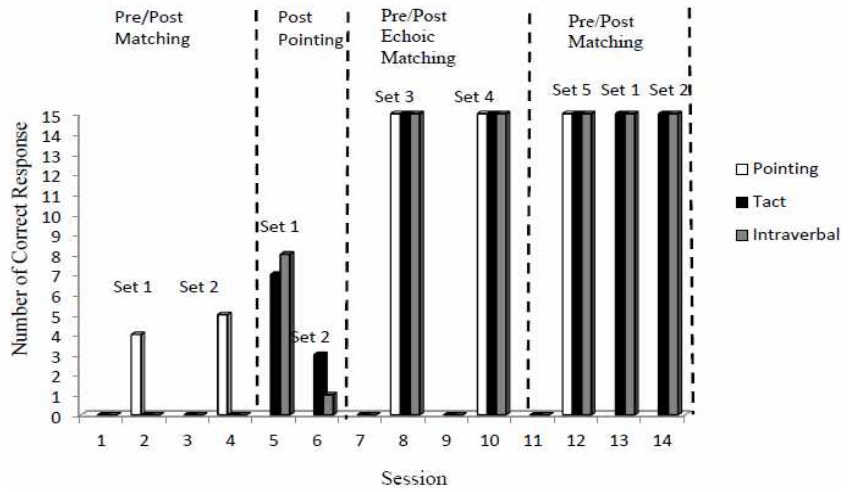
〈Figure 4〉 Peer-Yoked Contingency and Emergence of Observational Learning

4. Teaching to Echo during Listener Responses and Emergence of Listener and Speaker Naming (Kim, Shin, Kim, Sang, Kim, Park, & LeePark, 2014)

Naming is emitting untaught listener or speaker responses to a stimulus with an instruction on either speaker or listener responses with the stimulus. This study examined whether teaching to echo names of stimuli during instruction on matching as listener responses would induce untaught pointing as listener Naming and untaught tacts and intraverbal as speaker Naming. A multiple probe design was utilized. A 5-year old male and a 7-year old male with developmental disabilities participated in Experiment I and in Experiment II respectively. Five picture sets of four unknown items in Experiment I and five picture sets of five unknown items in Experiment II were used. Participant A received echoic-matching intervention in which he was required to echo the name of stimuli presented by the experimenters twice when he matched presented pictures. During the probe sessions for untaught pointing as listener Naming, the participants were required to point to a picture of the set upon hearing "point to (name of a picture)." During the probes for untaught tact as speaker Naming, a picture from the set was presented and the participants were required to label it vocally.



〈Figure 5〉 Teaching to Echo during Listener Responding and Emergence of Listener and Speaker Naming, Experiment Ⅰ



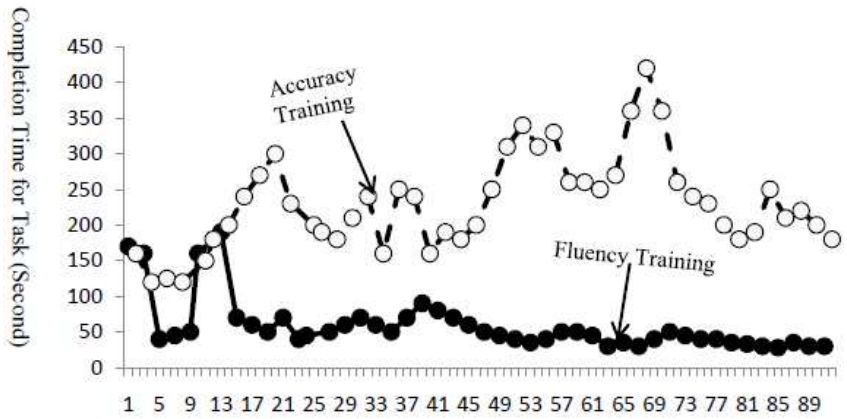
〈Figure 6〉 Teaching to Echo during Listener Responding and Emergence of Listener and Speaker Naming, Experiment Ⅱ

