



Optimizing Children's Self-Regulation:

A Group Therapy Approach to Neurocognitive
Habilitation for Foster and Adopted Children with
FAS/ARND

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Curriculum Development

“How Does Your Engine Run[©]?”
A Leader’s Guide to
The Alert Program[©] for Self-Regulation

By Mary Sue Williams and Sherry Shellenberger
Used with permission from the authors

Original Alert Program ©

Program has three stages.

A picture of a speedometer is used to represent the main idea of engine speed.

CRT Adaptation

Program uses ideas from first and second stages, but stages are not identified overtly.

To add a visual aide, a picture of cartoon person with a visual brain and a car with a motor was used in addition to a speedometer

Original Alert Program ©	CRT Adaptation
<p>Children are given a variety of oral motor inputs to change their engine speeds, emphasizing the terms sour, sweet, spicy, salty, crunchy, chewy.</p>	<p>To identify a regulation strategy, children receive a snack at every group to use to change their engine speeds. Leaders emphasize the concepts of crunchy and chewy.</p>
<p>Children make a flour balloon and are given a variety of tactile inputs to change their engine speeds.</p>	<p>To regulate their behavior, children are offered a variety of fidget toys to use throughout the duration of each group.</p>

Treatment design

- Treatment course = 12 weeks
- Each group session = 75 minutes
- Group size limited to five children
- Simultaneous children's group and parents' group. The two groups join for the last 10-15 minutes of each session.

Session 1

Children

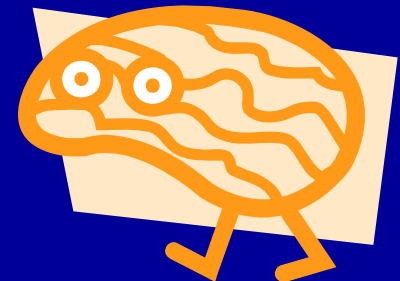
Parents

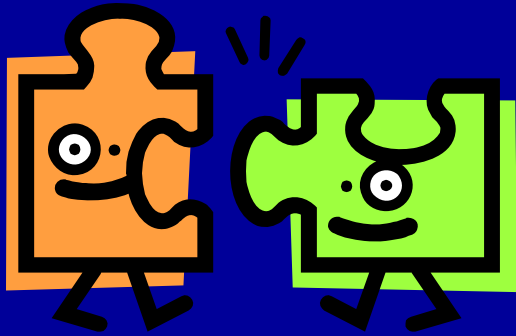
Different Games for Different Brains

- Introductions
- Group rules
- Self-regulation, emotional awareness, and self-esteem
- Engine analogy

Welcome and Introductions

- Introductions
- Children's strengths and weaknesses
- Group goals
- Curriculum (child and parent)





Session 2

Starting to Come Together

- Introductions continued
- Skill review
- Self-monitoring skills
- Ways to change gears
- Self-esteem

Beginning to Understand (Part 1)

- Introductions continued
- Effects of prenatal alcohol exposure on development

Session 3

Time to Relax

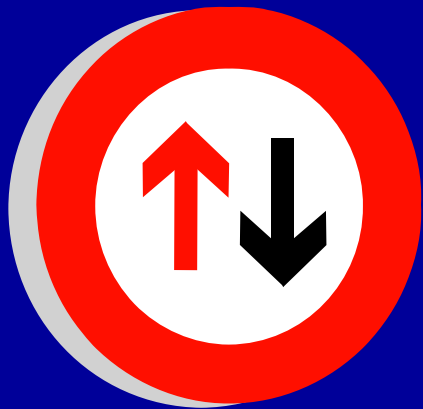
- Skill review
- Self-monitoring techniques
- Relaxation training



Beginning to Understand (Part 2)

