San Antonio Pilot Study: Data Analysis Results

Summary of Data Analysis Findings

July, 2015

Background

This Efficacy Study was conducted with Excel Beyond the Bell-San Antonio. Excel Beyond the Bell-San Antonio (EBBSA) is a collaborative effort among nonprofit and public agencies who provide Out-of-School Time (OST) or related services to youth and their families. EBBSA works with these and other willing partners to seek a shared vision for San Antonio youth.

The purpose of this study was to assess the effectiveness of six e-learning courses. At least two participants at each school-age child care provider member agency served by the EBBSA Collaborative were asked to participate in this efficacy study of six e-learning courses. The participants were chosen to represent a wide range of experience and organization size: they included new hires, seasoned professionals, those with high school/GED education, those with masters or doctoral degrees, front-line staff, and directors.

A total of 147 people completed the six e-learning courses, and pre- and post-surveys. Dr. James Marshall, an expert in e-learning and faculty member at San Diego State University, received the full dataset collected by CypherWorx. He then conducted a topline analysis of participant test performance and survey item responses. This document summarizes Dr. Marshall's analysis of the provided dataset.

About Dr. Marshall

James Marshall Ph.D. is a faculty member in the Department of Learning Design and Technology (formerly Educational Technology) at San Diego State University. With over 20 years in the learning design field, he brings a wealth of applied experience to his teaching and research endeavors.

An expert in e-learning and design-based research, Dr. Marshall's research focuses on the relationship between an e-learning product's design, and the results it achieves. Typically, this involves examining immediate knowledge gains for learners, and ultimately, return on investment for the organizations in which these learners work. Jim has been responsible for evaluating over $25 million dollars worth of federal-, state- and locally-funded programs for purposes of optimizing their design, and quantifying their impact.

Through his consulting work, he has collaborated with organizations that include: Bank of America, Anheuser Busch, Court TV, McGraw Hill Companies, The Princeton Review, The Transportation Security Administration, TIAA-CREF, The Corporation for Public Broadcasting and the U.S. Department of Education. His most recent research can be found in the Journal of Applied Instructional Design, Performance Improvement Quarterly and the International Journal of E-Learning.

Education

B.A. in Liberal Studies, San Diego State University

M.A. in Educational Technology, San Diego State University

Ph.D. in Education, Claremont Graduate University and San Diego State University

List of Courses Tested

Data was collected for six of the e-learning courses. The involved data included:

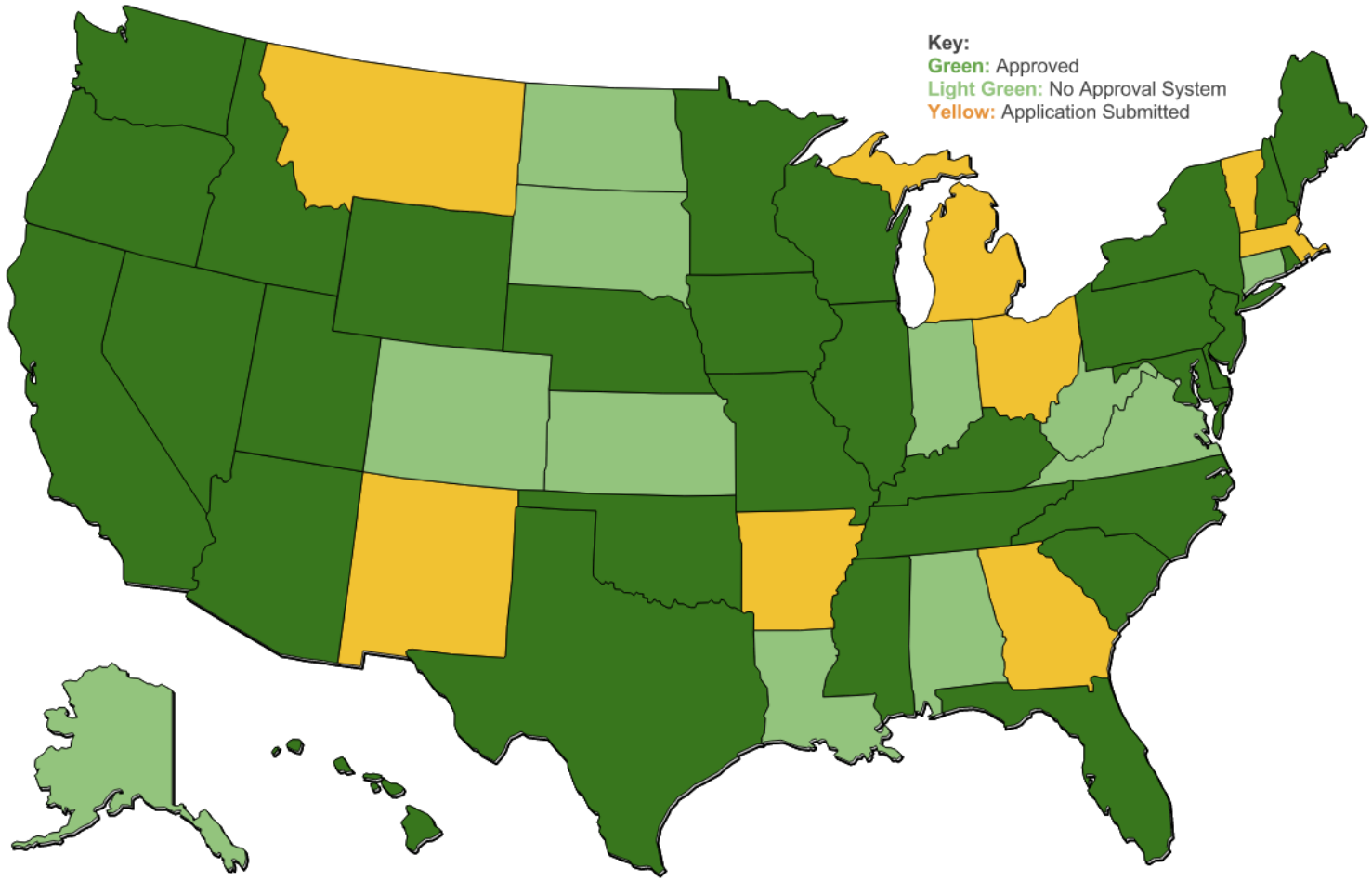
- **Pre- and posttest scores—**based on answers to test items aligned with each course's objectives. The *Objective Measures* section of this document summarizes test results.
- **Pre- and postsurvey responses—**from a survey conducted with participants prior to engaging in e-learning and following completion of the final course. The *Participant Beliefs* section of this document summarizes survey results.

EBBSA selected the following e-learning courses for this study.

Course	Title
3	Exploring Developmental Needs and Characteristics of Different Age Groups (Implications for Programming)
6	Guiding the Behavior of Individual Children
8	Human Relations Skill Development
20	Developing Activities that Encourage Creativity and Cognitive Development
24	Helping Children with ADD Succeed in School-Age Programs
28	Commitment to Quality in School-Age Programs

Course Content State Approvals

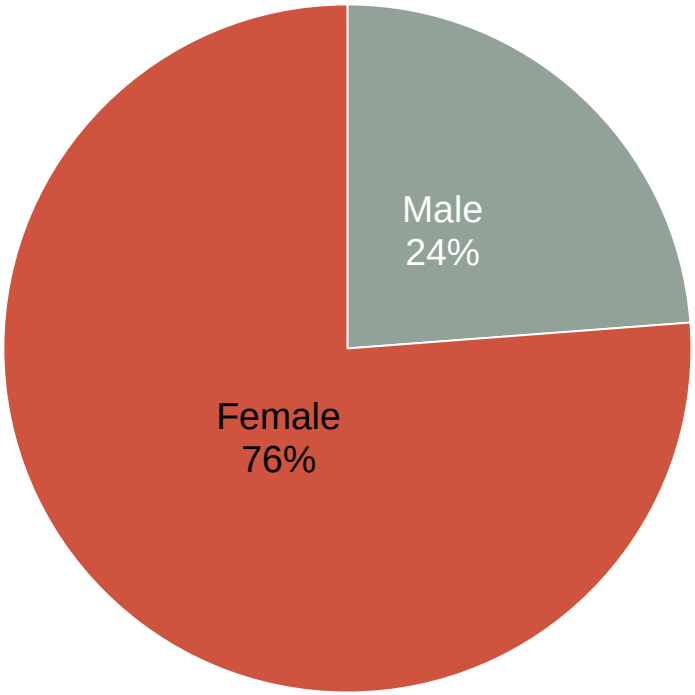
The course content chosen for the study has been approved in Texas, and the States in Green as of 7/8/15.



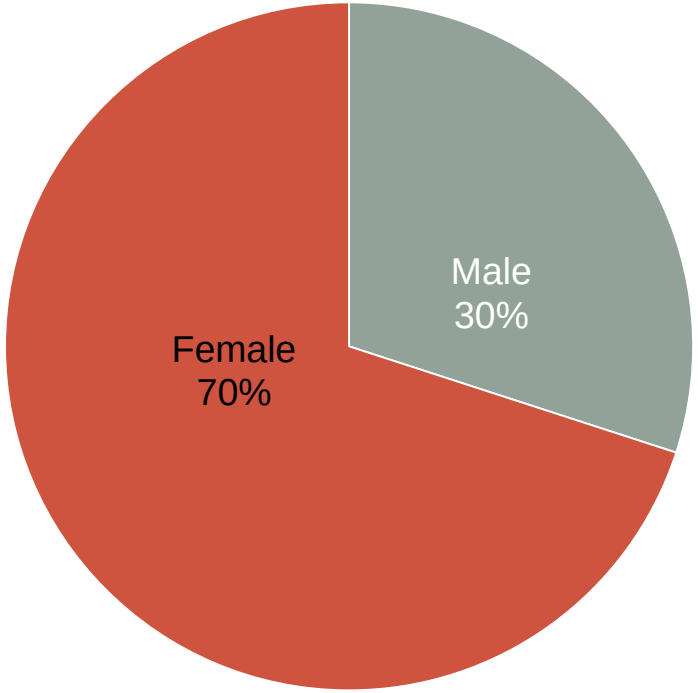
PARTICIPANT DEMOGRAPHICS

Information describing the 147 pilot study participants

Demographics: Gender



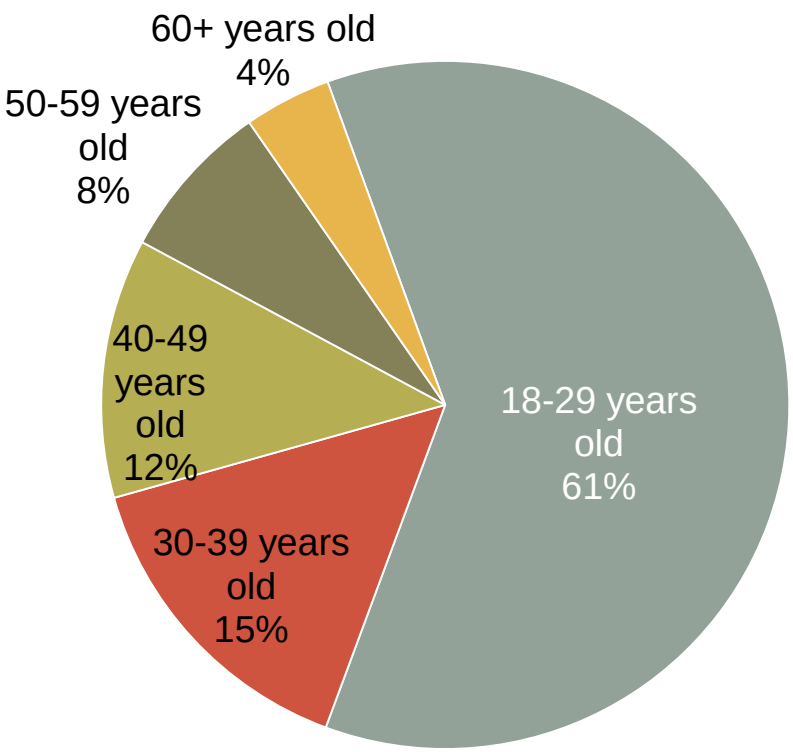
Study Participants
(n=147)



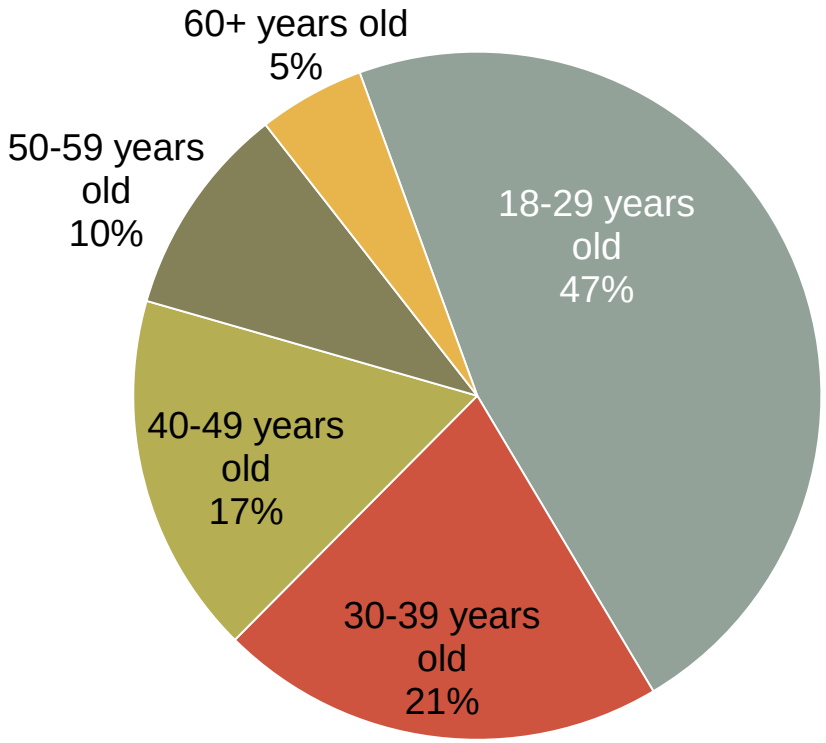
National Averages For Field*

***Source: Understanding the Afterschool Workforce: Opportunities and Challenges for an Emerging Profession (NAA, 2006)**

