



Computer **A**ssisted **I**nstruction

&

The **P**rogressive **A**cademic **L**earning **S**ystem

Vera Bernard-Opitz, Ph.D. Clin. Psych.
Charlotte Witsoe, M.S. School Psychologist
Jim Brady, Regional Sales Director

Research on CAI



- Learning in children with ASD
- Advantages of CAI
- What does research tell us?
- Pilot data on PALS

Background



- **Los Ninos Center San Diego**
- **German Research Foundation Heidelberg**
- **BICC Singapore**

Learning in children with ASD

- Attention problems
 - Focus on irrelevant aspects
- Need for structure & consistency
 - Massed trials
- Motivation problems

Advantages of CAI

- Improves attention
 - Distraction-free
 - Visual
- Enhances learning
 - Small teaching steps
 - Consistent instructions
 - Internal prompts
 - Predictable reinforcers
- Increases motivation

CAI Research

- Stimulates language
 - Colby & Kraemer, 1975
- Enhances vocal imitation
 - Bernard-Opitz et al, 1999
- Improves sentence construction
 - Yamamoto & Miva, 1999
- Improves vocabulary
 - Moore & Calvert, 2000
- Improves problem solving
 - Bernard-Opitz, Sriram & Sapuan, 2001

IBM SpeechViewer

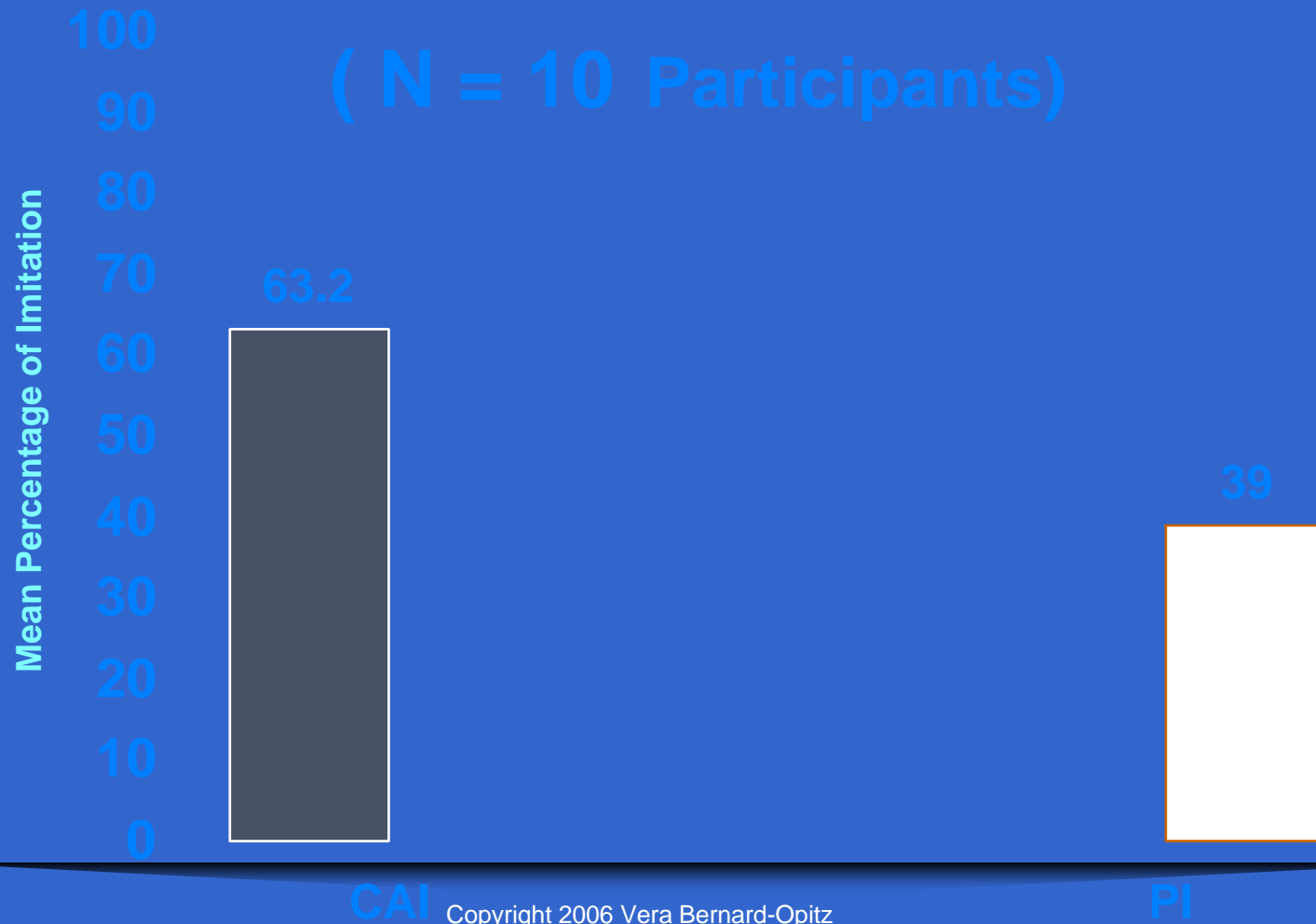
QuickTime™ and a
YUV420 codec decompressor
are needed to see this picture.