During the probes for untaught intraverbal as another speaker Naming, the experimenters asked "What is this?" presenting a picture of the set and the participants were required to say the name of the picture. Participant A in Experiment I didn't show a clear emergence of speaker Naming. In Experiment II, Participant B was required to reach to a criterion (emitting echoics while matching

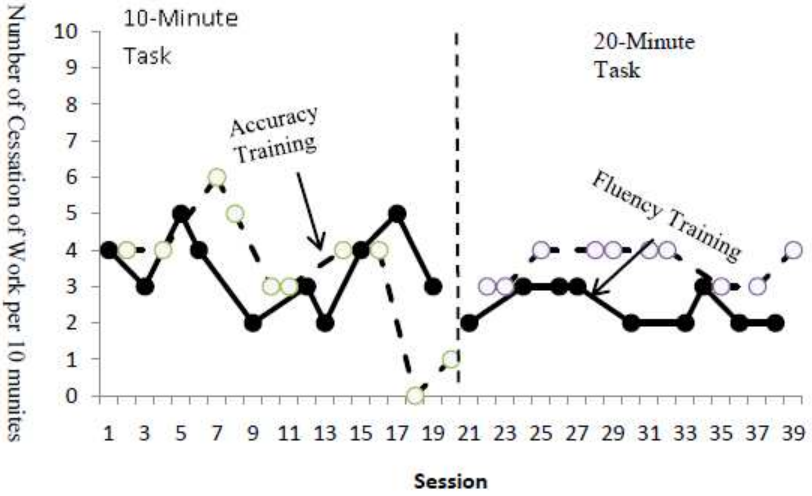
with 90% accuracy for two consecutive sessions) during echoic-matching instruction. Participant B demonstrated a clear emergence of listener and speaker Naming after he received intervention. Participant B demonstrated a clear generalization of Naming with novel sets of unknown items. The results of Experiment I are shown in <Figure 5> and Experiment II in <Figure 6>.

5. Effects of Fluency Training on Endurance and Maintenance of Assembly Tasks (Jeung, Kim, Choi, & LeePark, 2014)

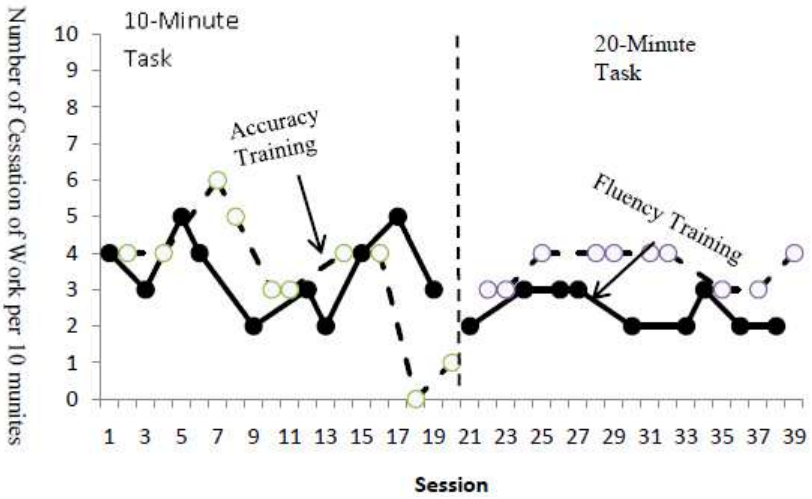
This study tested effects of fluency versus accuracy training on performance and endurance of assembly tasks with an adolescents with autism. Using alternating treatment design, data were collected during intervention sessions and probe sessions as follow-up. During training sessions, number of seconds needed to complete one assembly task were measured during each fluency or accuracy conditions. During fluency conditions, a timer was placed in front of the participant. Then the participant was told that time required to complete the task would be measured. Under the accuracy condition, no timer was placed within the sight of the participant and no comment on time requirement was provided. 10-minute probe sessions were conducted 2 weeks after the completion of the training sessions, and 20-minute probe sessions following the last 10-minute probe session. During those probe sessions, maintenance of trained skills in fluency measured with number of cessation of task performance during the sessions. The results showed that the fluency training



〈Figure 7〉 Fluency vs. Accuracy Training and Time Required to Complete an Assembly Task



〈Figure 8〉 Number of Products per 10 Minutes Produced with Skills Which Were Acquired under Accuracy vs. Fluency Training



〈Figure 9〉 Number of Cessation of Task Performance Which Were Acquired under Accuracy vs. Fluency Training Condition

produced greater work productivity, endurance, and maintenance. The results are shown in <Figure 7>, <Figure 8>, and <Figure 9>.