Demographics: Age



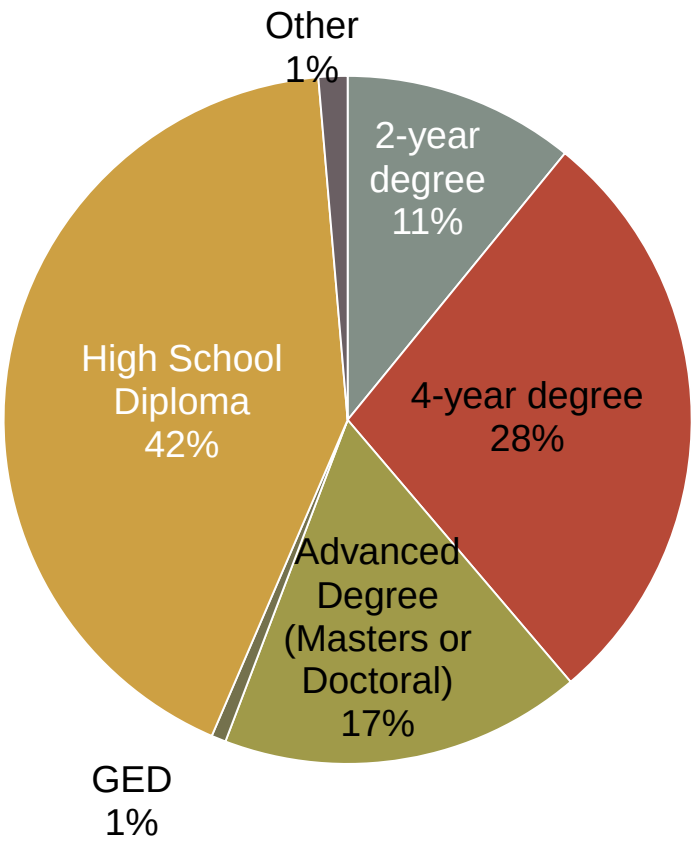
Study Participants
(n=147)



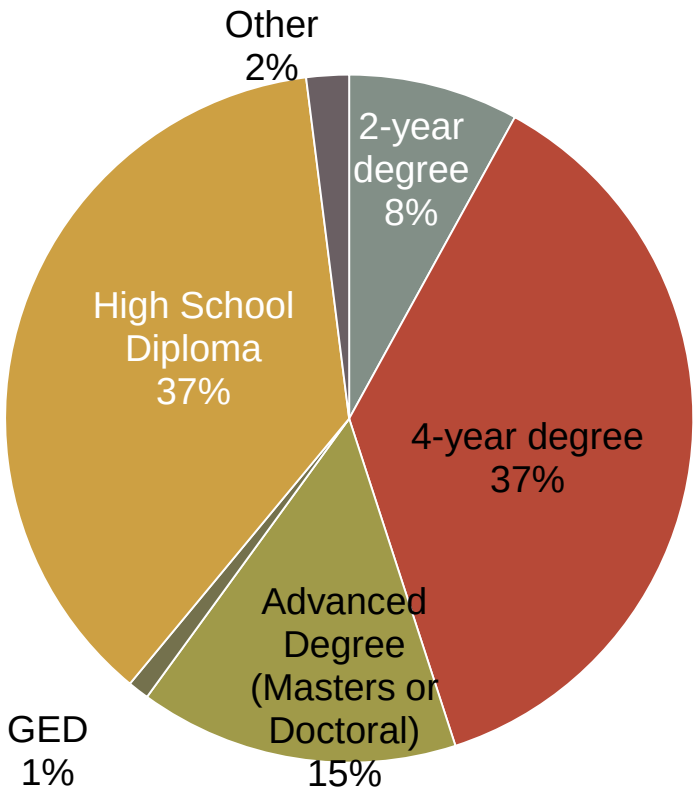
National Averages For Field*

***Source: Understanding the Afterschool Workforce: Opportunities and Challenges for an Emerging Profession (NAA, 2006)**

Demographics: Education



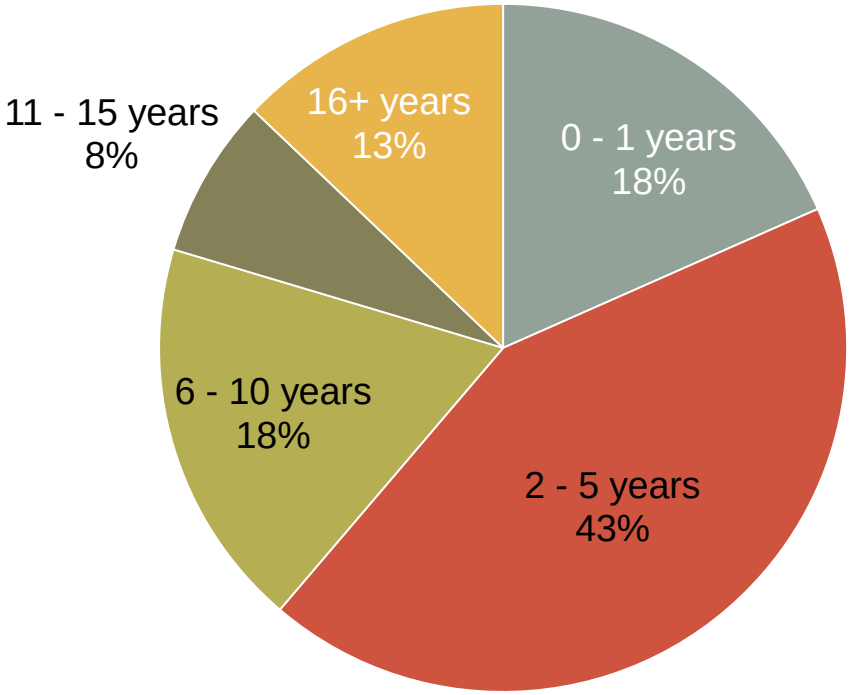
Study Participants
(n=147)



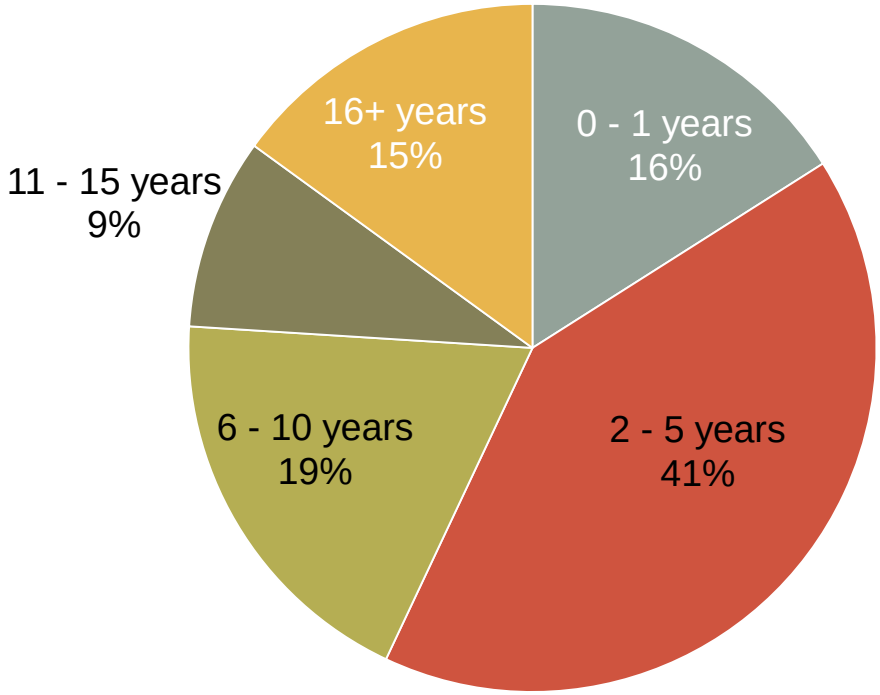
National Averages For Field*

***Source: Understanding the Afterschool Workforce: Opportunities and Challenges for an Emerging Profession (NAA, 2006)**

Demographics: Professional Experience



Study Participants
(n=147)



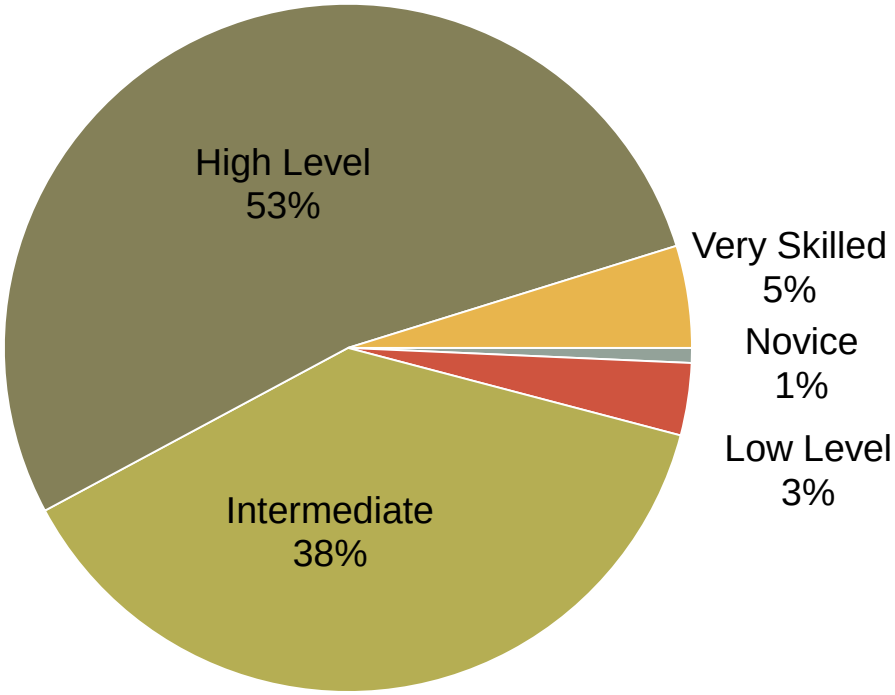
National Averages For Field*

***Source: Understanding the Afterschool Workforce: Opportunities and Challenges for an Emerging Profession (NAA, 2006)**

Demographics: Study Participant Position Title

Position Title	Number of Participants	Percentage of Participants
Admin	2	1.4%
Aide / Assistant Teacher	50	34.0%
Assistant Director / Coordinator	5	3.4%
Clinician	1	.7%
Director/Owner	26	17.7%
Education Coordinator	4	2.7%
Facilitator	2	1.4%
Juvenile Probation Counselor	1	.7%
Lead Teacher/Supervisor	15	10.2%
Site Manager	28	19.0%
Youth Worker	13	8.8%
Totals	**147**	**100%**

Demographics: Computer Skills



Study Participant Self-rating:
How would you rate your computer knowledge and competency?
(n=147)

OBJECTIVE MEASURES

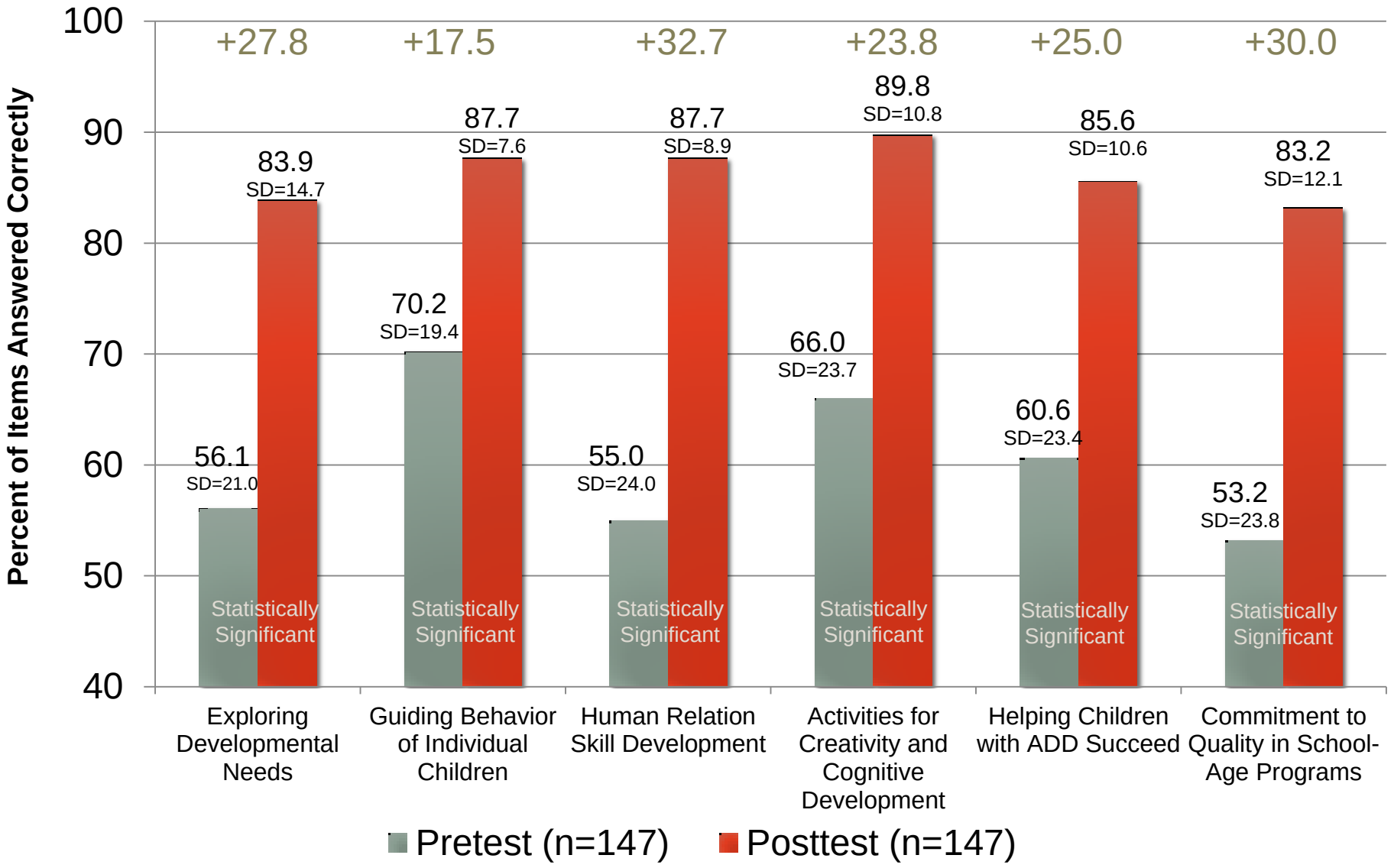
A comparison of pre- and posttest performance to determine growth as a result of instruction

Pretest to Posttest Comparisons

Each course in this pilot includes a pre- and posttest instrument. Aligned with the course objectives, these tests were used to assess participant knowledge prior to, and following completion of, each course.