- 1999 Bernard-Opitz, Sriram & Sapuan
- 9 of 10 children better vocal imitations in CAI compared to PI

Figure 1

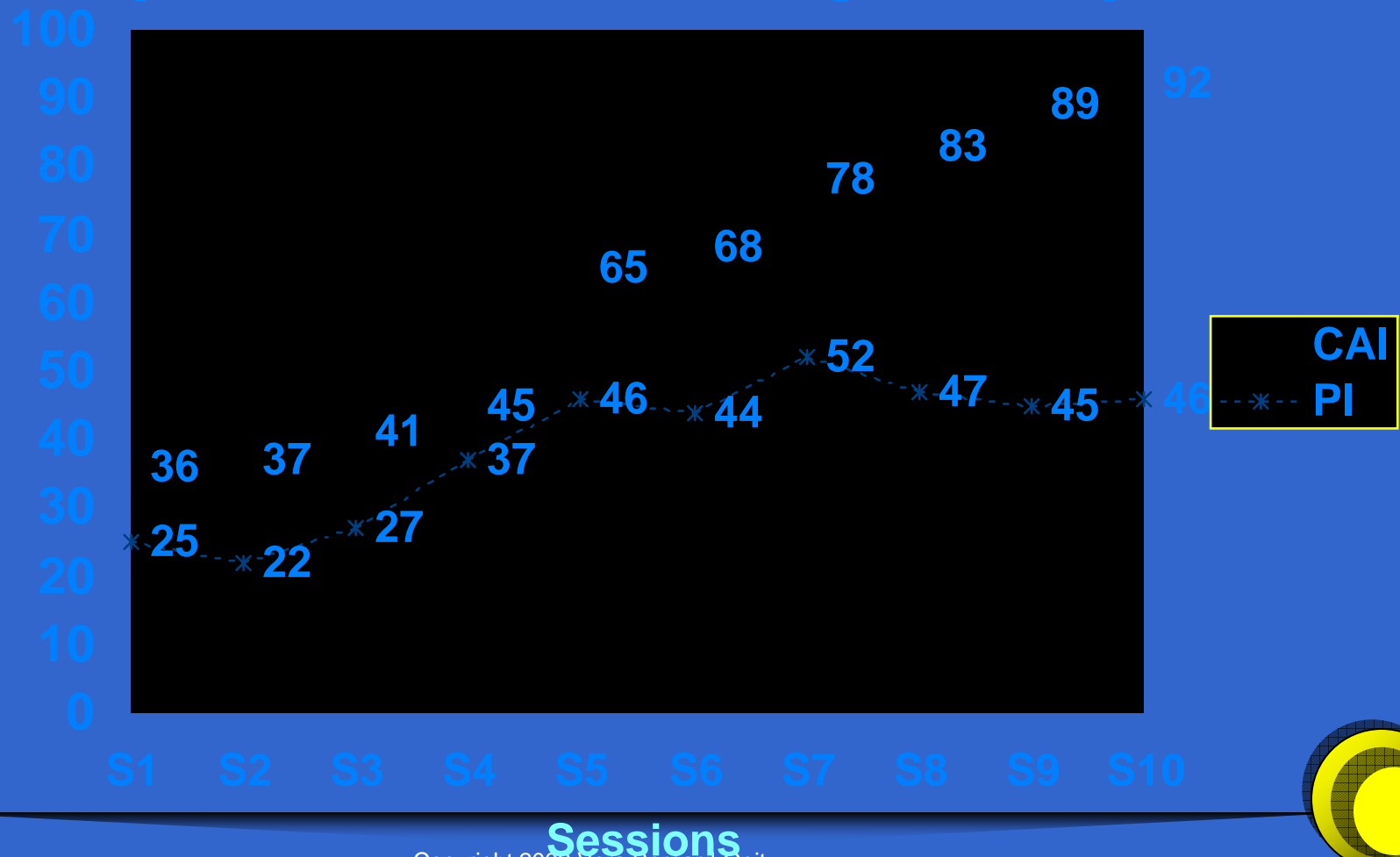
Speech Viewer CAI and PI

(N = 10 Participants)



Imitation Across Sessions

(N = 10 Participants)



Cure Autism Now

New treatment grant addresses receptive language needs



- Laura Schreibman
- Computer-based language training
- San Diego Autism Research lab



*“P*rogressive *A*cademic *L*earning *S*ystem”

“PALS”