- Introductions continued
- Effects of prenatal alcohol exposure on development

Session 4

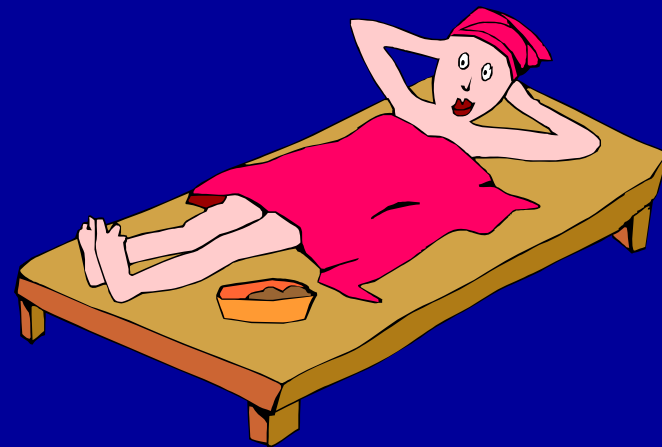


High and Low

- Skill review
- Self-regulation
- Self-monitoring

Parent Self-Care

- Importance of parent self-care
- Barriers to self-care
- Self-care strategies



Session 5

Planning and Thinking

- Skill review
- Self-regulation skills
- Planning skills
- Appropriate communication

How to be an External Brain (Part 1)

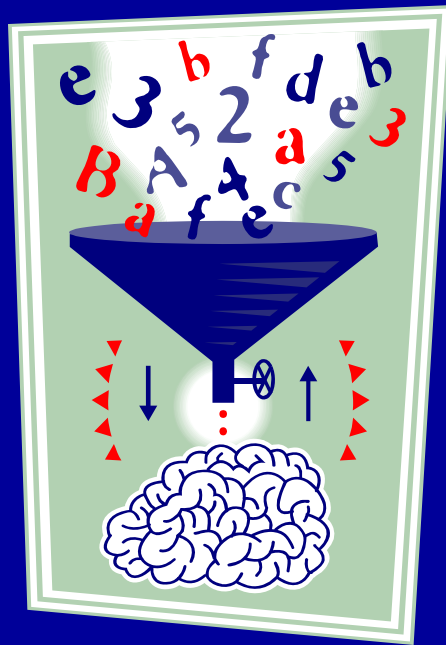
- Regulatory problems
- External brain how-to
- Structure and guidance



Session 6

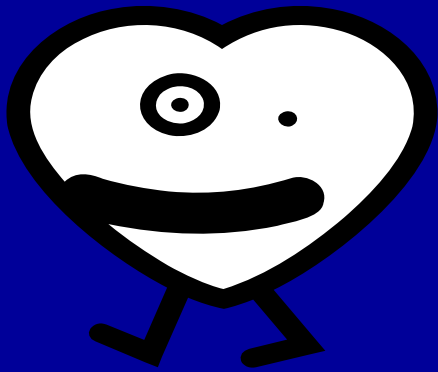
Take Two

- Self-regulation skills
- Review skills and concepts



How to be an External Brain (Part 2)

- External brain how-to
- Organize environment
- Social problems
- Monitor child
- Discipline
- Medication strategies
- Educational interventions



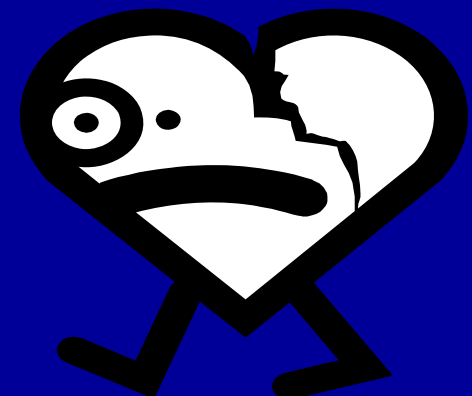
Session 7

Nothing More Than Feelings

- Skill review
- Self regulation
- Feelings vocabulary
- Connection between thoughts, feelings and body

Memory Deficits in Alcohol-Exposed Children

- Common memory deficits
- Informational processing
- Visual vs. verbal memory
- Memory enhancement