This analysis uses mean scores to analyze differences in pre- and posttest performance. In addition, we examine whether found differences are (a) statistically significant—meaning unlikely to be the result of random chance; and (b) consistent for all participants, regardless of various demographics that *could* influence performance (i.e., age or years in the profession).

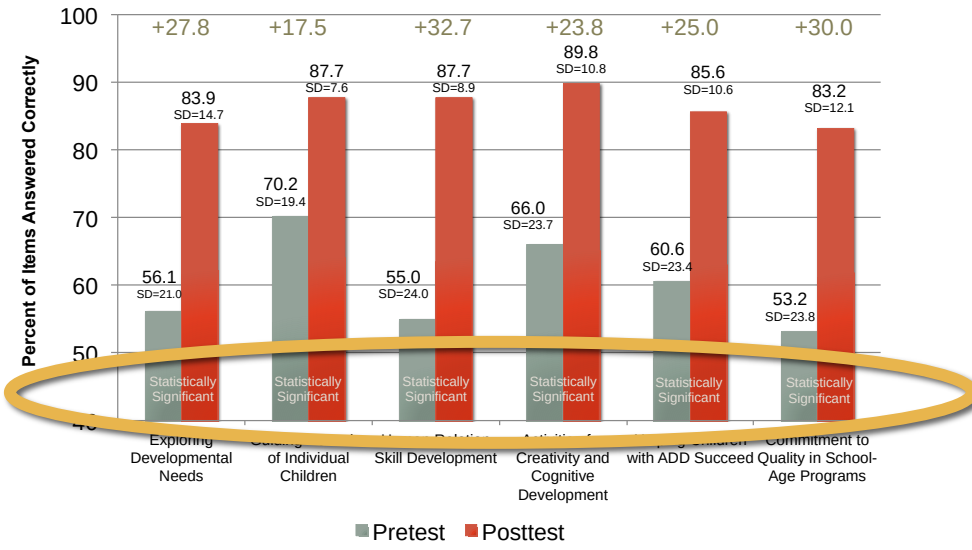
Pretest to Posttest Gains



Pretest to Posttest Gains

On average, participants increased their knowledge in each of the six courses, with statistically significant differences.

- Significance levels for pre-to-posttest differences on all six tests were p=.000.
- This finding indicates that the observed differences between pre- and posttest mean scores had essentially no possibility of occurring by random chance.



- We conclude the difference (growth) is attributable to the intervention (in this case, the training provided to participants).

Pretest to Posttest Gains

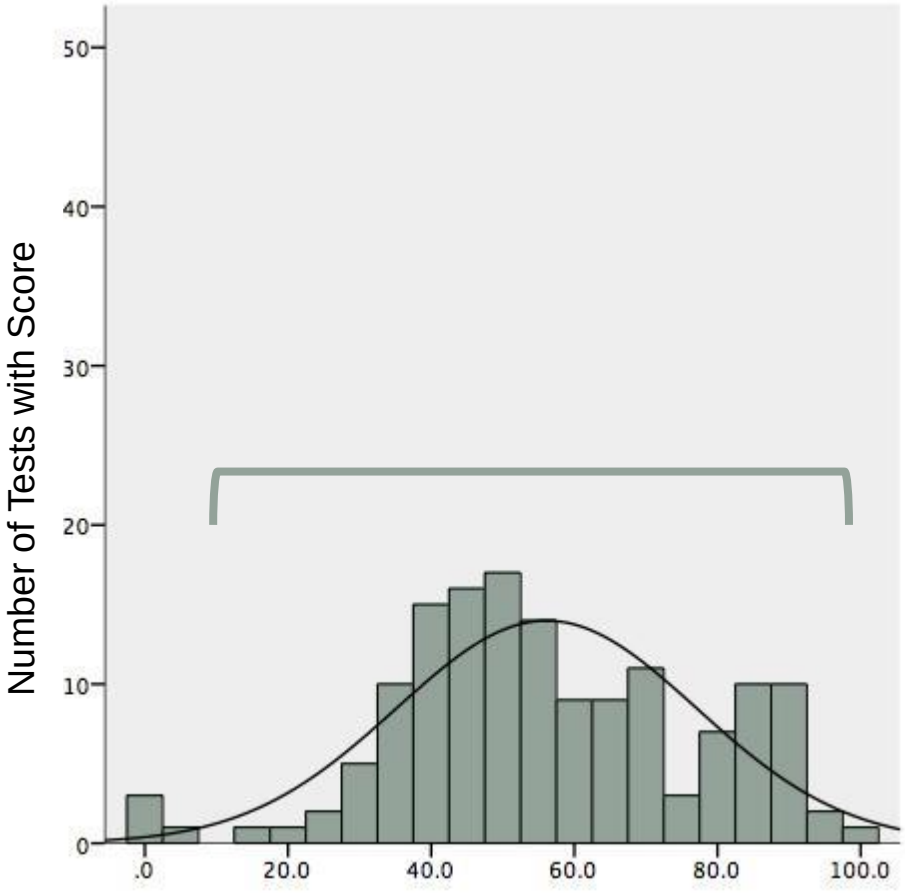
Course (n=147)	Pretest: Mean Score	Pretest: Standard Deviation	Posttest: Mean Score	Posttest: Standard Deviation	sig
Course 3	56.1	21.0	83.9	14.7	.000
Course 6	70.2	19.4	87.7	7.6	.000
Course 8	55.0	24.0	87.7	8.9	.000
Course 20	66.0	23.7	89.8	10.8	.000
Course 24	60.6	23.4	85.6	10.6	.000
Course 28	53.2	23.8	83.2	12.1	.000

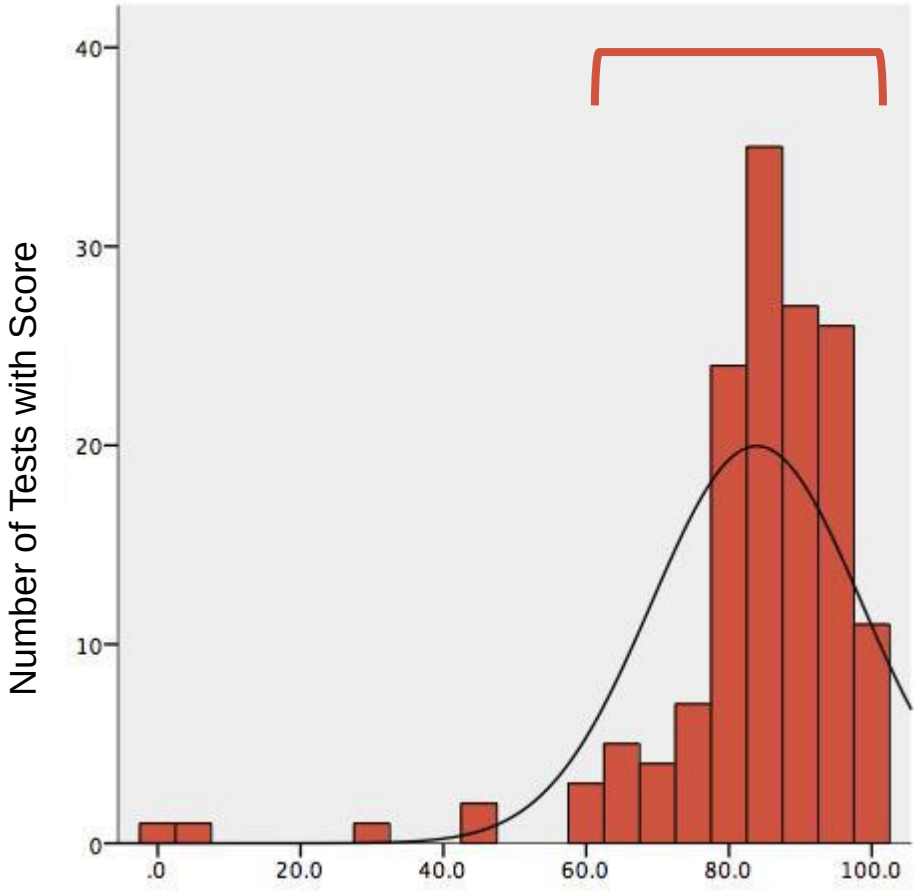
- Pretest score distributions varied more (as indicated by the standard deviation), relative to posttest distributions. For example, the standard deviation (variance) on Course 3 shifted from 21.0 points on the pretest to 14.7 on the posttest—representing an almost 1/3 reduction in response variance).
- This means that while pretest scores varied greatly, posttest scores were clustered closer to the mean.
- Regardless of where an individual pretested, most participants performed consistently higher on the posttest—with far less variation in scores.

The following slides illustrate these changes in distribution for each course.

Change in Distribution: Course 3

Exploring Developmental Needs and Characteristics of Different Age Groups: Implications for Programming





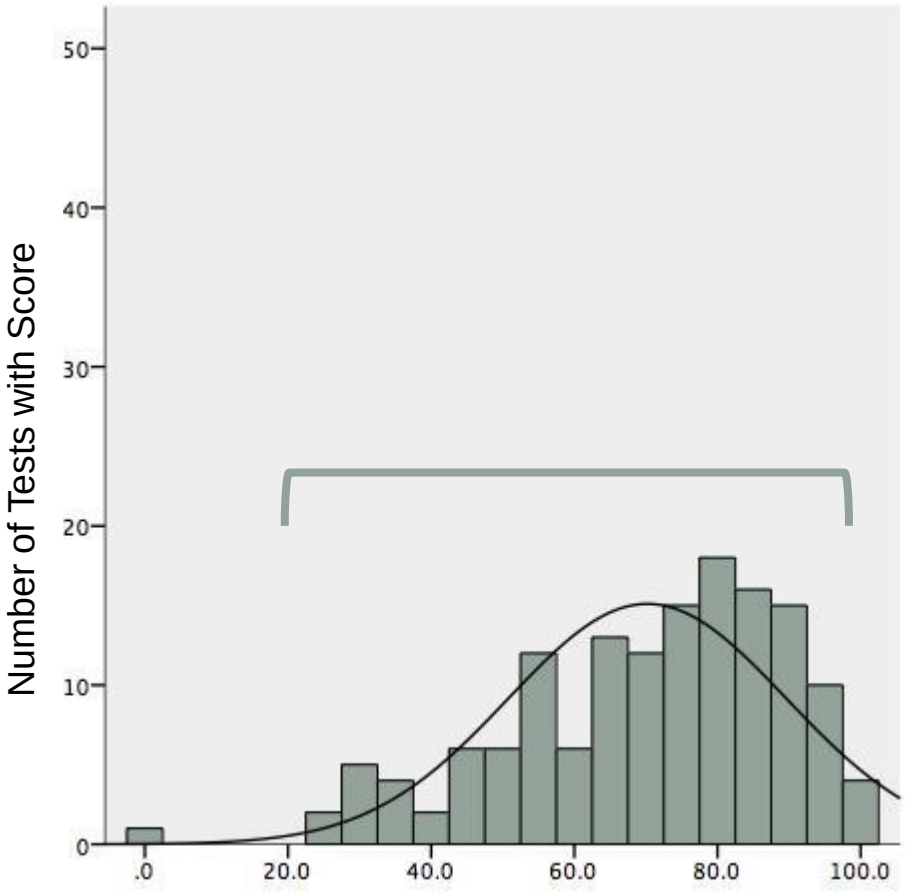
Pretest: Mean = 56.1 | SD = 21.0

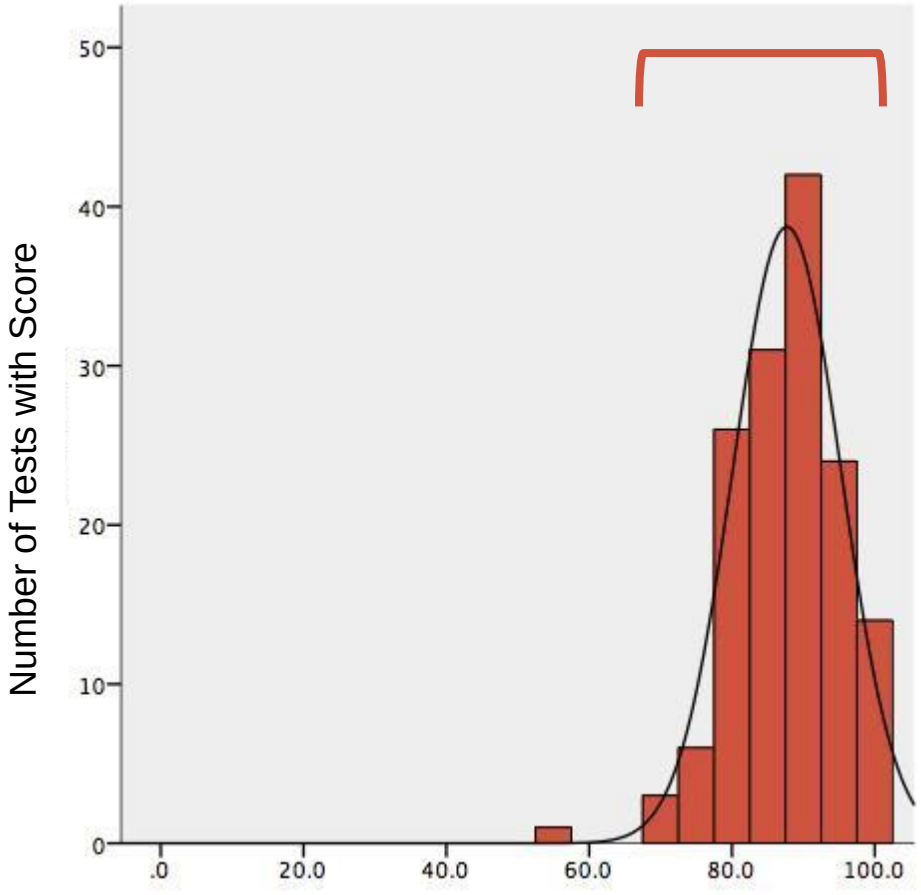
Posttest: Mean = 83.9 | SD = 14.7

A comparison of the two distributions illustrates how test scores shifted to higher points on the scale from pretest to posttest. Additionally, the variance in scores was greatly reduced—with most posttest scores clustering around the 87.7 mean score.