Ⅵ. Conclusion

ABA is behavioral science of which purpose is improving quality of individual lives within a society targeting socially significant behaviors to be changed. Its primary interest is temporal behavior changes under manipulated or natural environmental conditions within specific contexts in individual levels. ABA as a methodology of special education heavily depend on objective definitions of target behaviors and intervention procedures and repeated observations which yield quantification of targeted behavioral changes. It allows special educators to be 'analytic' when they provide individualized and evidence-based practices for students with special needs. Considering that being 'analytic' is closely associated to being 'scientifically-based,' being competent in utilizing SSR is a one of core characteristics of special educators.

Reference

Algozzine, R. (2003). Scientifically based research: Who let the dogs out? *Research and Practice for Persons with Severe Disabilities, 28*(3), 156-160.

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1*(1), 91-97.

Byiers, B. J., Reichle, J., & Symons, F. J. (2012). Single-subject experimental design for evidence-based practice. *American Journal of Speech-Language Pathology*, *21*(4), 397-414. DOI:10.1044/1058-0360 (2012/11-0036)

Cakiroglu, O. (2012). Single subject research: applications to special education. *British Journal of Special Education, 39*(1), 21-29. DOI: 10.1111/j.1467-8578.2012.00530.x

Cook, L., Cook, B. G., Landrum, T. J., & Tankersley, M. (2008). Examining the role of group experimental research in establishing evidence-based practices. *Intervention in School and Clinic, 44*(2), 76-82. DOI: 10.1177/1053451208324504

Cook, B. G., & Odom, S. L. (2013). Evidence-based practices and implementation science in special education. *Exceptional Children, 79*(2), 135-144.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis 2nd edition.* Upper Saddle River, NJ: Pearson Education.

Freeman, J., & Sugai, G. (2013). Identifying evidence-based special education intervention from single-subject research. *Teaching Exceptional Children, 45*(5), 6-12.

Hammond, D., & Gast, D. L. (2010). Descriptive analysis of single subject research design: 1983-2007. *Education and Training in Autism and Developmental Disabilities, 45*(2), 187-202.

Hong, K. S., Kim, H. I., & LeePark, H. S. (2014). Effects of Fluency Training on Textual Responding to Words on Reading Comprehension. Poster accepted to the 40th Annual Conference of the Association of Behavior Analysis International, Chicago.

Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children, 71*(2), 165-179. Individuals with Disabilities Education Act, 20 U.S.C. § 1400 et seq. (2004)

Jeung, S. Y., Kim, Y. U., Choi, S. H., & LeePark, H. S. (2014). Effects of Fluency Training on Endurance and Retention of Assembly Tasks. Poster accepted to the 40th Annual Conference of the Association of Behavior Analysis International, Chicago.

Kim, S. H., Shin, H. J., Kim K. H., Kim, N. Y., Park, S. H., & LeePark, H. S. (2014). Teaching to Echo with Listener Responding and Emergence of Listener Naming and Speaker Naming. Poster accepted to the 40th Annual Conference of the Association of Behavior Analysis International, Chicago.

Kratochwill, T. R., Hitchcock, J., Horner, R. H., Levin, J. R., Odom, S. L., Rindskopf, D. M., & Shadish, W. R. (2010). Single-case design technical documentation version 1.0 (pilot). What Works Clearinghouse.

Kwack, B. S., Bang, H. J., Lee, M. H., & LeePark, H. S. (2014). Peer-Yoked Contingencies and Emergence of Observational Learning. Poster accepted to the 40th Annual Conference of the Association of Behavior Analysis International, Chicago.