Session 8

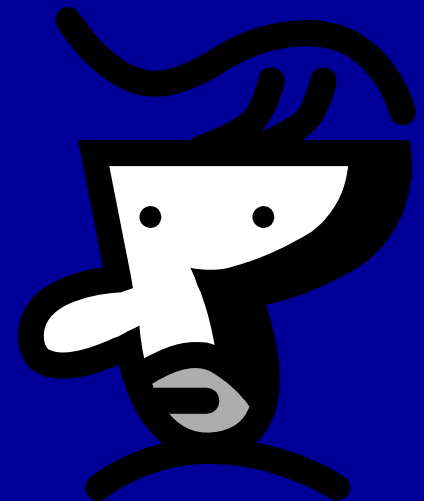
It's All in the Body

- Skill review
- Emotional regulation
- Nonverbal emotions



Sensory Integration Effects

- Sensory input types
- Sensory processing
- Effects on behavior
- Treatment



Session 9

Finding Me Inside

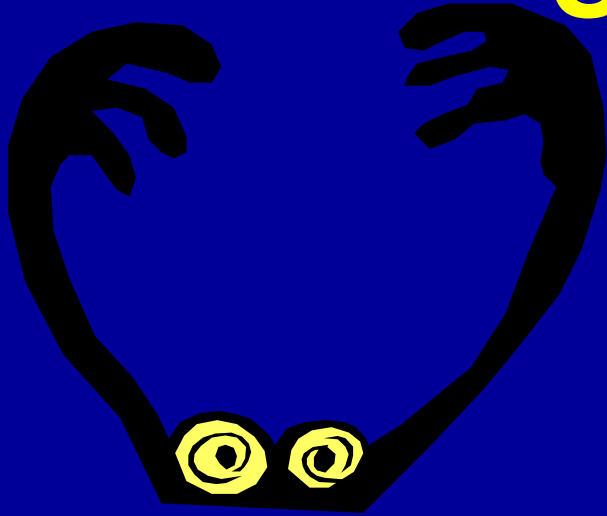
- Skill review
- Self-esteem
- Impacting factors



Understanding Your Child's Self-Esteem

- Define and discuss
- Affecting factors
- Strategies for improving

Session 10



Stop Mr. Mean!

- Skill review
- Affecting self-esteem
- Positive self-talk

Medical Consultation

- Q & A with a pediatrician regarding medical implications, medication issues for substance-exposed children

Session 11

We All Have a Gift

- Skill review
- Closure for members
- End on a positive reinforcing note

Review, Catch-up and Wrap-up

- Revisit any lectures or topics
- Clarification of any remaining questions



Session 12

Graduation Day

- Review all skills
- Group closure
- Rewards
- Good-byes
- Review sessions
- Graduation ceremony for children



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Demographic Information

Variable	Participants (N=75)
Gender	
Male	51 (68.0)
Female	24 (32.0)
Race	
Caucasian	28 (37.3)
African American	31 (41.3)
Latino	3 (4.0)
Native American	1 (1.3)
Mixed Race	12 (16.0)

Background of Children

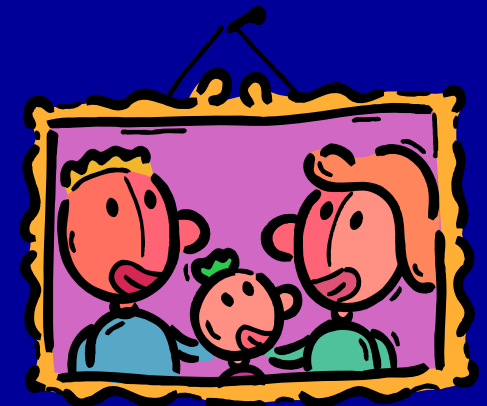
Reason Removed from Birth Home

Physical Abuse	9 (12.0)
Neglect	36 (48.0)
Abandonment	16 (21.3)
Sexual Abuse	3 (4.0)
Risk of Harm	19 (25.3)
Voluntary	9 (12.0)
Other	26 (34.7)

Home Situation of Children

Legal Custody

Kinship Guardian	3 (4.0)
Foster Care	10 (13.3)
Adopted	60 (80.0)
Other	2 (2.7)



Educational Information

Held back in school	14 (18.7)
Current classroom situation	
Regular class	48 (64.0)
Special class	5 (6.7)
Special placement	6 (8.0)
Combination of above	12 (16.0)
Suspensions/Expulsion	
In school suspension	7 (9.3)
<10 days out of school	6 (8.0)
10-45 days interim	1 (1.3)
Expelled	2 (2.7)

Medical Information

Exposure to Additional Substances

Tobacco	23	(30.7)
Amphetamines	1	(1.3)
Cocaine	35	(46.7)
Marijuana	10	(13.3)
Other	21	(28.0)



Demographic Information

Current Age (in months)

