



AOTA Critically Appraised Papers Series

Evidence Exchange

**A product of the American Occupational Therapy Association's Evidence-Based Literature Review Project*

CRITICALLY APPRAISED PAPER (CAP)

FOCUSED QUESTION

Does a neurocognitive habilitation group therapy service improve executive functioning and emotional and social problem-solving skills in children with fetal alcohol syndrome (FAS) and alcohol-related neurodevelopmental disorder (ARND) compared to a no-treatment group using the Behavior Rating Inventory of Executive Function (BRIEF) and the Roberts Apperception Test for Children (RATC)?

Wells, A. M., Chasnoff, I. J., Schmidt, C. A., Telford, E., & Schwartz, L. D. (2012). Neurocognitive habilitation therapy for children with fetal alcohol spectrum disorders: An adaptation of the Alert Program®. *American Journal of Occupational Therapy*, 66, 24–34. <http://dx.doi.org/10.5014/ajot.2012.002691>

CLINICAL BOTTOM LINE:

A primary goal for occupational therapists is to promote success in school and social settings for children with disabilities. The specific aspects of executive functioning in children prenatally exposed to alcohol include deficits in selective inhibition, verbal and nonverbal fluency, arousal and attention, problem-solving strategies, planning, and working memory. Difficulties in executive functioning and emotional regulation progress as children go through school and as social relationships become more complex. This study provides promising evidence that neurocognitive habilitation therapy is successful in improving school and social tasks for children with FAS and ARND. Occupational therapeutic interventions are based on the premise that difficulties with self-regulation contribute to the day-to-day challenges experienced by children with FAS and ARND; occupational therapists can use neurocognitive habilitation to aid these children in becoming more successful.

RESEARCH OBJECTIVE(S)

List study objectives.

Evaluate the effectiveness of a neurocognitive habilitation, a group therapy intervention for foster and adoptive caregivers and their children who were prenatally exposed to alcohol.

DESIGN TYPE AND LEVEL OF EVIDENCE:

Randomized controlled trial (RCT)

Level I evidence

This design is the best way to determine success of a specific intervention.

Limitations (appropriateness of study design):

Was the study design type appropriate for the knowledge level about this topic? *Circle yes or no, and if no, explain.*

YES/NO

SAMPLE SELECTION

How were subjects selected to participate? Please describe.

All subjects were recruited from the Illinois Department of Children and Family Services (DCSF) general welfare services and children living in adoptive homes. The foster or adoptive parent and, as appropriate, the Office of the Guardian of DCSF signed consents for the children’s participation in the study. Also, children were asked to sign an assent after being provided with verbal and written information about that study.

Inclusion Criteria

Verified prenatal exposure to alcohol through documentation in medical records or child welfare and adoption records. Also, exposure to illicit drug exposure and tobacco were included if they also fit into the criteria for FAS or ARND. All children had foster and adoptive parents and/or caregivers.

Exclusion Criteria

Children not diagnosed with FAS or ARND. Children with a history of serious head trauma, and current or historical evidence of lead poisoning.

SAMPLE CHARACTERISTICS

N = 78

% Dropouts	<input type="text" value="NR"/>		
#/ (%) Male	<input type="text" value="53 (68%)"/>	#/ (%) Female	<input type="text" value="25 (32%)"/>
Ethnicity	<input type="text" value="30% White, 47.5% African American, 7.5% Hispanic, 15% mixed race"/>		
Disease/disability diagnosis	<input type="text" value="FAS and ARND"/>		

Check appropriate group:

< 20/study group	20–50/study group ✓	51–100/study group	101–149/study group	150–200/study group
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INTERVENTION(S) AND CONTROL GROUPS

Add groups if necessary

Group 1

Brief Description	40 children were randomized into the treatment group, a caregiver and child group participating in neurocognitive habilitation curriculum. The
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	therapeutic goal of neurocognitive habilitation (a blend of therapy for traumatic brain injury with components of the Alert Program) is to improve executive functioning skills and emotional regulation in relation to the child's home and school environments. The program is designed to teach children with FAS and ARND to recognize their particular deficit areas and develop strategies to compensate the areas of weakness while building on existing skills and strengths. Also, over the course of the neurocognitive habilitation program, the children's caregivers participated in psychoeducational groups in which they were provided information about FAS and ARND. Specifically, the training teaches caregivers to recognize precipitants to changes in their child's arousal level, to respond to the child in ways that elicit a desired emotional and behavioral response, and to implement strategies designed to engage the child in reciprocal and meaningful activities by providing accommodations that address the child's specific developmental needs.
Setting	A clinical setting
Who Delivered?	Doctoral- and master's-level therapists, including an occupational therapist with extensive experience with child-based interventions
Frequency?	Once per week
Duration?	Approximately 75 minutes per session. 12-week program.

Group 2

Brief Description	38 children randomized into the no-treatment control group
Setting	NR
Who Delivered?	NR
Frequency?	NR
Duration?	NR

Intervention Biases: *Circle yes or no and explain, if needed.*

Contamination

YES/NO

Co-intervention

YES/NO

Timing

YES/NO

Site

YES/NO

Use of different therapists to provide intervention

YES/NO Fidelity was managed by use of a treatment manual by all therapists throughout.