Change in Distribution: Course 6

Guiding the Behavior of Individual Children





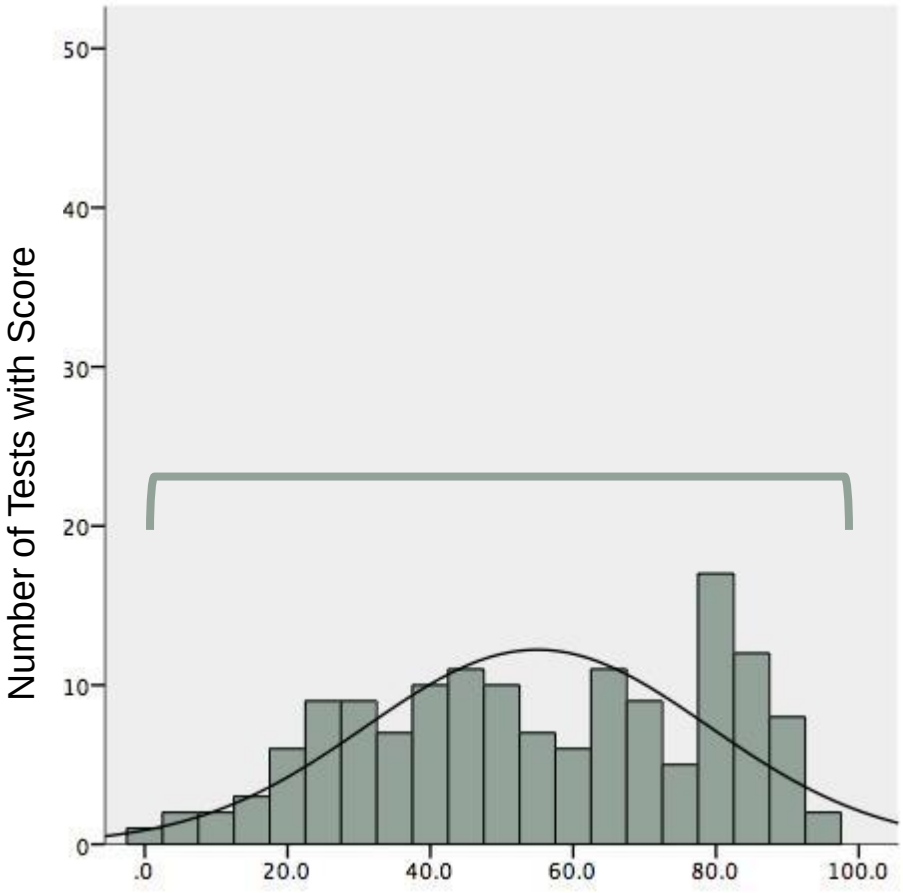
Pretest: Mean = 70.2 | SD = 19.4

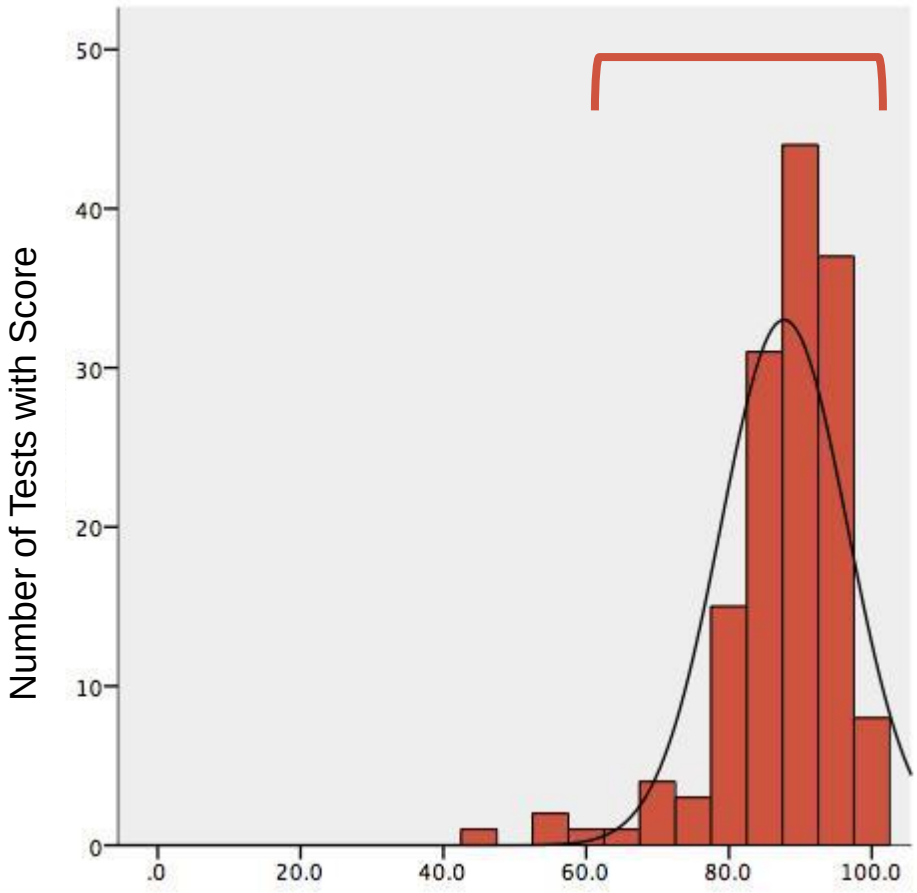
Posttest: Mean = 87.7 | SD = 7.6

A comparison of the two distributions illustrates how test scores shifted to higher points on the scale from pretest to posttest. Additionally, the variance in scores was greatly reduced—with most posttest scores clustering around the 87.7 mean score.

Change in Distribution: Course 8

Human Relations Skill Development





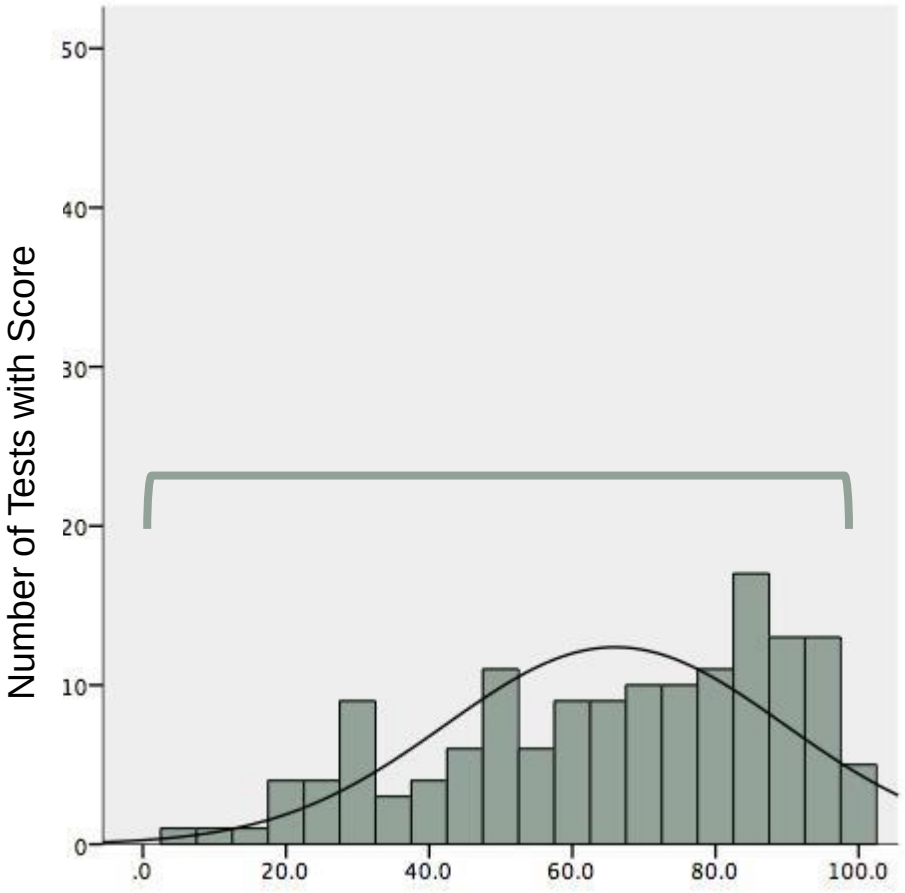
Pretest: Mean = 55.0 | SD = 24.0

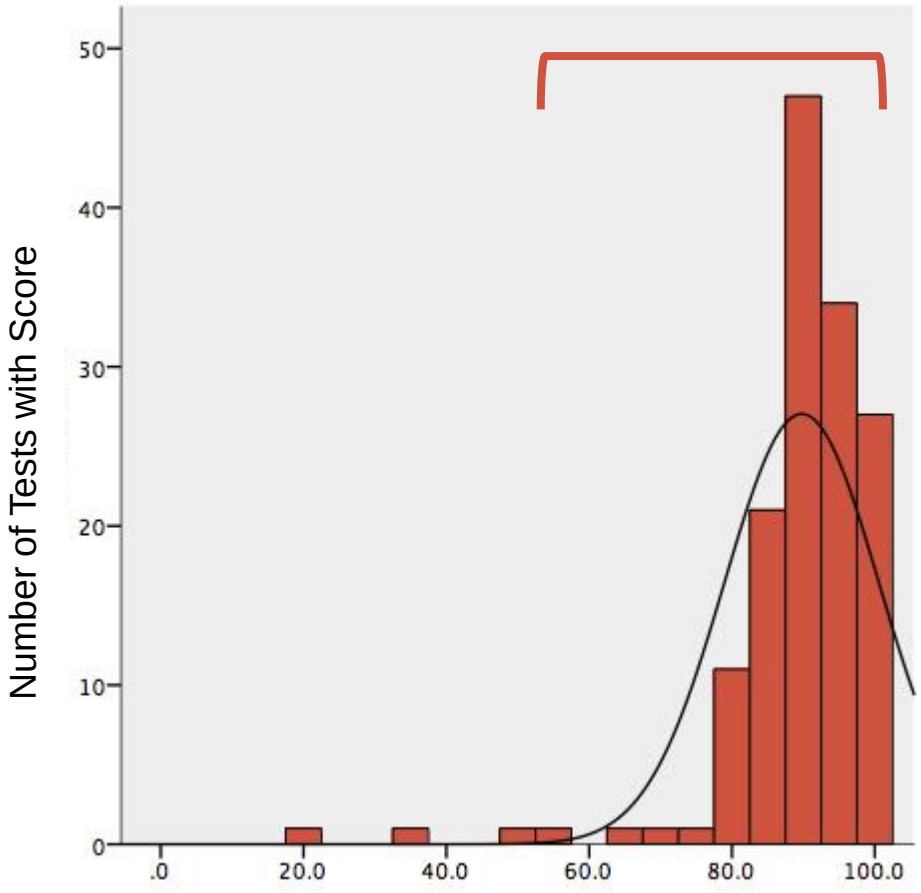
Posttest: Mean = 87.7 | SD = 8.9

A comparison of the two distributions illustrates how test scores shifted to higher points on the scale from pretest to posttest. Additionally, the variance in scores was greatly reduced—with most posttest scores clustering around the 87.7 mean score.