Range 63.0-151.0

Mean 104.6

Standard Deviation 18.4

Number of homes child lived in prior to current placement

Range 0-7

Mean 1.8

Standard Deviation 1.6

Diagnostic Information

FAS **16** **(21.0)**

ARND **59** **(79.0)**

Baseline and Follow-Up Measures

- Intellectual Functioning
 - Wechsler Intelligence Scale for Children, Third Edition (WISC-III)
- Executive Functioning
 - Wisconsin Card Sorting Test - 64
 - Children's Color Trails Test
 - Behavior Rating Inventory of Executive Function (BRIEF)

Baseline and Follow-Up Measures

- Memory
 - Wide Range Assessment of Memory and Learning-Screener (WRAML-S)
- Academic
 - Wide Range Achievement Test-Revision 3
- Language Skills
 - Test of Language Competence (TLC)-
Figurative Language Subtest

Baseline and Follow-Up Measures

- Adaptive Functioning
 - Vineland Adaptive Behavior Scales
- Behavior
 - Achenbach Child Behavior Checklist (CBCL)
 - Achenbach Teacher Report Form (TRF)
- Sensory Integration
 - Short Sensory Profile

Baseline and Follow-Up Measures

- Social Functioning
 - Social Skills Rating Scales (SSRS)
- Emotional Functioning
 - Roberts Apperception Test
- Parental Functioning
 - Parenting Stress Inventory (PSI)

Treatment versus Control Group

- Treatment and control groups differed at baseline on the following:
 - control group was older than the treatment group
 - children in the treatment group experienced a higher rate of physical abuse than children in the control group

Data Analysis

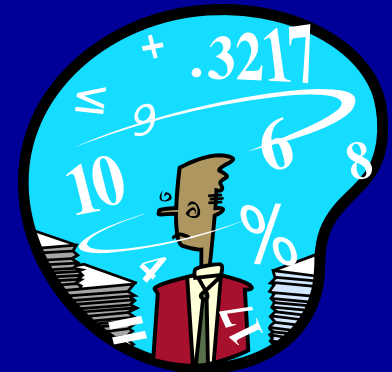
Multivariate Approach

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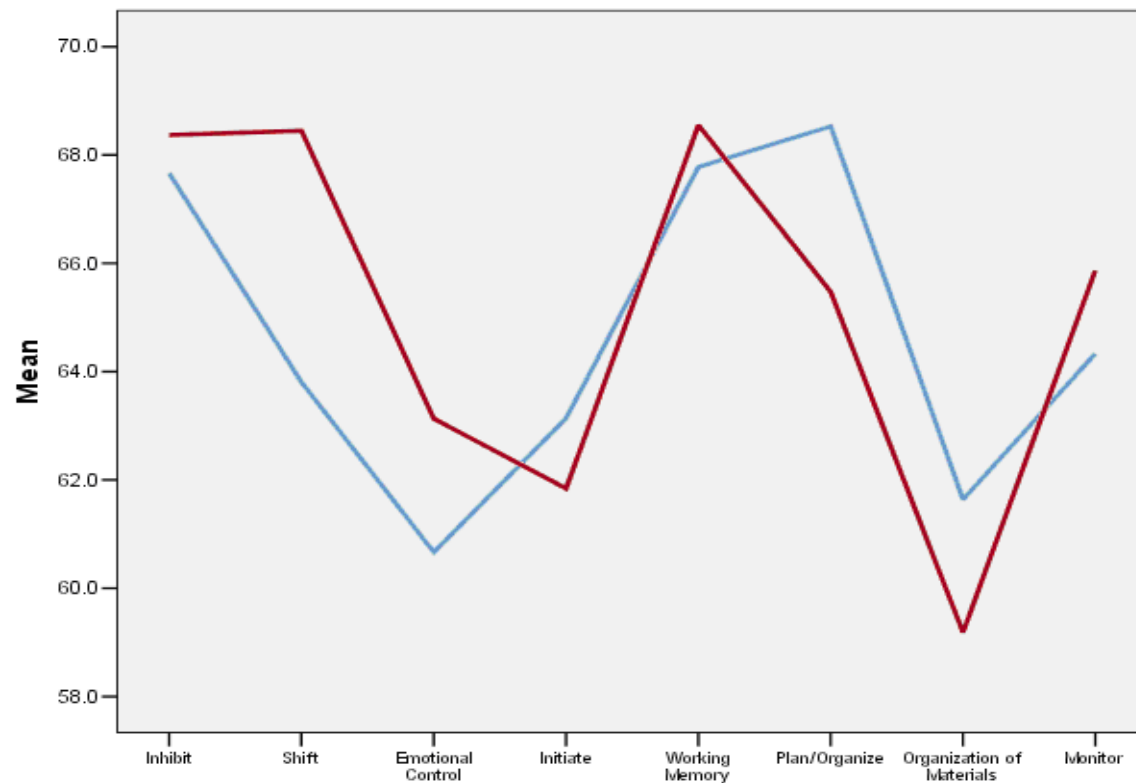
Repeated Measures



