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# Multi-year Summer Training Participant Application of Knowledge Analysis

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## Abstract

In working with children with autism spectrum disorder (ASD) it is important that school personnel implement ABA-based interventions in the educational setting. To ensure that those providing services have knowledge of empirically supported treatments and their application, each year the HANDS (Helping Answer Needs by Developing Specialist in Autism) program trains teachers and staff on ABA-based interventions to use when working with children with ASD. Training is done over five days through didactic lessons and a combination of observation, modeling, and coaching. The Assessment of Knowledge - Expanded scale (AoK-E) (HANDS in Autism, 2007) is administered prior to, at the conclusion of, and three months following training to assess participant knowledge prior to training and attainment and application of knowledge following training. AoK-E is a 37-item scale measuring knowledge in the areas of assessment, programming, goal development, teaching and behavior interventions, data collection and analysis, socialization, and generalization, in addition to other topics. The analyses of AoK-E results of 99 participants across three years prior to training, immediately following training, and three months after training will be discussed, demonstrating the effectiveness of the HANDS model in training school personnel in the use of ABA-based interventions with children with ASD.

## Introduction

The HANDS (Helping Answer Needs by Developing Specialists) in Autism Program and Resource Center strives to meet the needs of professionals that work with children affected by an ASD or related developmental disability. To meet these needs, the HANDS program offers an intensive, one-week long training session three times each summer. The training program, developed by HANDS, is founded upon evidenced based practices and includes a combination of didactic trainings, interactive sessions, and hands-on opportunities with individuals affected by an ASD. Coaching occurs in the HANDS classroom as trainers provide immediate feedback to participants. Training includes information on ABA principles and evidence based practices to promote the use of effective strategies when working in schools with children affected by an ASD or related developmental disability.

To ensure the effectiveness of the HANDS training model, participants are asked to complete Assessment of Knowledge - Expanded (AoK-E) prior to, at the conclusion of, and three months following training. Results of the AoK-E allow trainers to assess participants' change in knowledge prior to, at the conclusion of, and three months following training. The results also demonstrate the effectiveness of the HANDS training model in increasing knowledge of ASD, awareness of effective strategies, and application of knowledge.

## Hypotheses

The HANDS in Autism training model will show effectiveness via the improvement in knowledge application by participants as shown by the assessment of their knowledge prior to and immediately after the training (pre- and post-tests).

The knowledge and application components will be maintained over time as measured by the follow-up test.

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## Methods and Participants

One hundred and thirty-eight (N=138) participants attended one of the nine week-long summer training sessions across three years (2008, 2009, and 2011), of which 101 participants completed the follow-up assessment. Teachers (both general education and special education), therapists (e.g., school psychologist, SLP, or OT), instructional aides/paraprofessionals, and school administrators made up the 138 participants.

Prior to attending 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 and again approximately three months after the training was completed.

## Measure

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 an ASD 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 that assess knowledge and 12 that assess application). Each multiple-choice question contains 10 responses, of which there are 1 to 7 correct responses (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' total scores are added across items and divided by 145 to get a percentage score. Participants' percent correct is the number of points a participant earned without deducting the points that were lost for the selection of incorrect responses divided by 145 to get a percentage score. Participants' percent incorrect is the participant's total number of incorrect responses divided by 105 to get a percentage score. Higher scores indicate better performance on the AoK-E. Participants complete this rating prior to training (baseline or pre-test), at the end of the last day of training (immediate or post-test), and again three months following the training (delayed or follow-up test).

Fig. 1. Application of Knowledge Scores (n=99)

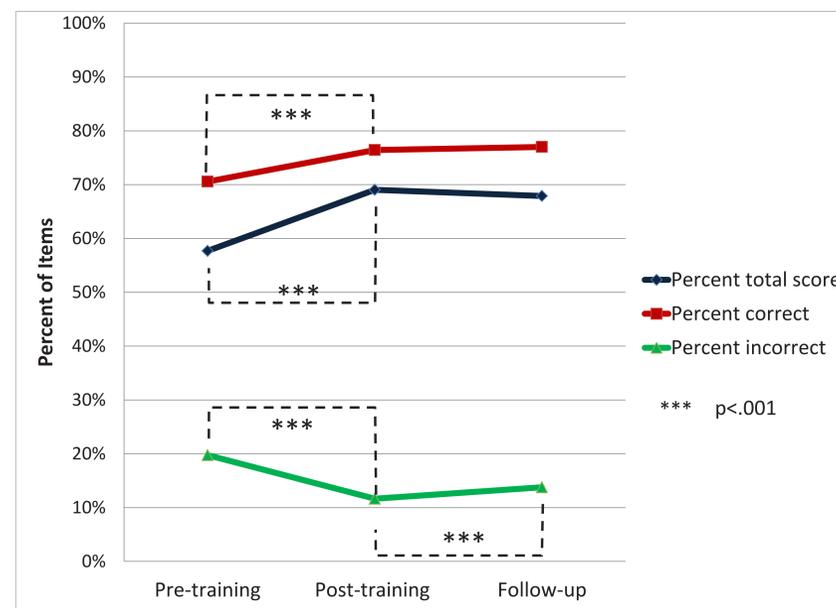


Table 1. 2008, 2009, 2011 Combined Assessment Results

	Pre-assessment		Post-assessment		Follow-up	
	M	SD	M	SD	M	SD
Percent total score	57.68	8.47	69.03	7.99	67.89	7.59
Percent correct	70.57	7.94	76.43	7.06	76.99	6.76
Percent incorrect	19.74	9.85	11.65	7.05	13.78	7.31

## Results

One hundred and thirty-eight participants (N=138) attended one of the 9 week-long summer trainings in 2008, 2009, or 2011. A total of 101 participants completed the follow-up assessment. Of the 101 participants that completed the follow-up assessment two surveys were not analyzed due to the participants not answering five or more of the assessment questions. The final analyses were based upon the results of 99 participants for the pre-, post-, and follow-up test.

Participants showed statistically significant improvement ( $p < .001$ ) in total score from pre-assessment (M=57.68, SD= 8.47) to post- assessment (M= 69.03, SD= 7.99). Participants' total score slightly decreased from post-assessment (M=69.03, SD= 7.99) to follow-up assessment (M=67.89, SD=7.59) however the decrease was not of statistical significance ( $p = .124$ ).

Participants showed statistically significant improvement ( $p < .001$ ) in percent correct from pre-assessment (M=70.57, SD=7.94) to post- assessment (M=76.43, SD=7.06). Participants' percent correct decreased slightly from post-assessment (M=76.43, SD=7.06) to follow-up assessment (M=76.99, SD=6.76). Results were not statistically significant ( $p = .435$ ).

Participants showed statistical significant improvement ( $p < .001$ ) in percent incorrect from pre-assessment (M=19.74, SD=9.85) to post-assessment (M=11.65, SD=7.05). Participants' percent incorrect increased from post-assessment (M=11.65, SD=7.05) to follow-up assessment (M=13.78, SD=7.31). Results were statistically significant ( $p < .001$ ).

## Conclusions and Future Directions

Results suggest that the HANDS training model, which includes a combination of didactic trainings, interactive sessions, and hands-on opportunities with individuals affected by an ASD, is effective in increasing participant knowledge of ASD, awareness of effective strategies, and application of knowledge. In addition, the results supported that participants' scores did not decrease significantly from post-assessment to follow-up assessment, suggesting that with the use of the HANDS training model participants retain a degree of knowledge learned up to three months following training.

Future plans include standardization of the AoK-E tool as a measurement of attainment and application of knowledge with school personnel that work with individuals affected by an ASD or related developmental disability.