PALS

Pilot Data: Subjects

- 2 Sites
- Four classrooms
 - 2 Autism classes
 - 2 Special day classes (SH)
- 17 children
- Age-range: 5 to 12 yrs
- MA-range: 2 1/2 to 6 yrs

PALS

Pilot Data: Procedure

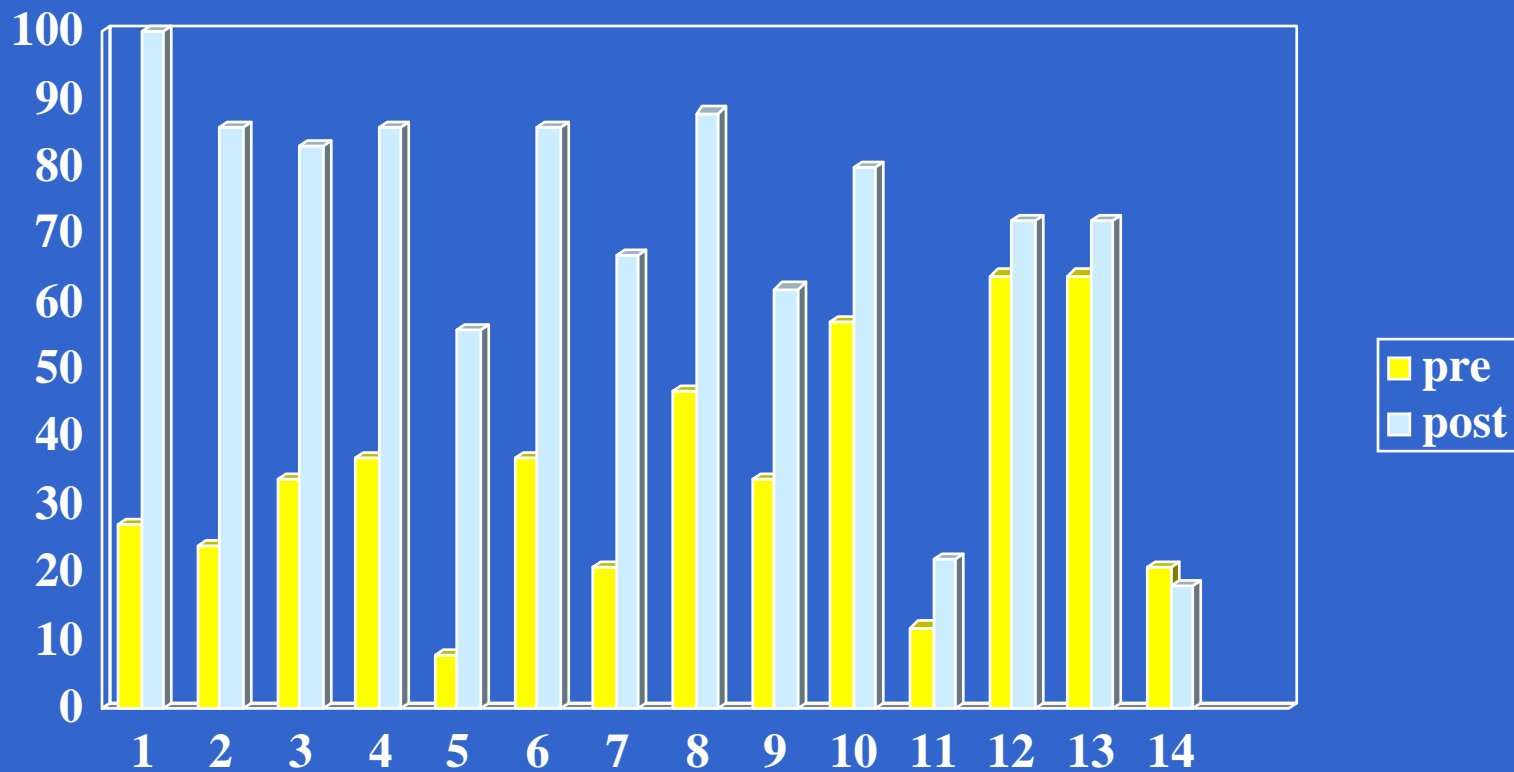
- 10 to 15 minutes
- 3-5 times a week
- 1 to 3 months
- 1 or 2 IEP goals