Profile Analysis: the Multivariate Approach
to Repeated Measures



Doubly multivariate analysis of variance



Comparing Profile Analysis to ANOVA

Profile Analysis	ANOVA
Parallelism	Interaction
Levels	Group
Flatness	Time

Follow up Tests to Profile Analysis

Conventional Approach:

E.g., BRIEF has 8 subtests

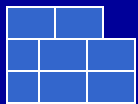
.05	.05
.05	.05
.05	.05
.05	.05

= .40,
which
means 40%
chance that
results due
to random
error.

Follow up Tests to Profile Analysis

Our approach:

Roy-Bargmann stepdown analyses



$= .05$, so all follow-ups
are done within 5% error.

Analysis of Assumptions

- Missing data \Rightarrow discard exit data
- Multivariate Normality
 - Outliers not due to scoring or input errors
 - Reduce impact of outliers by making them one unit larger than next most extreme score
 - Eliminate excessive skewness and kurtosis by using mathematical transformations on the data

Analysis of Assumptions

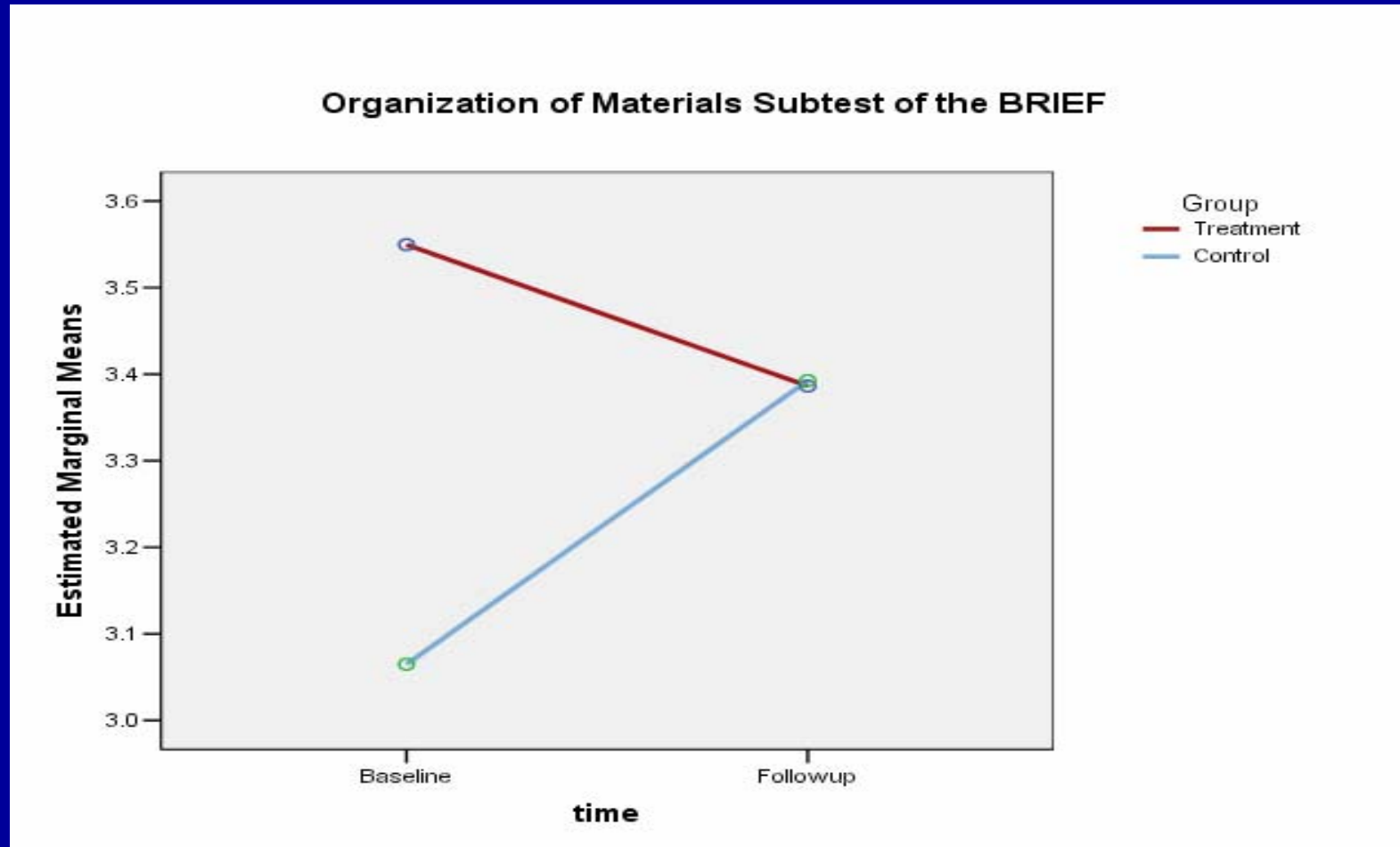
- Linearity
 - Examined scatterplots of all pairs of variables
- Homogeneity of variance-covariance matrices
 - When violated, used a MANOVA statistic that was robust to violation of assumption (Pillai's trace)