Change in Distribution: Course 20

Developing Activities That Encourage Creativity and Cognitive Development





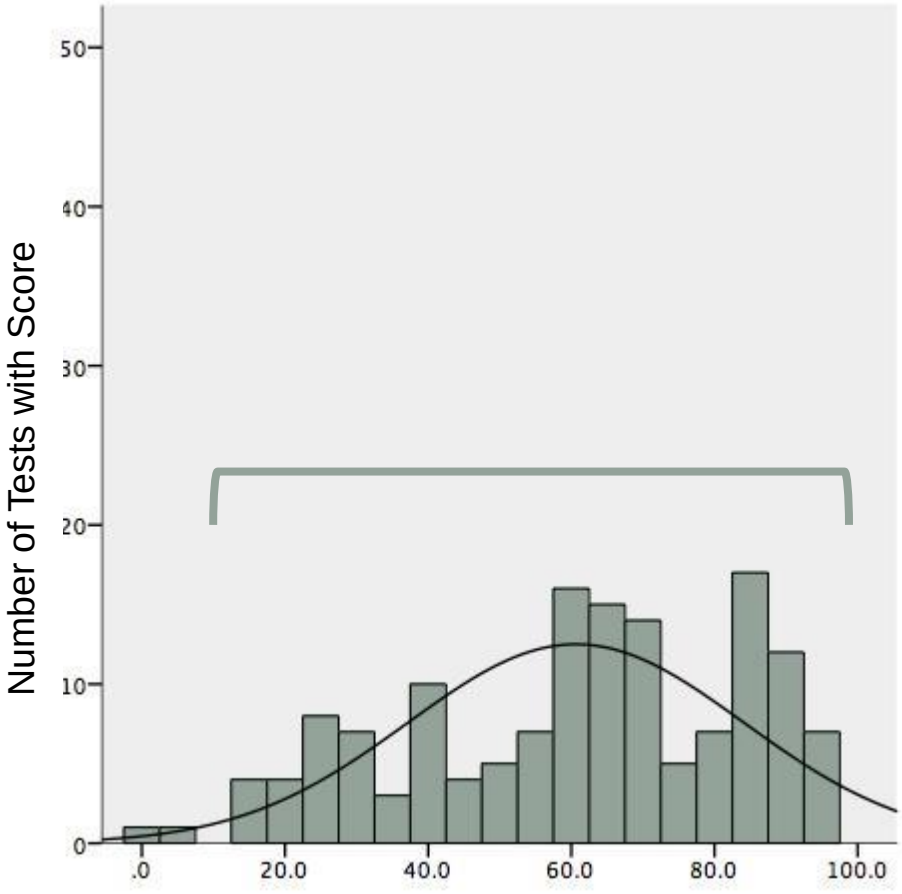
Pretest: Mean = 66.0 | SD = 23.7

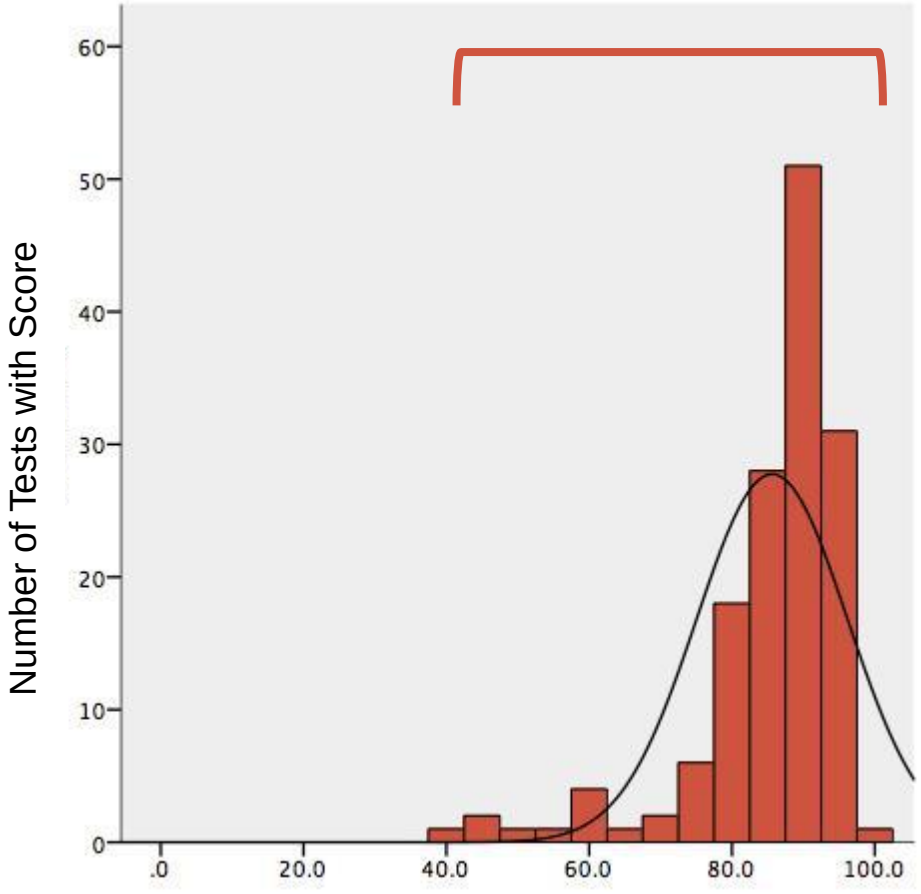
Posttest: Mean = 89.8 | SD = 10.8

A comparison of the two distributions illustrates how test scores shifted to higher points on the scale from pretest to posttest. Additionally, the variance in scores was greatly reduced—with most posttest scores clustering around the 87.7 mean score.

Change in Distribution: Course 24

Helping Children with ADD Succeed in School-Age Programs





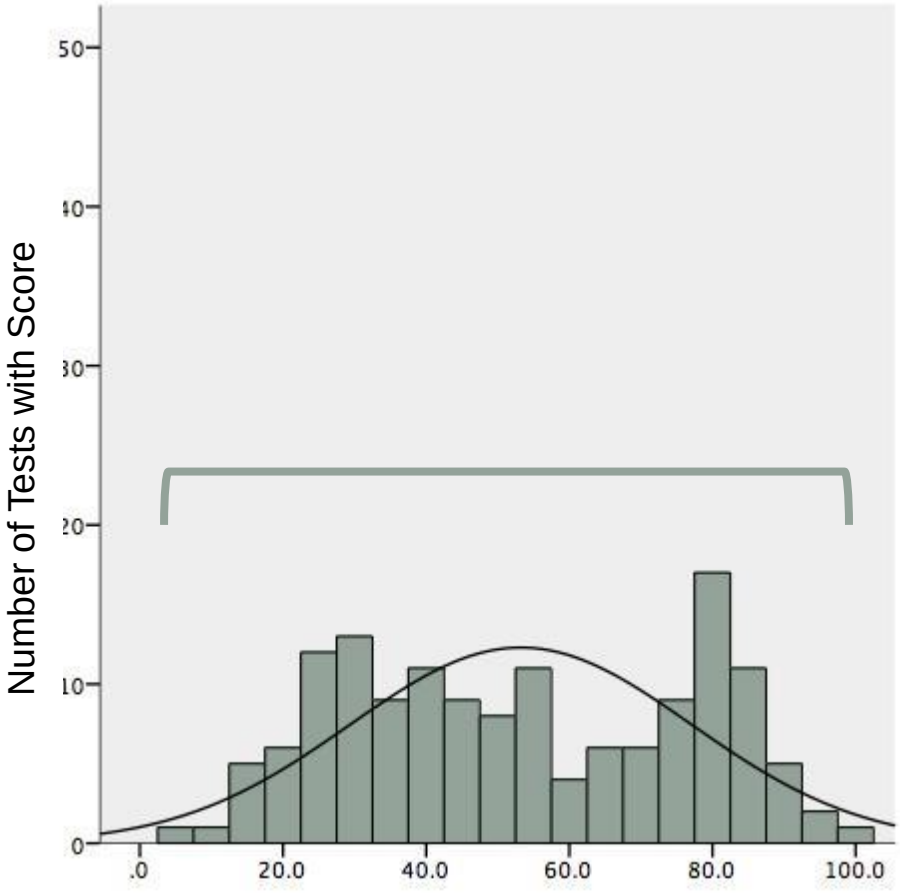
Pretest: Mean = 60.6 | SD = 23.4

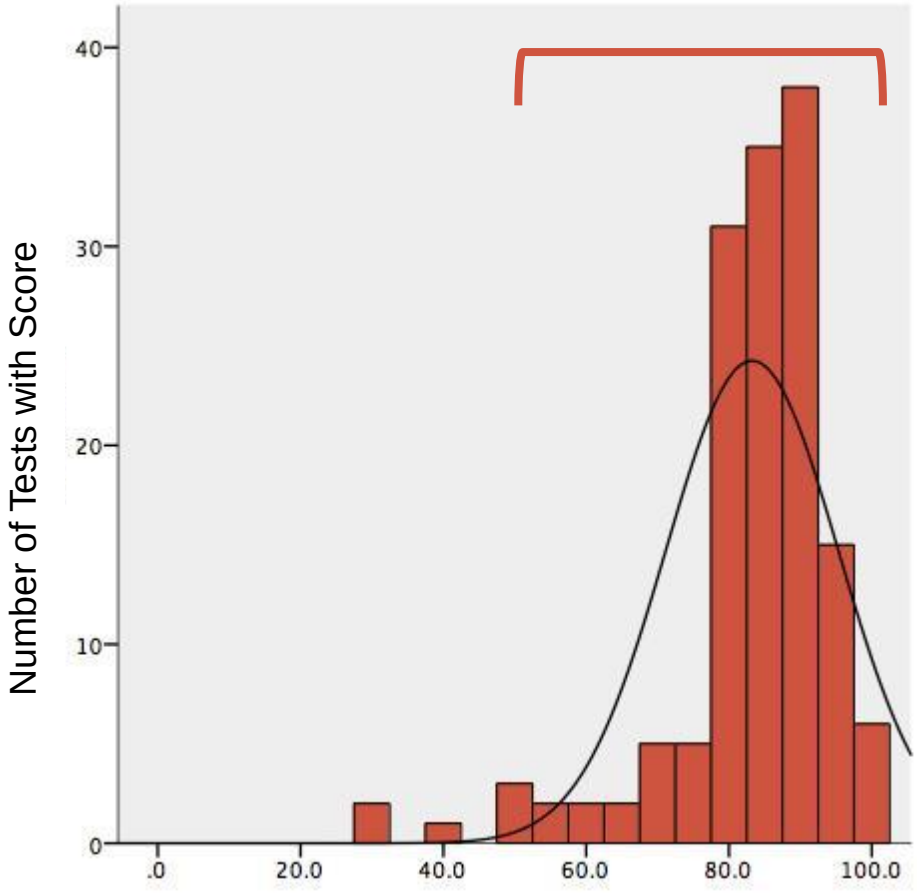
Posttest: Mean = 85.6 | SD = 10.6

A comparison of the two distributions illustrates how test scores shifted to higher points on the scale from pretest to posttest. Additionally, the variance in scores was greatly reduced—with most posttest scores clustering around the 87.7 mean score.

Change in Distribution: Course 28

Commitment to Quality in School-Age Programs





Pretest: Mean = 53.2 | SD = 23.8

Posttest: Mean = 83.2 | SD = 12.1

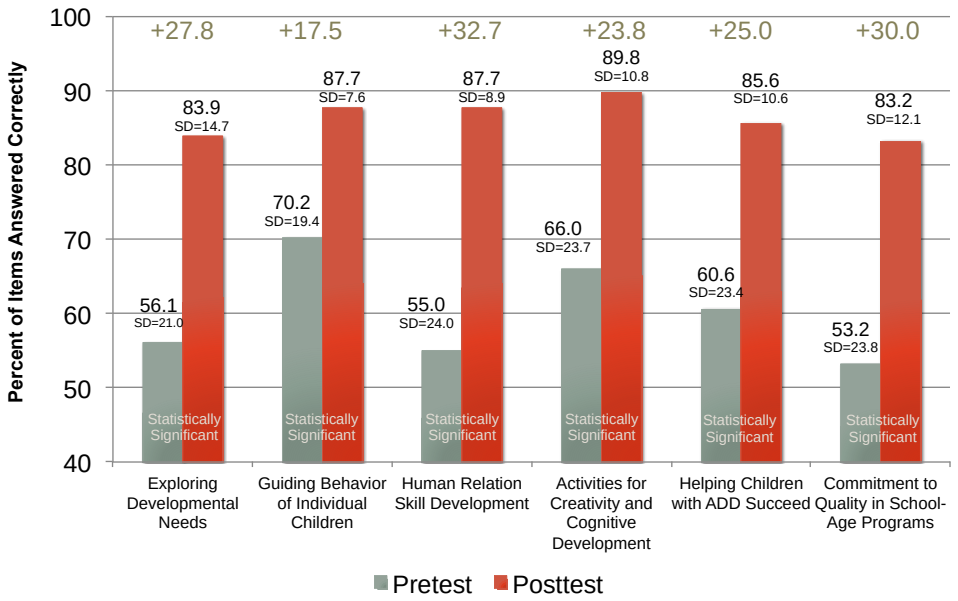
A comparison of the two distributions illustrates how test scores shifted to higher points on the scale from pretest to posttest. Additionally, the variance in scores was greatly reduced—with most posttest scores clustering around the 87.7 mean score.

Pretest to Posttest Gains

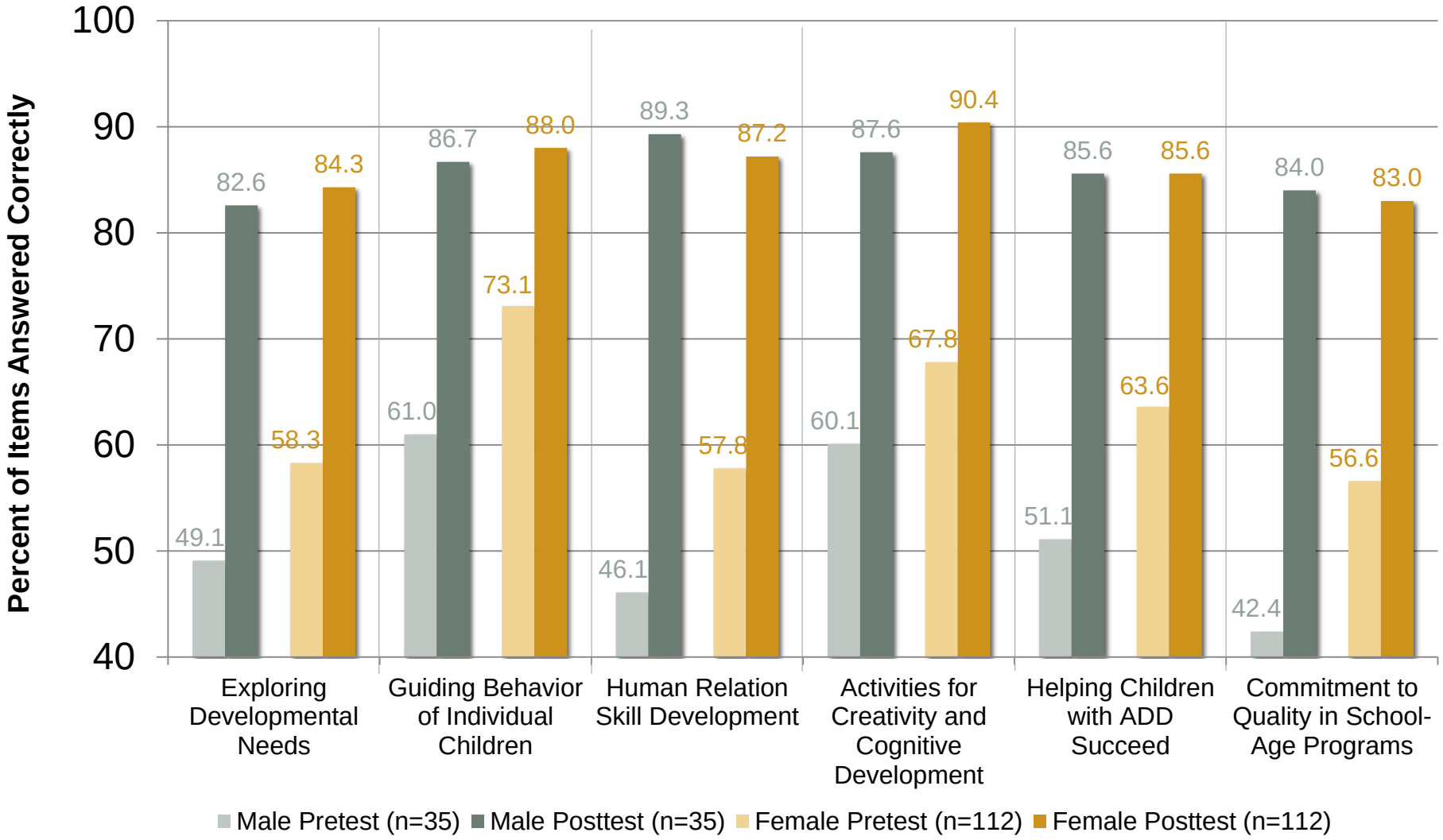
While performance on the pretest often varied based on key demographics, posttest scores proved consistent regardless of potential demographically-based advantages and/or disadvantages.