PALS

Pilot Data: Tasks

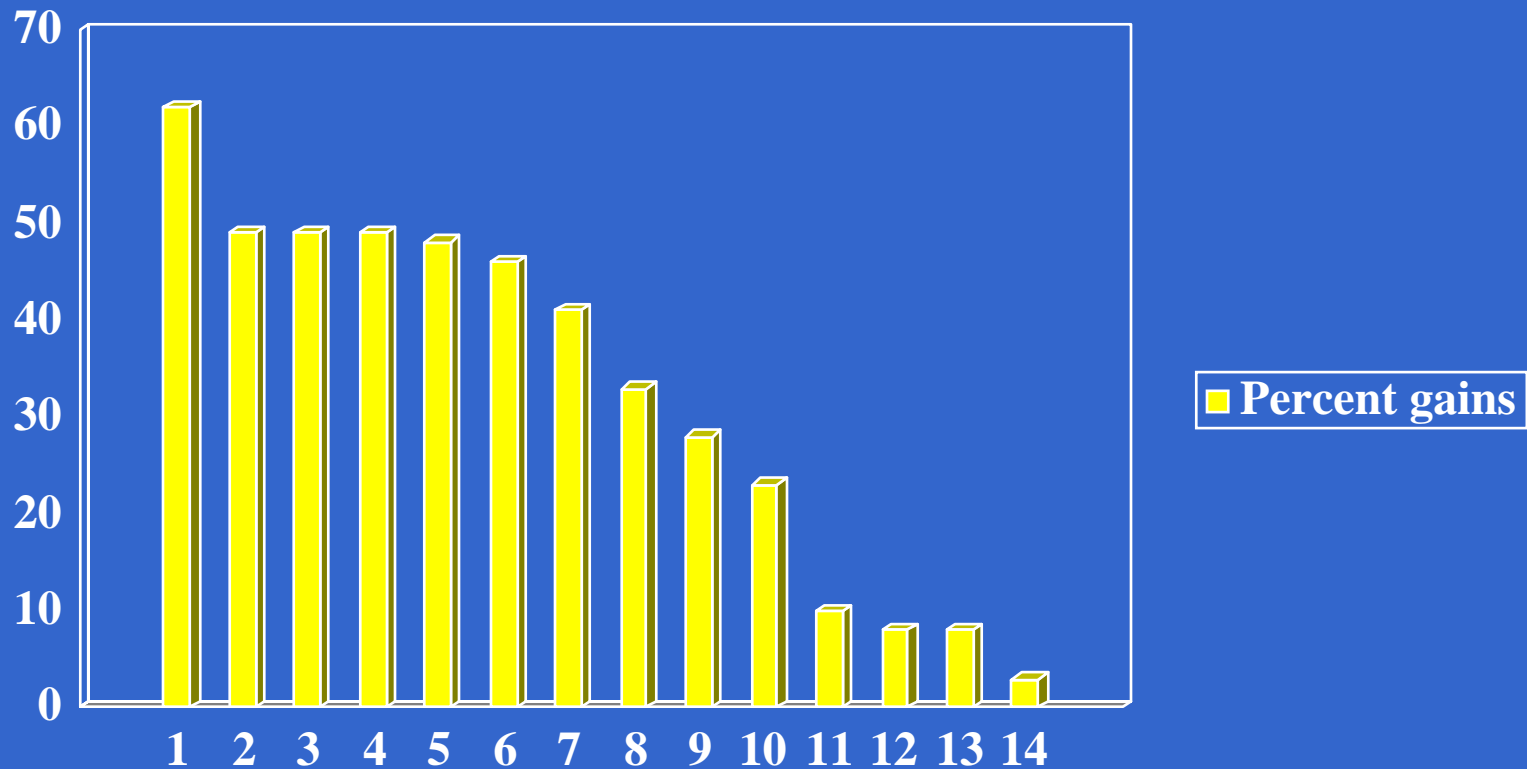
- Match & point to
 - Colors
 - Letters
- Point to
 - Shapes
 - Colors & shapes
 - Numbers
 - Letter-picture combo