Executive Functioning

Results on BRIEF

Parallelism	$F(8, 57) = 2.08, p = .05$
Levels	$F(8, 57) = 2.55, p = .02$
Flatness	$F(8, 57) = 1.28, p = .28$
Strength of Association	$\eta^2 = .23$

BRIEF Results



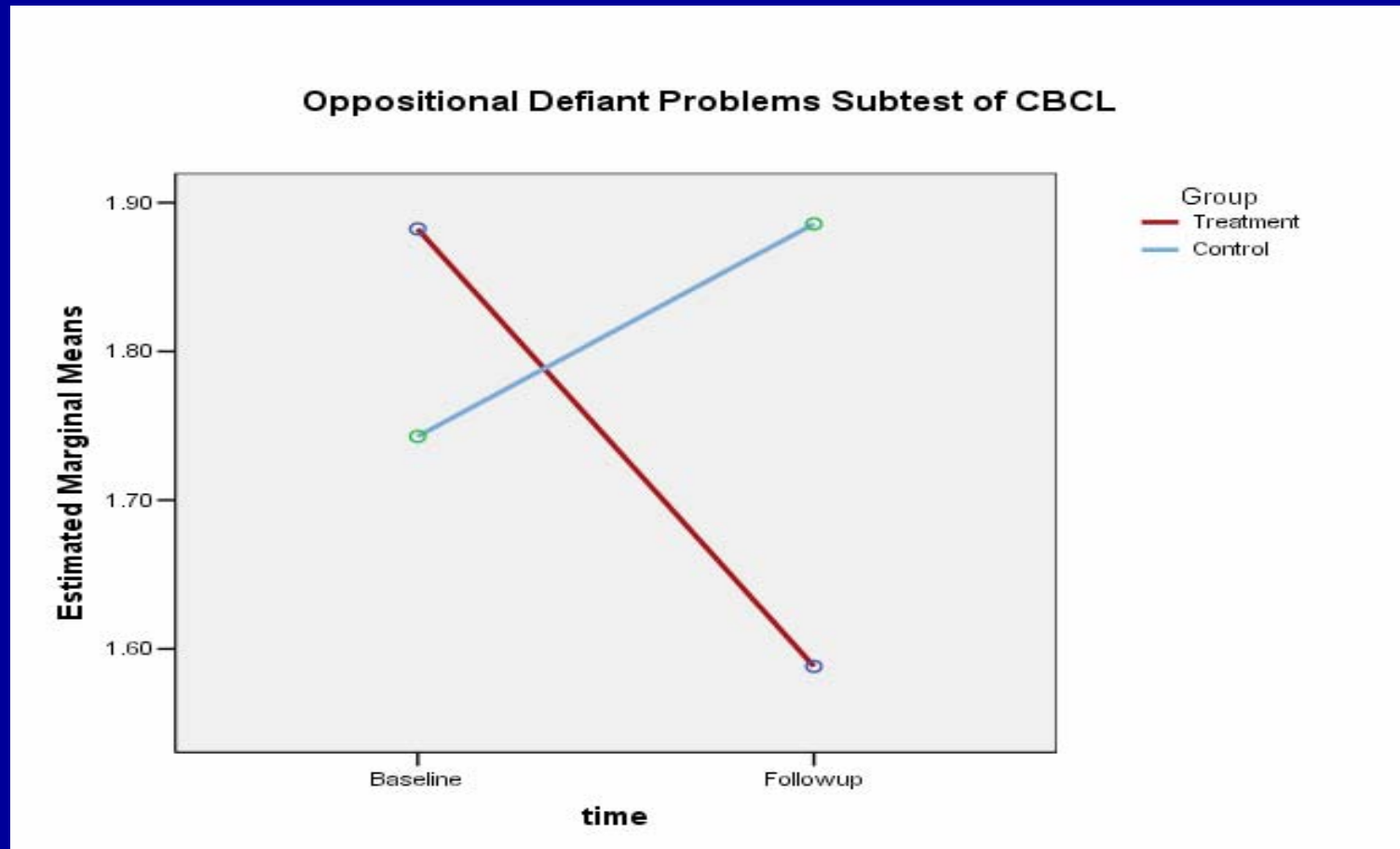
Behavior: The Child Behavior Checklist (CBCL)