The average level of performance on almost all posttests was determined to be consistent, regardless of the participants':

- age
- gender
- level of education
- years in the profession
- computer skills

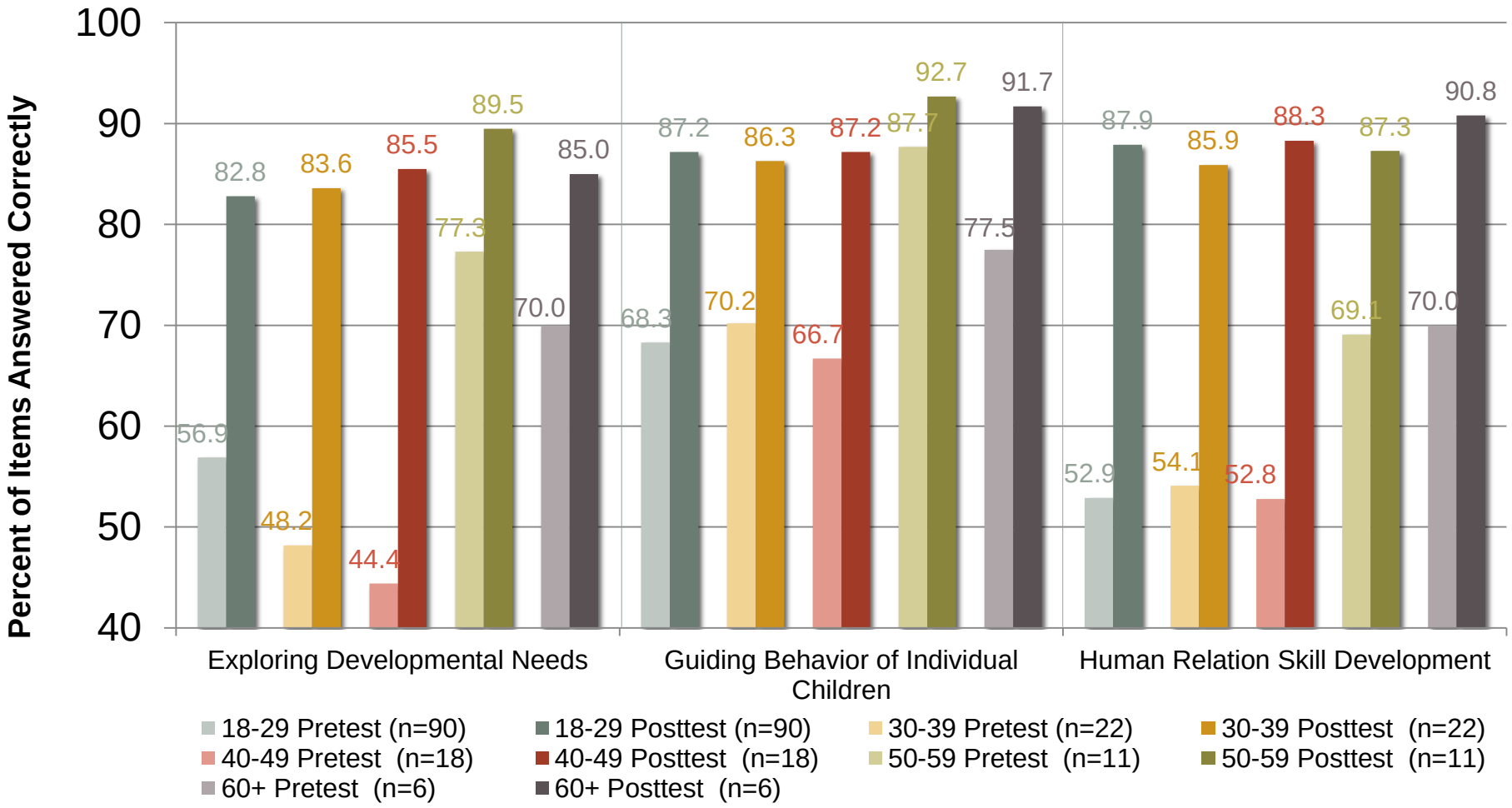


Pretest to Posttest Gains: Gender



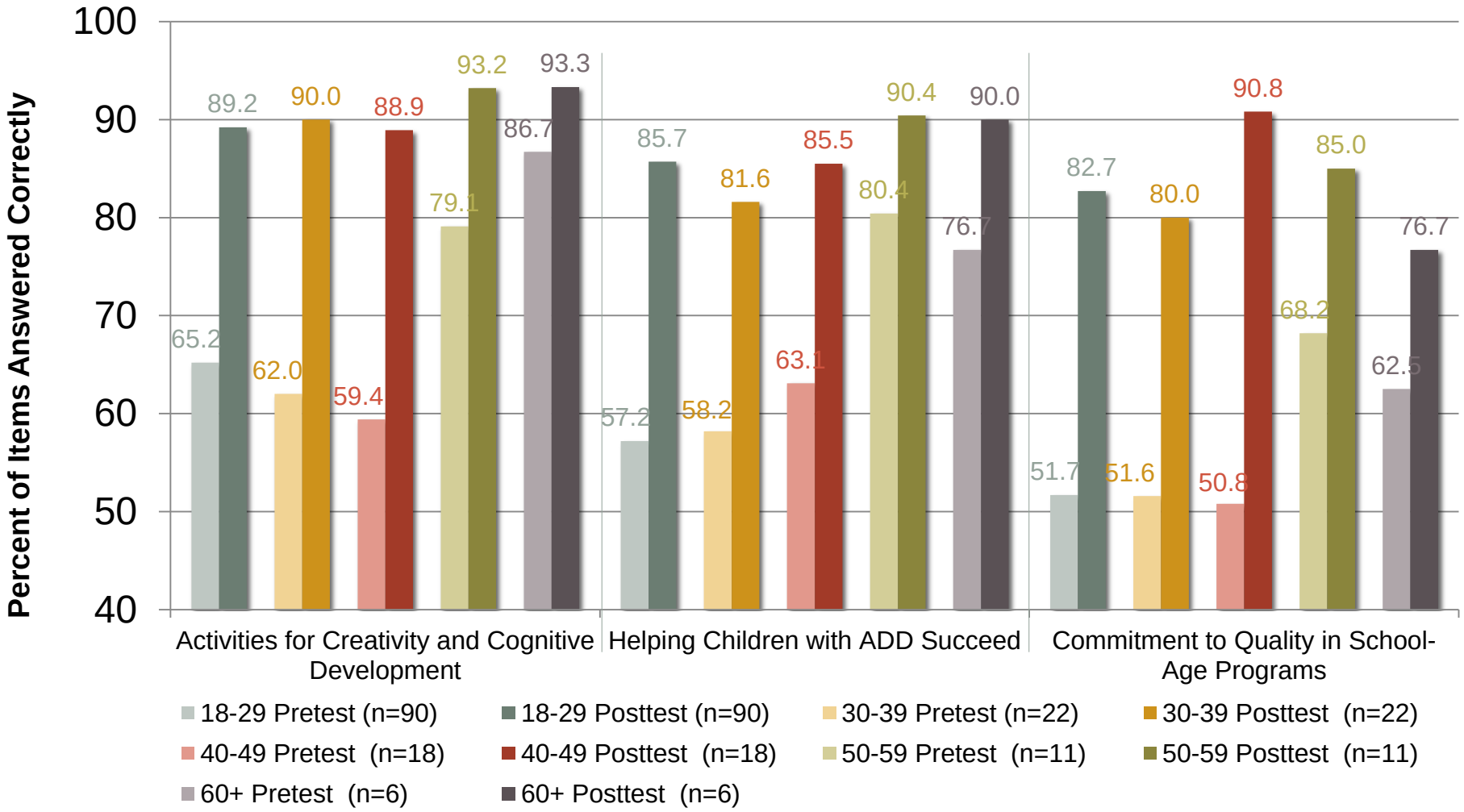
- All pre- to posttest differences are statistically significant.
- Posttest scores did not differ significantly between male and female participants.

Pretest to Posttest Gains: Age



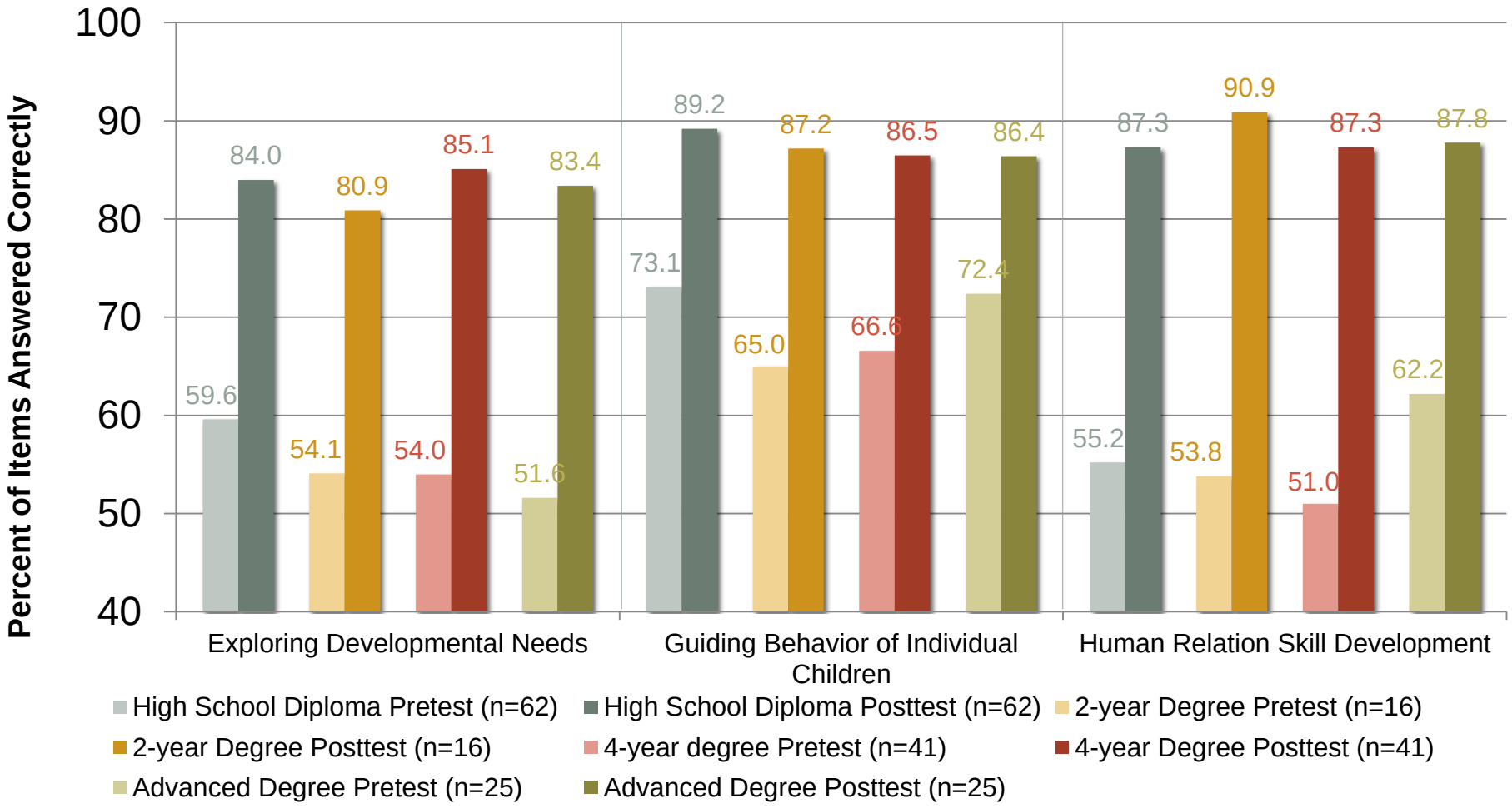
- Pre- to posttest differences for ages 18-29 through 40-49 are statistically significant. Small sample sizes for ages 50-59 and 60+ limit the ability to analyze for these groups.
- Posttest scores did not differ significantly by age for these three courses.