Pre- Post Across Tasks PALS

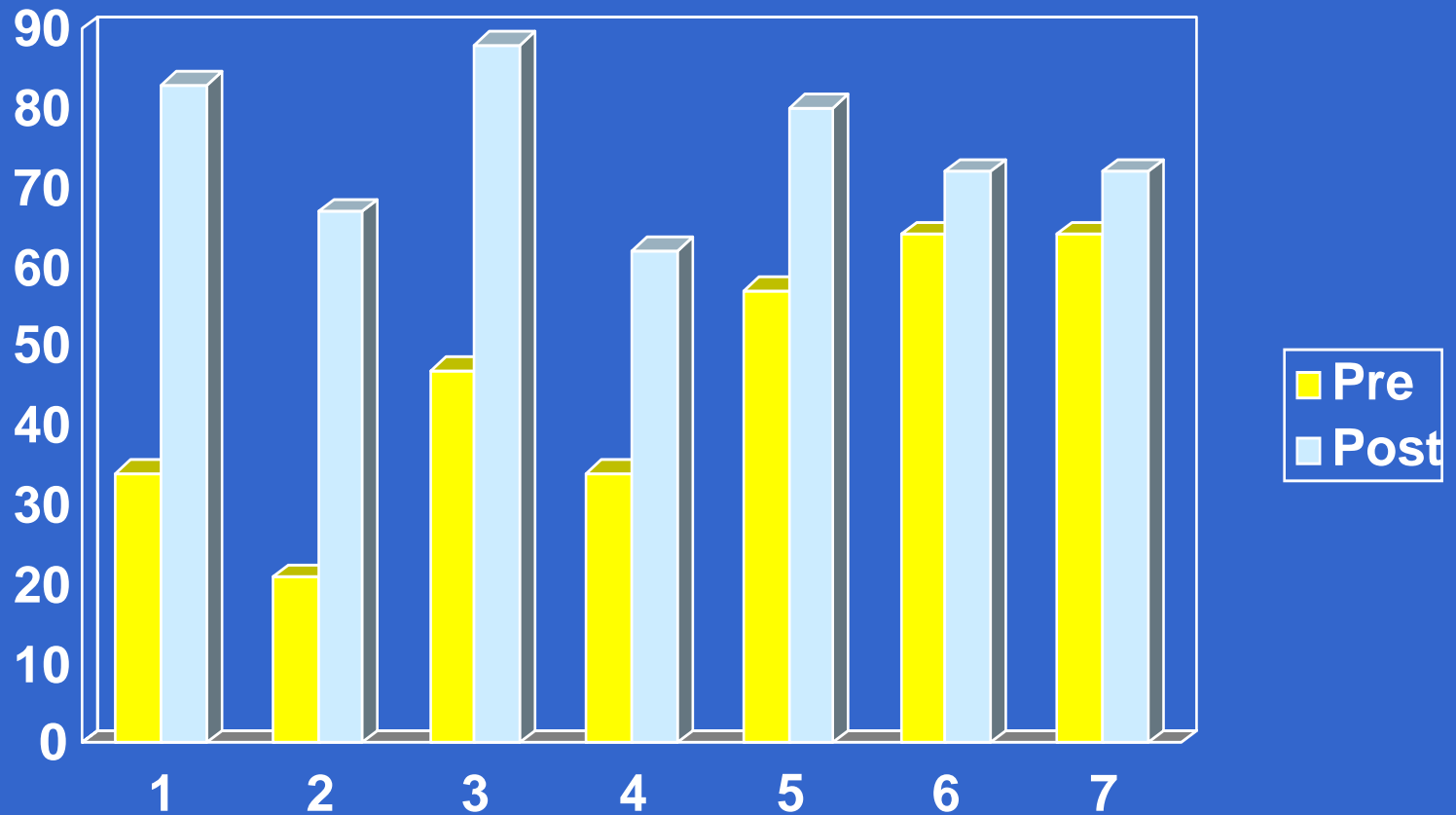


Gains Across Tasks

PALS

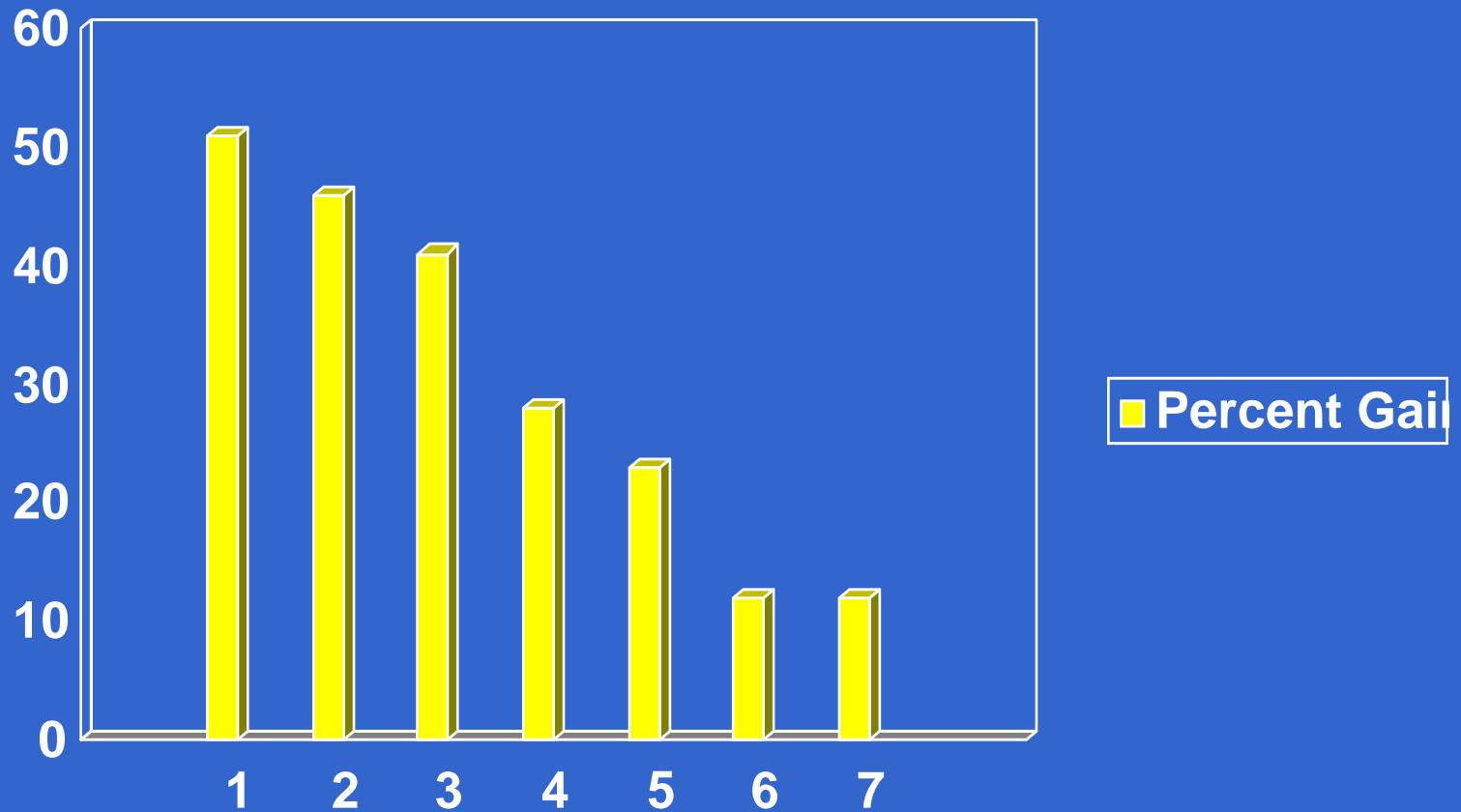


Pre-Post Recept. Letters/Numbers

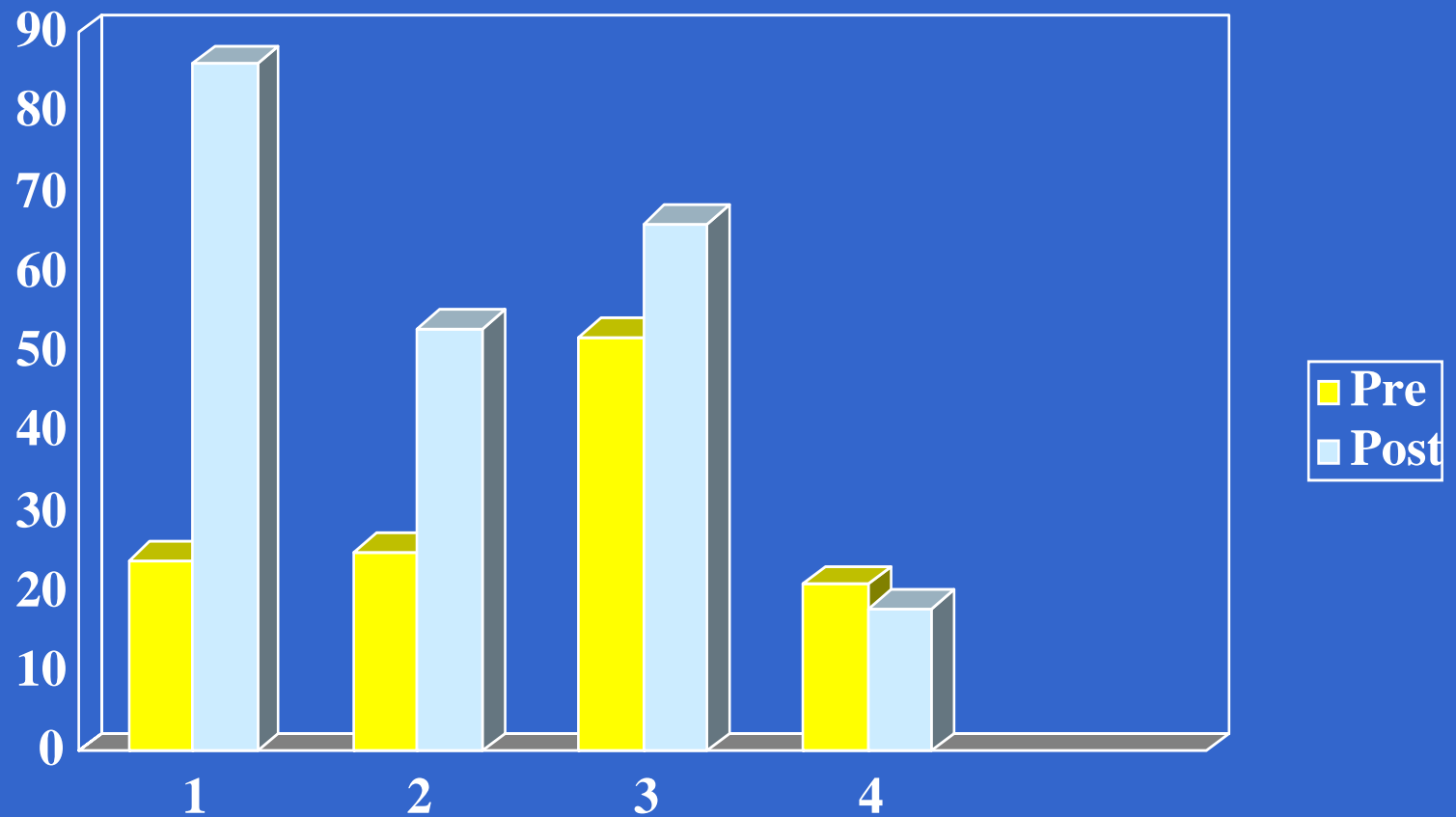


Gains

Receipt Letters/Numbers

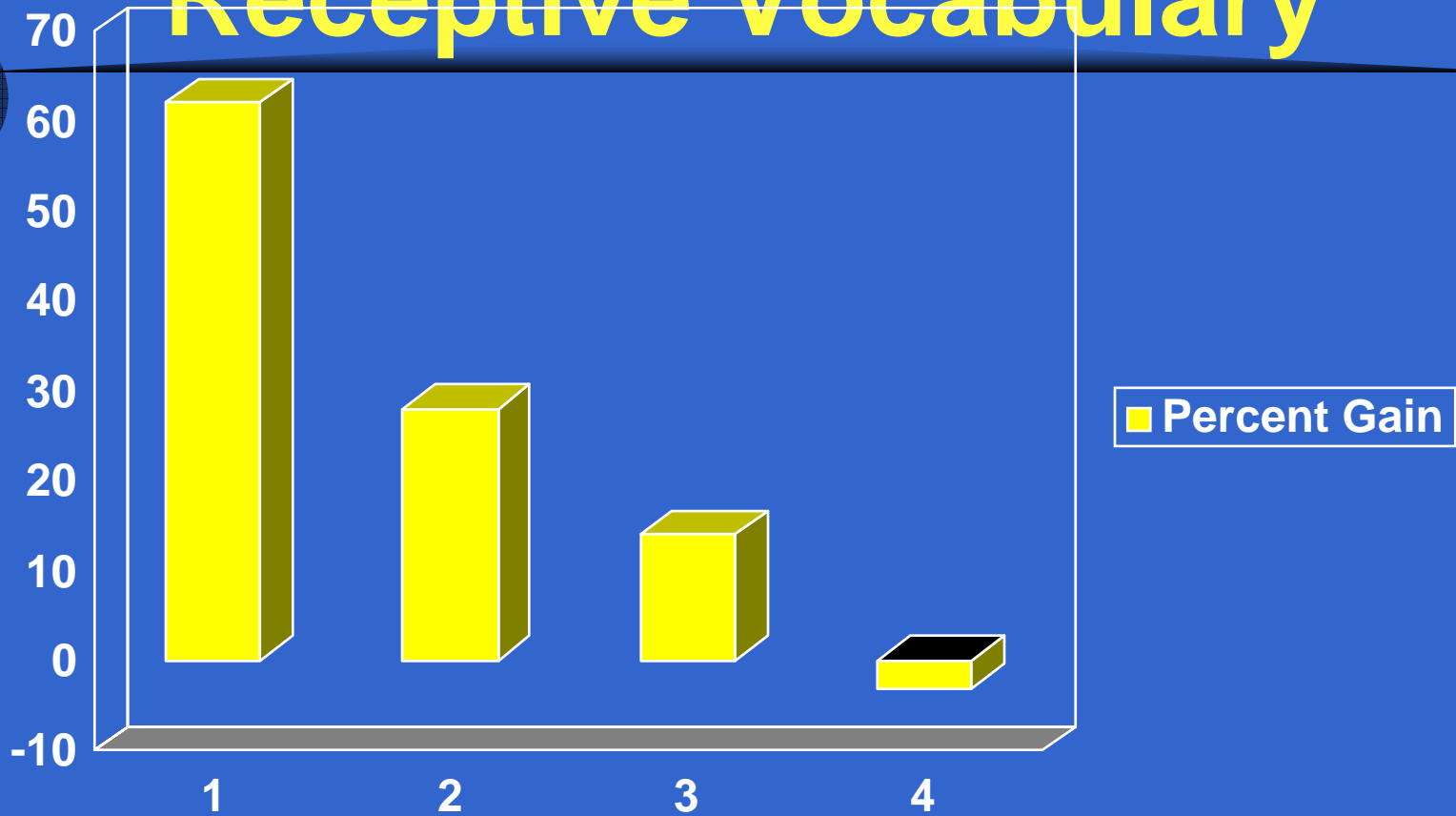


PALS Pre-Post Receptive Vocabulary



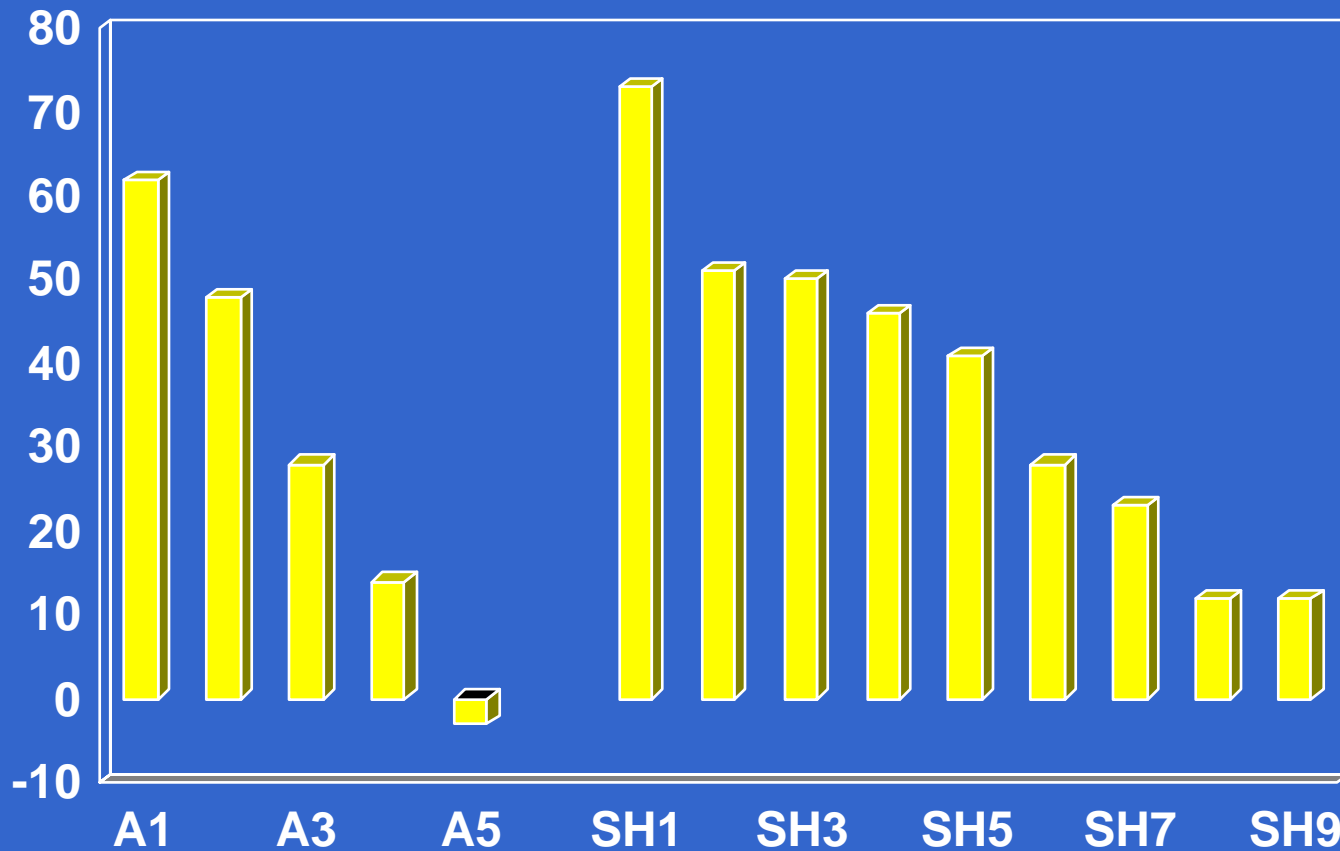
PALS Gains

Receptive Vocabulary



Autistic - SH Class

Pre-post



Research Project