- 2 sets of problem subscales
 - Syndrome scales
 - DSM scales
- Clinically interpreted in terms of ranges
 - *t*-scores between 50 and 65 are considered to be in the average range (1)
 - *t*-scores between 66 and 69 are considered to be in the borderline clinical range (2)
 - *t*-scores above 70 were considered to be in the clinical range (3)

CBCL DSM Scales

Parallelism	$F(6, 62) = 2.49, p = .03$
Levels	$F(6, 62) = 0.95, p = .46$
Flatness	$F(6, 62) = 2.83, p = .02$
Strength of Association	$\eta^2 = .194$

CBCL DSM Scales



POWER ANALYSIS

- Statistical power is the probability you will detect a meaningful difference, or effect, if one were to occur
- Power of .80 or higher is desired
- Prospective power analysis is used to determine sample size needed to detect a particular effect
- Retrospective power analysis is used to determine if limited number of statistically significant interaction effects was due to lack of statistical power

Retrospective Power Analysis

Measure	Power
BRIEF	0.712
Color Trails	0.075
WCST-64 (errors & perserr)	0.095
CBCL Syndrome Scales	0.541
CBCL DSM Scales	0.796
TRF Adaptive Scales	0.172
TRF Syndrome Scales	0.136
TRF DSM Scales	0.191

Retrospective Power Analysis

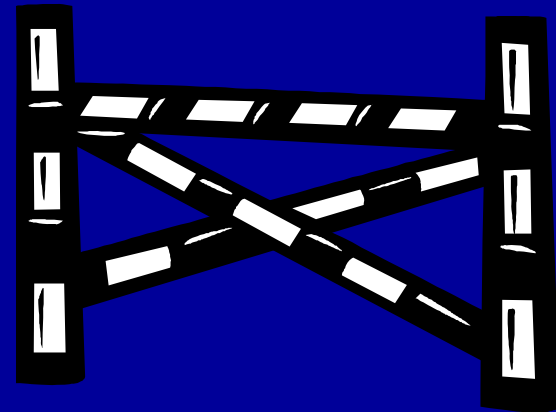
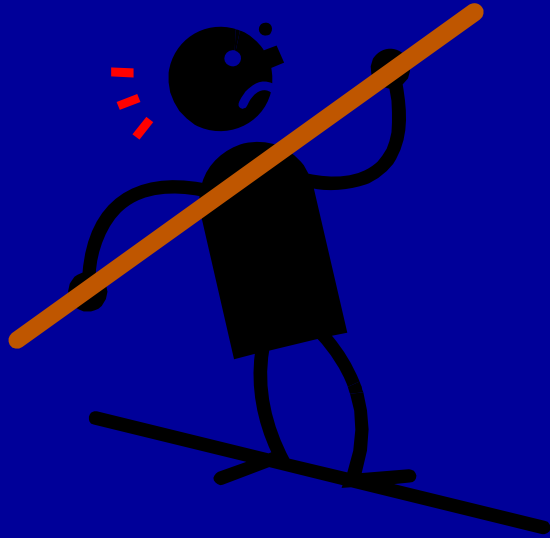
Measure	Power
PSI Child Subscales	0.130
PSI Parent Subscales	0.270
Vineland Adaptive Scales	0.609
Vineland Maladaptive Behavior	0.223
Short Sensory Profile	0.537
WRAML	0.365
RAT Adaptive Scales	0.206
RAT Clinical Scales	0.144