Pretest to Posttest Gains: Age



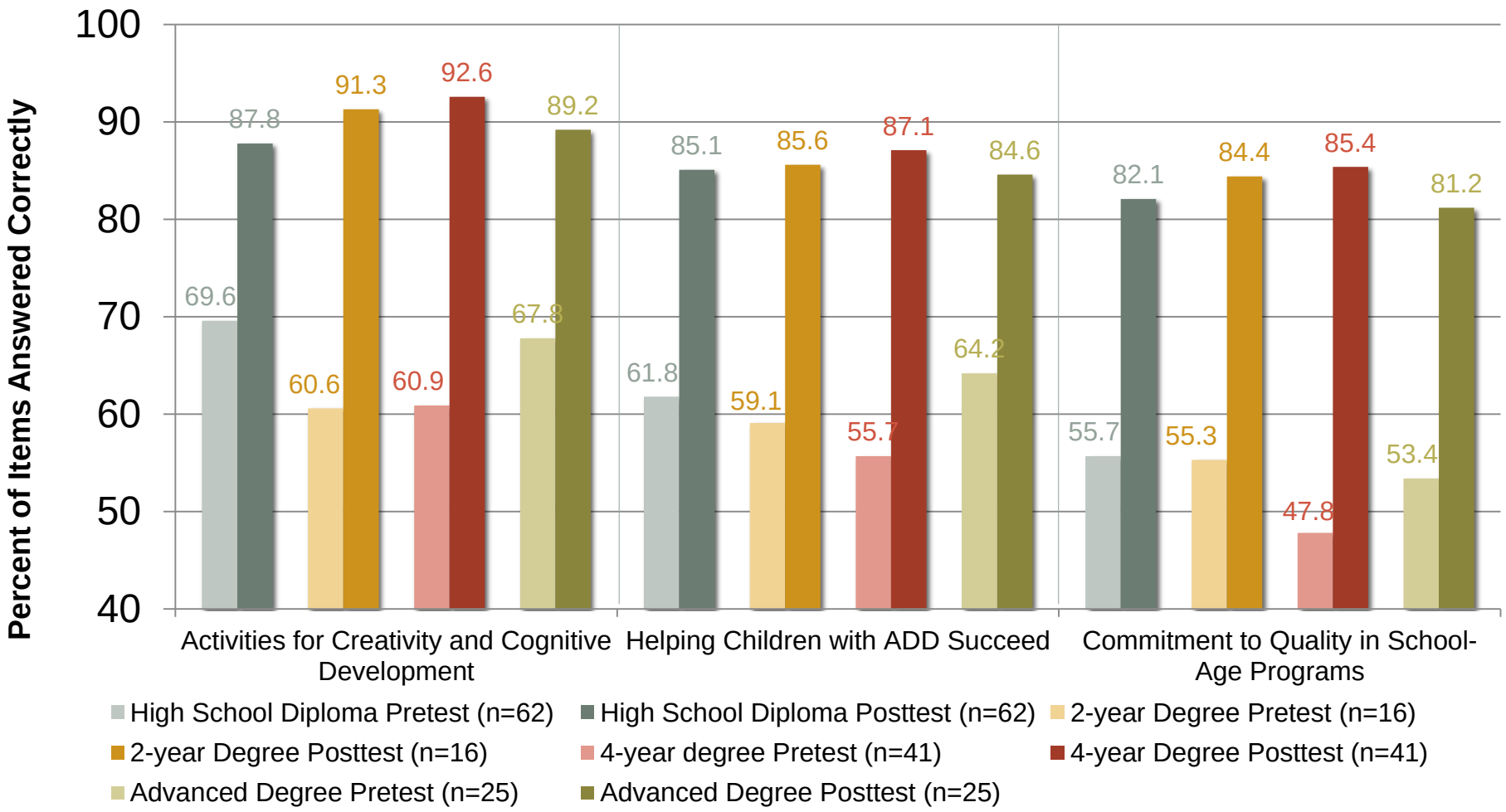
- Pre- to posttest differences for ages 18-29 through 40-49 are statistically significant. Small sample sizes for ages 50-59 and 60+ limit the ability to analyze for these groups.
- Posttest scores differed significantly between 30-39 and 40-49 year old participants for the final course displayed. All other posttest scores did not differ significantly based on participant age.

Pretest to Posttest Gains: Education Level



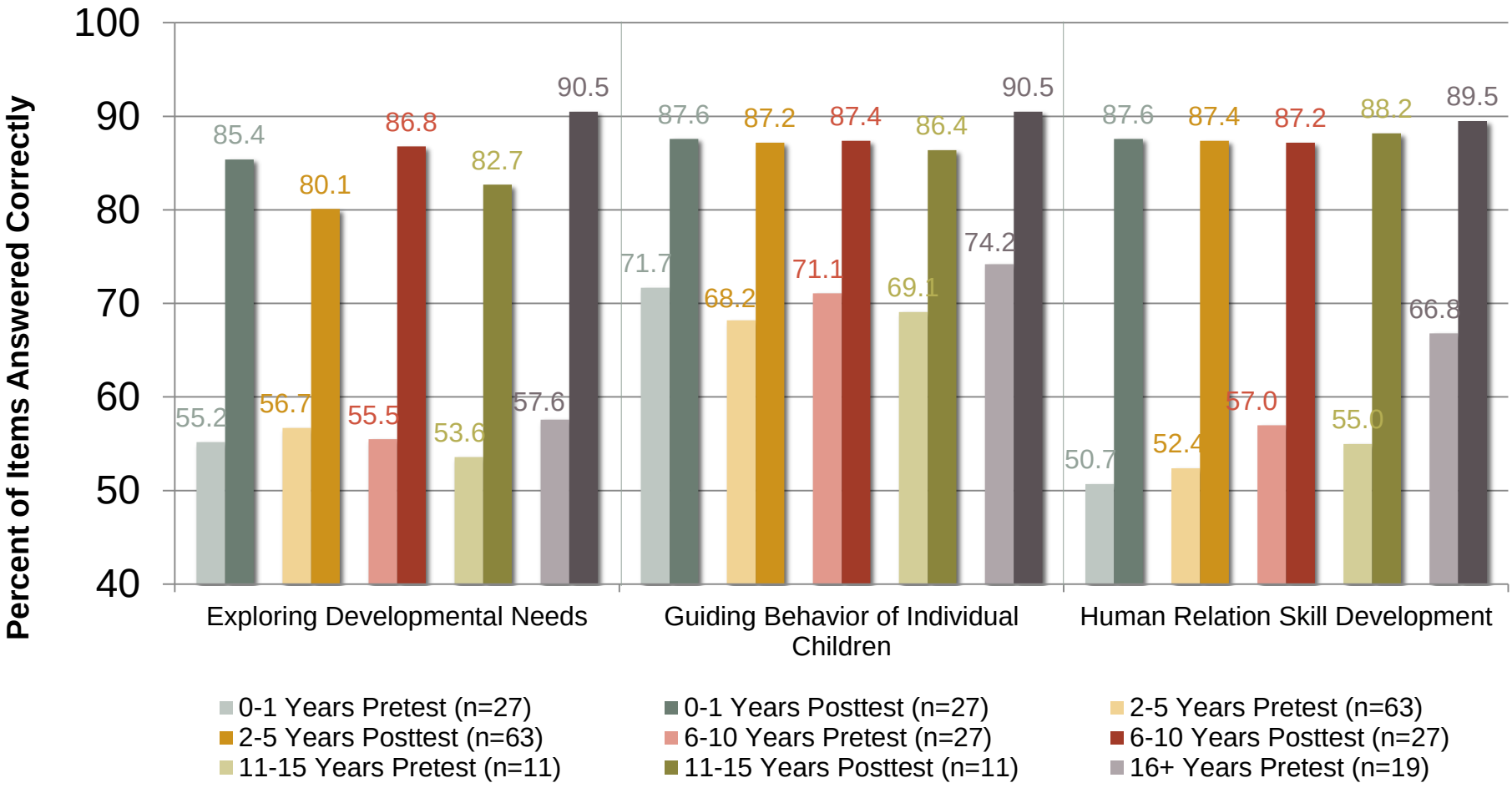
- Pre- to posttest differences for were statistically significant for each education level-based group.
- Posttest scores did not differ significantly based on education level.

Pretest to Posttest Gains: Education Level



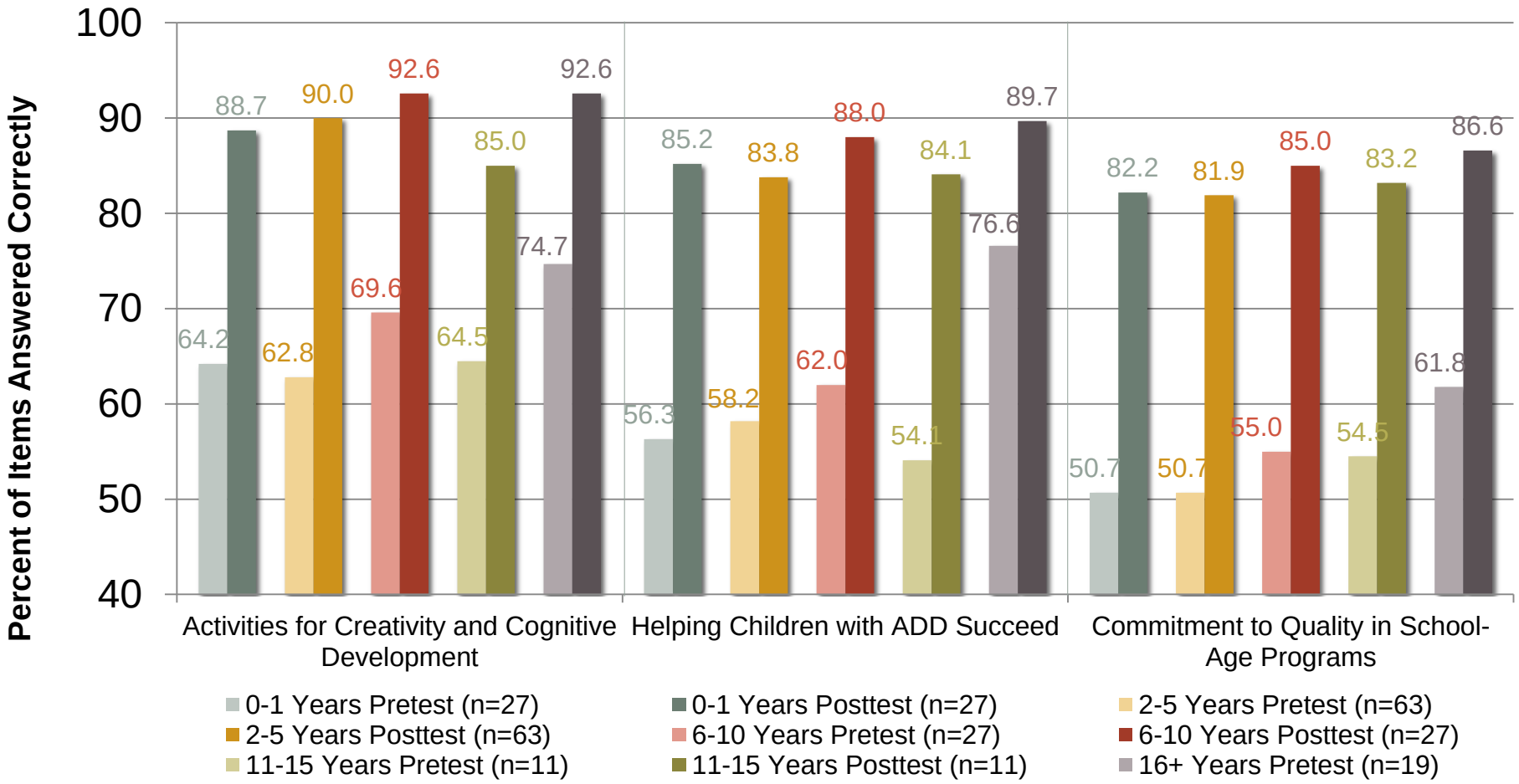
- Pre- to posttest differences for were statistically significant for each education level-based group.
- Posttest scores did not differ significantly based on education level.

Pretest to Posttest Gains: Professional Experience



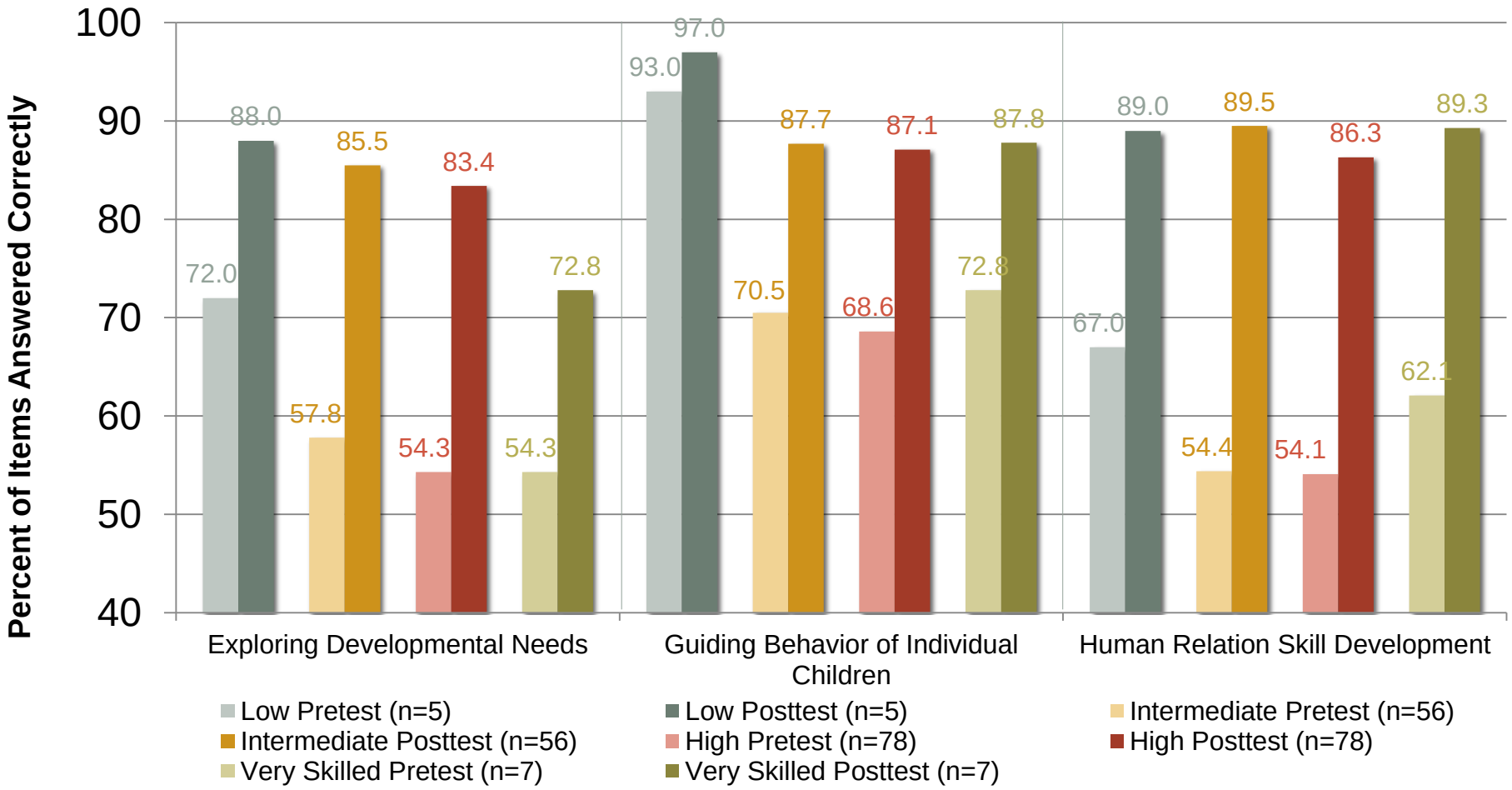
- Pre- to posttest differences for were statistically significant for each professional experience-based group.
- Posttest scores did not differ significantly based on years of professional experience.

