



HANDS in Autism Training: An Efficacy Analysis of a Training Model

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Abstract

The practical application of ABA-based interventions in an educational setting is an important component in the intervention of children with ASD. To decrease the discrepancy between empirically supported treatment and application in community settings, the HANDS (Helping Answer Needs by Developing Specialists in Autism) program trains teachers and staff to practice and implement ABA-based interventions to children with ASD through a hands-on coaching and mentoring model in an analogue classroom setting. Repeated measures administered prior to the training, at the conclusion of the training, and three months post training were taken via the Assessment of Knowledge - Expanded scale (AOK-E) (HANDS in Autism, 2007) to assess efficacy of this training model through the evaluation of the participant acquisition and application of knowledge. An overall within subjects test provided a significant Pillai's Trace ($F = 23.356, p < .0001$) and a partial eta squared of .809, indicating that 80% of the variance in the AOK-E scores could be explained by time. Significant Bonferroni adjusted pairwise comparisons demonstrate improvement in the participants' knowledge acquisition and application across time. Study implications are discussed.

Background

Since 2004, the HANDS (Helping Answer Needs by Developing Specialists) in Autism training model has been striving to meet the growing need of professionals working with children on the autism spectrum to gain more profound knowledge of ABA principles and best practices and of their application to school settings. The HANDS in Autism model curriculum allows participants to learn in an active environment through didactic, intensive hands-on practice, coaching, and feedback sessions with further utilization of these principles in real-life situations presented in the structured HANDS classroom with student participants of different age and developmental profiles.

To determine the effectiveness of the HANDS model, participants were assessed through a variety of means. In particular, to enable trainees to demonstrate whether their knowledge of particular areas relevant to working with children covered in the HANDS curriculum increased as a result of the training, they were asked to complete a knowledge test (Assessment of Knowledge - Expanded [AOK-E]) before the training, immediately after the training, and three months after the training. The obtained results showed that the HANDS in Autism Model was an effective program to increase knowledge relevant to professionals working with children with an ASD in school settings.

Hypotheses

The training program will show effectiveness via increased scores in the AOK-E subscales of Knowledge and Application.

Increases in Knowledge and Application subscales will be maintained overtime.

Methods and Participants

Thirty-one ($N = 31$) professionals attended and completed one of three week-long training sessions conducted during the summer of 2008: 12 in session I, 7 in session II, and 12 in session III. Across all sessions, 17 special educators, 6 instructional assistants/paraprofessionals, 4 therapists (speech or occupational), 2 administrators, and 2 general educators participated.

Prior to attending the training, participants completed the Assessment of Knowledge - Expanded (AOK-E) as part of an initial assessment packet. The measure was then repeated at the end of the last day of training at the end of the day and again three months after the training was completed.

Measures

Assessment of Knowledge - Expanded (AOK-E) is an outcome measure adapted from a scale used in previous training sessions. The goal of the AOK-E is to assess theoretical and practical knowledge about particular areas relevant to working with children with autism in an educational setting that are also addressed in the HANDS in Autism curriculum. Particular areas assessed include physical and visual structure of the classroom, facilitating social skills, incorporating students with autism into group settings, assessment strategies, behavior intervention, program design, generalization of skills, developing independence, and prompting strategies. The measure contains 37 questions (25 to assess knowledge and 12 - application). Each multiple-choice question contains 10 possible responses, out of which from 1 to 7 choices are correct (except for questions 26-35, where 1 out of 4 possible choices is correct) for a total of 145 points. Participants are asked to select between correct and incorrect statements to find the best answer for the question. Participants receive 1 point for identifying a correct response, and -1 point for selecting an incorrect response (except for questions 26-35, where selecting an incorrect response does not result in point deduction). Failure to select a correct response does not earn any points. Participants' scores are added across items and divided by 145 to get a percentage score. Higher scores indicate better performance on the AOK-E. Participants complete this rating prior to training (baseline), at the end of the last day of training (immediate), and again three months following the training (delayed). Preliminary psychometric analyses regarding the internal consistency of the AOK-E provide an overall Cronbach's alpha of .807. The factors structure of the AOK-E is theoretically derived.