Reasons for Diminished Power

1. Low N
2. Heterogeneous sample



Challenges and Obstacles



- Recruitment
- Staffing
- Child Characteristics

Recruitment: Financial Concerns

- DCFS approval for evaluations
- Limited private funding for testing
- Medicaid funding



Recruitment: Referrals

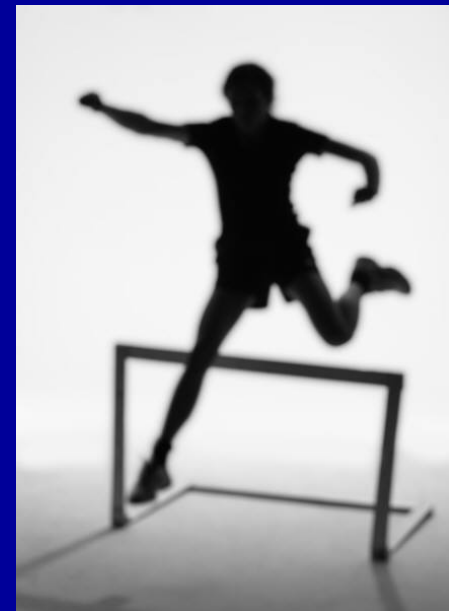
Under-identification by:

- Physicians
- Mental health professionals
- School staff
- Adoption agencies

Under-identification  decreased referrals

Recruitment: Logistical Barriers

- Transportation
- Scheduling of group for busy families
- Long-term commitment
- Random design
- Heavy staff expenditure



Child Characteristics

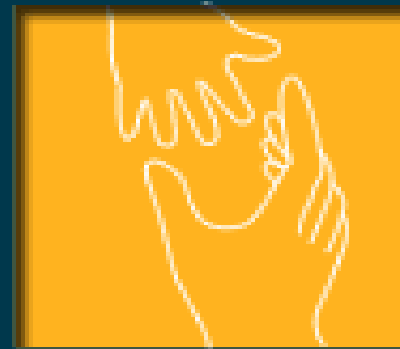
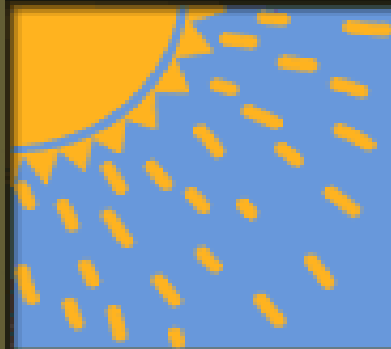
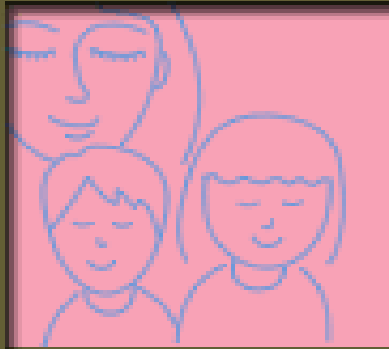
Diverse diagnostic concerns

- Mental Retardation
- Autistic Spectrum Disorder
- Attachment Disorder and PTSD
- Anxiety
- Regulatory Disorders

Summary

- Despite the challenges and obstacles, 75 children and their families participated in our study.
- Our sample of children with FAS and ARND was a diverse group with a range of difficulties.
- Improvements were found in the children's behaviors and executive functioning.





www.childstudy.org



CHILDREN'S RESEARCH TRIANGLE