MEASURES AND OUTCOMES

Complete for each relevant measure when answering the evidence-based question:

Name of measure, what outcome was measured, whether the measure is reliable and valid (as reported in article—yes/no/NR [not reported]), and how frequently the measure was used.

The BRIEF: Questionnaire completed by caregiver that assesses executive function behaviors in the home and school environments. *Reliability:* Internal reliability ranges from .80 to .98, test-retest reliability are high (.82–.88).

Validity: Convergent validity has been demonstrated against other measures of inattention, impulsivity, and learning skills. Divergent validity established against measure of emotional and behavioral functioning.

Name of measure, what outcome was measured, whether the measure is reliable and valid (as reported in article—yes/no/NR [not reported]), and how frequently the measure was used.

RATC: Assess child's (ages 6-15) perception of common interpersonal situations.

Reliability: Interrater reliability 55.5% to 97.6%, split half reliability .46 to .86.

Validity: Yes

Name of measure, what outcome was measured, whether the measure is reliable and valid (as reported in article—yes/no/NR [not reported]), and how frequently the measure was used.

The Wechsler Intelligence Scale for Children—3rd Edition: Assess the children's global intellectual functioning.

Reliability: Reliability coefficients are .95, .91, and .96 for Verbal, Performance, and Full Scale IQs. Range from .85–.94 for the four factor indexes.

Validity: NR

Measurement Biases

Were the evaluators blind to treatment status? *Circle yes or no, and if no, explain.*

YES/NO

Recall or memory bias. *Circle yes or no, and if yes, explain.*

YES/NO During the baseline testing control group may have benefited from the psychologists initial evaluation of their child's behavior, learning, and emotional functioning and the extensive feedback provided.

Others (list and explain):

RESULTS

List results of outcomes relevant to answering the focused question

Include statistical significance where appropriate ($p < 0.05$)

Include effect size if reported

The demographic characteristics of the treatment and control groups, including race and ethnicity as classified by the children's primary caregivers and DCFS, were similar, except that the mean age of the control group was significantly greater than that of the study group. No differences were found in verbal, performance, or full scale IQ scores between the two groups. No significant differences were found between the two groups in the incidence of mental health diagnoses, prenatal exposures to other substances, prenatal exposure to tobacco, and in current family placement (adopted vs. foster care).
Posttest comparison:

The postintervention BRIEF test: The parallelism (interaction between group and time) was significant, with $p = .006$; the levels test (main effect for group) was significant, with $p = .02$. This indicates the treatment group had significant improvement attributable to the intervention.

The postintervention RATC test: The parallelism (interaction between group and time) was significant, $p = .012$; the levels test (main effect between group and time) was significant, $p = .003$; and the flatness test (main effect for time) was significant, $p < .001$.

The strength for association for interaction effect was (n^2) = 0.30 and the correlations between subtests were moderate to high with .27–.80 for the BRIEF. The strength of the associate for the interaction effect was $n^2 = 0.28$, and correlations between subtests were low to moderate, .07–.59 for the RATC test.

Was this study adequately powered (large enough to show a difference)? *Circle yes or no, and if no, explain.*

YES/NO Sufficient power was able to lead to the significant differences found in the intervention group versus the control group. A significant difference is deemed to be higher than the 5% chance provided within the design

Were appropriate analytic methods used? *Circle yes or no, and if no, explain.*

YES/NO

Were statistics appropriately reported (in written or table format)? *Circle yes or no, and if no, explain.*

YES/NO Both written and table format

CONCLUSIONS

State the authors' conclusions that are applicable to answering the evidence-based question.

The study hypothesized that group therapy would aid children with FAS and ARND by improving deficits in executive and emotional functioning due to difficulties in self-regulation, emotional control, planning, and organizing. The study showed significant improvements in the

treatment group's executive and emotional functioning when compared to the control group as reported by the BRIEF, RATC, emotional problem-solving, and parental reports. Research also shows that deficits in executive functioning likely contribute to the high number of children diagnosed with FAS and ARND having attention-deficit hyperactivity disorder (ADHD; 74% in the study). This study yields promising evidence of the effectiveness of the neurocognitive habilitation curriculum, adapted from the Alert Program, as an intervention to improve executive functioning deficits and emotional problem-solving skills in children with a diagnosis of FAS or ARND. Furthermore, addressing deficits in executive functioning with neurocognitive habilitation intervention also may decrease symptoms in ADHD in children with FAS and ARND who initially present with an ADHD diagnosis.

The study population, children with FAS and ARND, typically are referred to occupational therapists, and this study provides information on their sensory integration and executive functioning needs. It will help occupational therapists adapt the Alert Program for children with FAS and ARND. As knowledge of the challenges facing children prenatally exposed to alcohol (and the challenges of their guardians) grows, there is a need to refine and create intervention programs that will help them develop new skills and maximize their existing skills.

This work is based on the evidence-based literature review completed by Robyn Blankenhagen, OTS, and Rochelle Mendonca, PhD, OTR/L, Faculty Advisor, University of the Sciences.

CAP Worksheet adapted from "Critical Review Form—Quantitative Studies." Copyright © 1998, by M. Law, D. Stewart, N. Pollack, L. Letts, J. Bosch, & M. Westmorland, McMaster University. Used with permission.

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