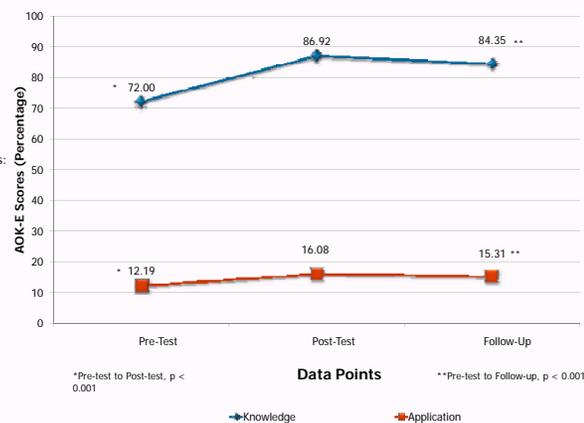


Figure 1. AOK-E Repeated Measures: Mean Scores

Table 1. AOK-E Repeated Measures MANOVA

AOK-E: Repeated Measures MANOVA ^a		
Measures	Mean Score	Std. Dev.
AOK-E Knowledge		
Pre-Test	72.00	11.74
Post-Test	86.92	8.03
Follow-Up	84.35	9.33
AOK-E Application		
Pre-Test	12.19	3.21
Post-Test	16.08	2.92
Follow-Up	15.31	3.23
Multivariate Tests ^b		
Pillai's Trace F Value ^c	23.356	
Partial Eta Squared	0.809	
Observed Power	1.00	
Pairwise Comparisons ^d		
AOK-E Knowledge:		
Pre-test to Post-test ^e		
Post-test to Follow-Up		
Pre-test to Follow-up ^f		
AOK-E Application:		
Pre-test to Post-test ^e		
Post-test to Follow-Up		
Pre-test to Follow-up ^f		

^aN = 26

^bMauchly's Tests of Sphericity were not significant for either of the dependent variables

^cBonferroni Adjustment

^dp < 0.001

Results

Table 1 and Figure 1 provide numerical and graphical representation of the AOK-E subscale scores across time, respectively. To control the type I error rate associated with multiple pairwise comparisons, a repeated measures multivariate analysis of variance (MANOVA) with Bonferroni adjustment was employed. The variance-covariance matrix assumption was substantiated with Mauchly's test of sphericity probability levels of .465 and .711 for the Knowledge and Application subscales, respectively. The original sample contained 31 participants; however with standardized scores of ± 2.5 standard deviations, five participants were identified as outliers and excluded from the final analysis. With a sample size of 26, the observed power was 1.00. A significant omnibus F score of 23.36 was obtained. Post-hoc analyses show participants significantly increasing their AOK-E scores from pre-test to post-test and from pre-test to follow-up for both the Knowledge and Application subscales. There was no significant decrease from post-test to follow-up for either of the AOK-E subscales. The increases in AOK-E scores from pre-test to follow-up were maintained across time; the observed decreases in the Knowledge and application subscales are attributable to chance. The partial eta squared of .809, indicates that 80% of the variance in the AOK-E scores can be explained by time.

Conclusions & Future Directions

There is empirical support for the relationship between the HANDS training model on ABA interventions and the acquisition of knowledge and application by educators and other professionals working with children with an Autism Spectrum Disorder. There is evidence that the increase in knowledge and application (from pre-test to post-test) is maintained over time (from pre-test to follow-up). The results of this study are promising; however there are a number of limitations. First, with regard to internal validity, the research design is not experimental therefore a cause and effect relationship between the ABA based HANDS training model and the outcomes cannot be stated. Second, although frequently employed in behavioral science research, the convenience sampling method employed in this study limits the external validity of the findings. The results obtained in this study may be more or less applicable depending on the population one wishes to generalize to. In the future, to further determine a cause and effect relationship between the HANDS training model and pertinent dependent variables, a randomized controlled trial is needed to compare the relevant outcomes of participants who completed the HANDS training to those who did not.