Group data pre-post CAI & PI

- Children with ASD
 - Matching - Visual
 - Pointing - Language
- Tasks
 - MA matched n-t children
 - MA matched SH children

Research Project

Multiple Baseline CAI & PI

- Simultaneous design
- Sequential cross-over design
 - 2 tasks per child (IEP or other goals)
 - 20-30 sessions

WHAT ARE THE ADVANTAGES OF COMPUTER DELIVERY OF DTT?

- **Cost**
- **Powerful instructional tool**
- **Fun and engaging for the student**
- **Ease of assessment**
- **Ease of response recording**
- **Ease of record keeping**
- **Great help with IEP's**
- **Requires little teacher/aide training**
- **Provides more time for social, academic and behavioral instruction**

What is PALS?

General

- Computerized educational program
- Discrete Trial Format
- 168 lessons & 44 000 tasks
- Colors & shapes to 900 sight words
- Summary Reports

What is PALS?

Features

- Random presentation of items
- Incorrect responses are ignored
- Animated verbs & token economy
- Actual photographs
- Mouse games

What is PALS?

Specifics

- Multiple task examples
- Timer
- Inactivity buzzer
- Independent use of program

Why PALS?

- **Cost effective**
- **Research based**
- **Standards aligned**
- **Engaging**
- **Easy to use for student & teacher**
- **Comprehensive Assessment & Reporting**
- **Broad applications spanning many areas of instruction**