McDonnell, J., & O'Neill, R. (2003). A perspective on single/within subject research methods and "scientifically based research". *Research & Practice for Persons with Severe Disabilities, 28*(3), 138-142.

No Child Left Behind Act of 2001, 20 U.S.C. § 16301 et seq. (2002).

Odom, S. L., Brantlinger, E., Gersten, R., Horner, R. H., Thompson, B., & Harris, K. R. (2005). Research in special education: Scientific methods and evidence-based practices. *Exceptional Children, 71*(2), 137-148.

Odom, S. L., & Strain, P. S. (2002). Evidence-based practice in early intervention/early childhood special education: Single-subject design research. *Journal of Early Intervention, 25*(2), 151-160.

Robey, R. R., & Wambaugh, J. (1999). Single-subject versus randomized group design. *American Speech Language Hearing Association. 41*(6), 14-15.

Seh, A. W., Youck, M. S., Kim, M. Y., & LeePark, H. S. (2014). Teaching Listener Reinforcement Components and Attending to Name. Poster submitted to the 40th Annual Conference of the Association of Behavior Analysis International, Chicago.

Tankersley, M., Harjusola-Webb, S., & Landrum, T. J. (2008). Using single-subject research to establish the evidence base of special education. *Intervention in School and Clinic, 44*(2), 83-90.

요 약

과학적 활동으로서의 특수교육, 응용행동분석, 그리고 단일대상연구

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오늘날, 특수교육이 과학적이어야 한다는 데는 아무도 이의를 제기하지 않을 것이다. 그렇다면 “과학적이란 말은 특수교육 현장에서 구체적으로 무엇을 의미하는가?” “과학적인 특수교육의 특징적 요소는 무엇인가?” 특수교육 분야를 이끌어 나가는 것이 관련 연구 활동이라고 했을 때, 특수교육의 연구활동의 개념적 기반이 위의 질문과 긴밀하게 관련되어 있다고 볼 수 있다. 특수교육이 현장에서 직면하는 학습 문제, 행동 문제의 해결의 과정이라는 점, 그리고 특수교육 관련 종사자들이 다양한 능력수준과 학습 성향을 보이는 집단을 대상으로 보편성이 결여된 교육적 환경에서 활동한다는 점을 고려한다면, 특수교육 종사자들이 직면하는 이러한 복잡한 상황을 반영하는 연구방법론의 필요성은 당연한 귀결이다. 단일대상연구는 분석적이며 그 분석의 단위는 개별적이다. 이러한 단일대상연구의 특징적 요소는 특수교육관련 연구자나 종사자들로 하여금 하나의 중재가 실행되는 현장에서 그 중재의 효율성을 평가하는 것을 가능하게 한다. 단일대상연구는 특정적 환경적 조건하에 보이는 행동변화를 개별적인 차원에서 조사하는 것이 특징이며, 이는 응용행동분석의 핵심적 특질과 긴밀히 관련이 되어있다. 또한, 이러한 점은 특수교육 관련 전문인들이 응용분석적 접근에서 과학에 기반한 교육을 제공하려 할 때 단일대상연구설계가 가지는 유용성을 말해준다. 본 논문에서는 과학에 기반한 교육의 특징적 요소와 응용행동분석의 특징을 특수교육과 관련해서 토론해보고자 한다. 이어 특수교육 분야에서 과학적 중재를 개발, 평가, 그리고 필요에 따라 수정을 할 때 단일대상연구설계가 보이는 유용성을 특수교육 분야가 직면하는 특수한 상황과 응용행동분석의 특징적 요소와 관련해서 토론하겠다. 마지막으로 미래의 특수교육 종사자 및 전문인을 배양하는 교육프로그램의 필수요소들 중 하나를 제시하고 응용행동분석 관련 석사과정 학생들이 특수교육 현장에서 실행한 연구 활동을 간략하게 보고하고자 한다.

〈주제어〉 특수교육, 응용행동분석, 단일대상연구, 과학에 기반한 교육, 증거에 기반한 교육

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