Pretest to Posttest Gains: Professional Experience



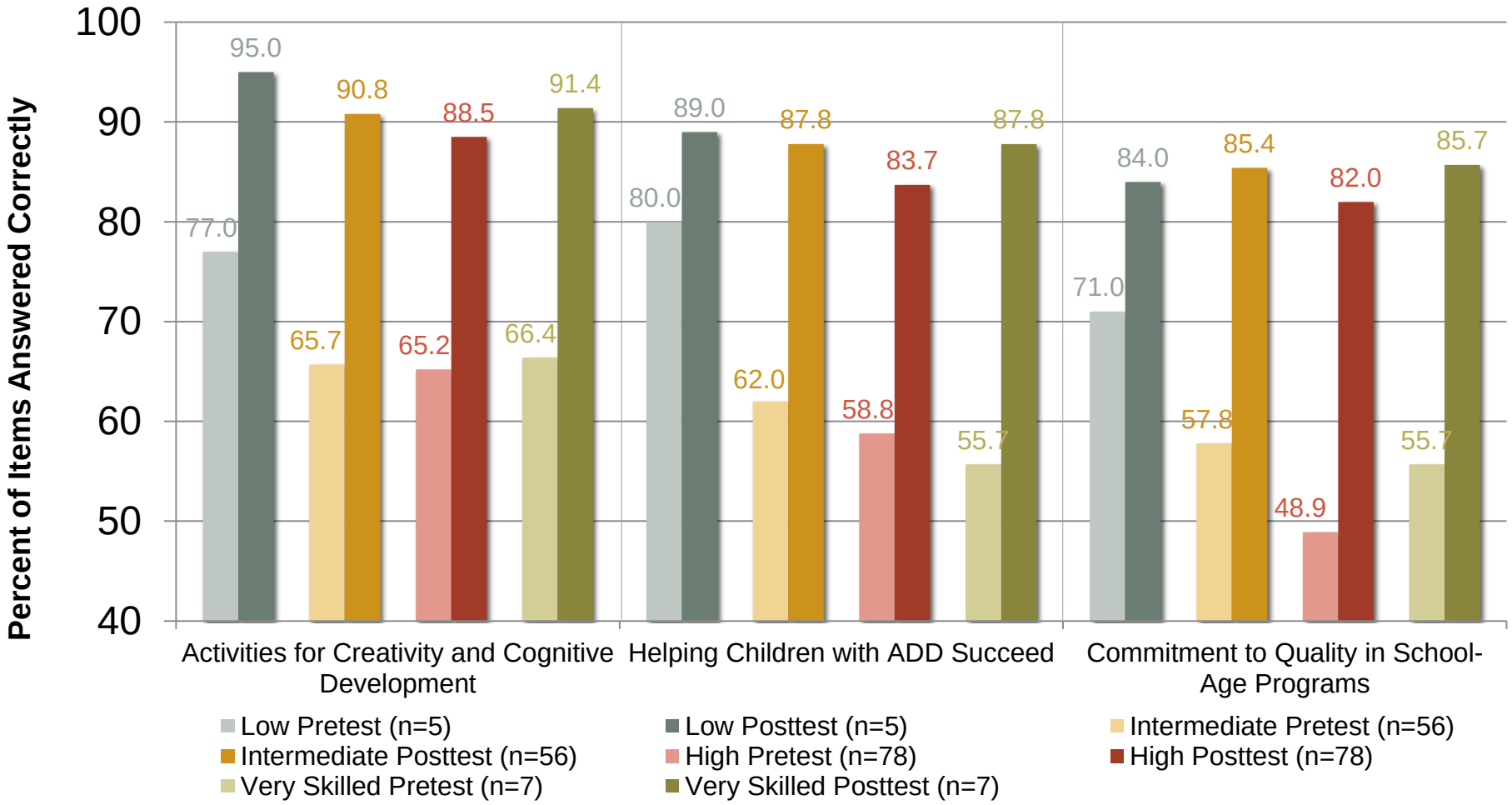
- Pre- to posttest differences for were statistically significant for each professional experience-based group.
- Posttest scores did not differ significantly based on years of professional experience.

Pretest to Posttest Gains: Computer Skills



- Pre- to posttest differences for intermediate and high computer skills groups are statistically significant. Small sample sizes for the low and very skilled groups limit the ability to analyze for these groups.
- Posttest scores did not differ significantly based on computer skills between intermediate and high computer skills groups. Small sample sizes for the low and very skilled groups limit the ability to analyze for these groups.

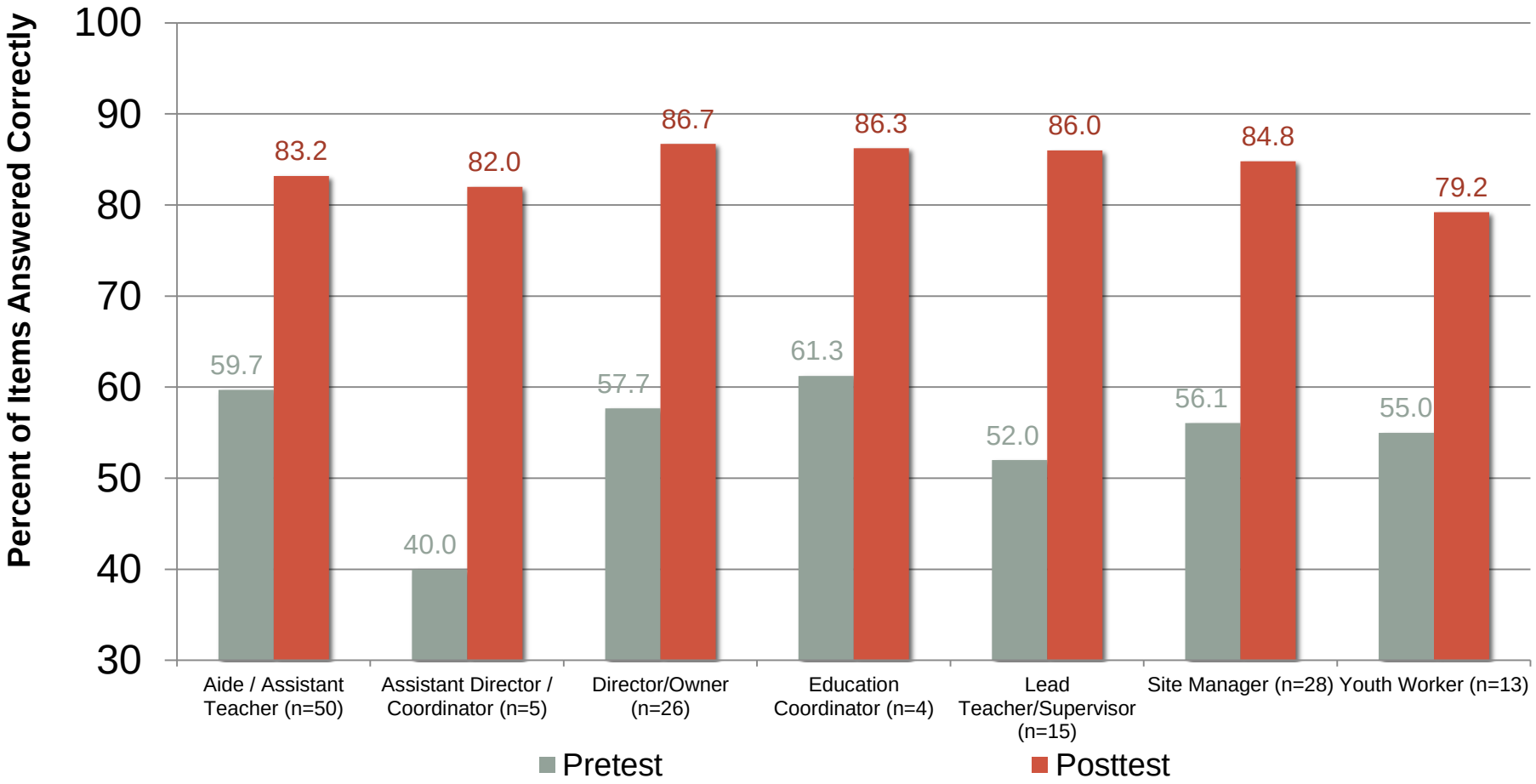
Pretest to Posttest Gains: Computer Skills



- Pre- to posttest differences for intermediate and high computer skills groups are statistically significant. Small sample sizes for the low and very skilled groups limit the ability to analyze for these groups.
- Posttest scores did not differ significantly based on computer skills between intermediate and high computer skills groups. Small sample sizes for the low and very skilled groups limit the ability to analyze for these groups.

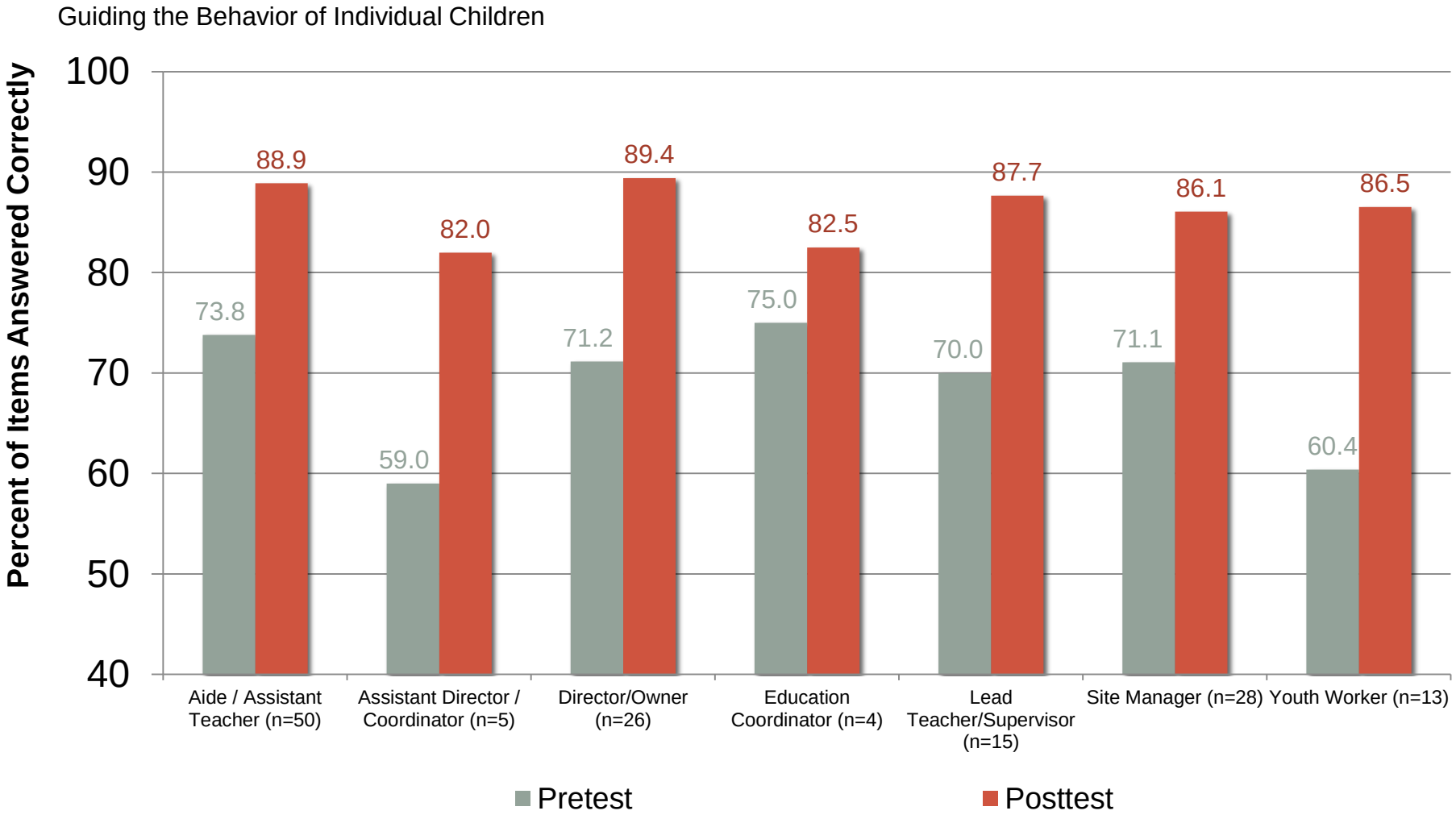
Pretest to Posttest Gains: Course 3, by Position

Exploring Developmental Needs and Characteristics of Different Age Groups: Implications for Programming



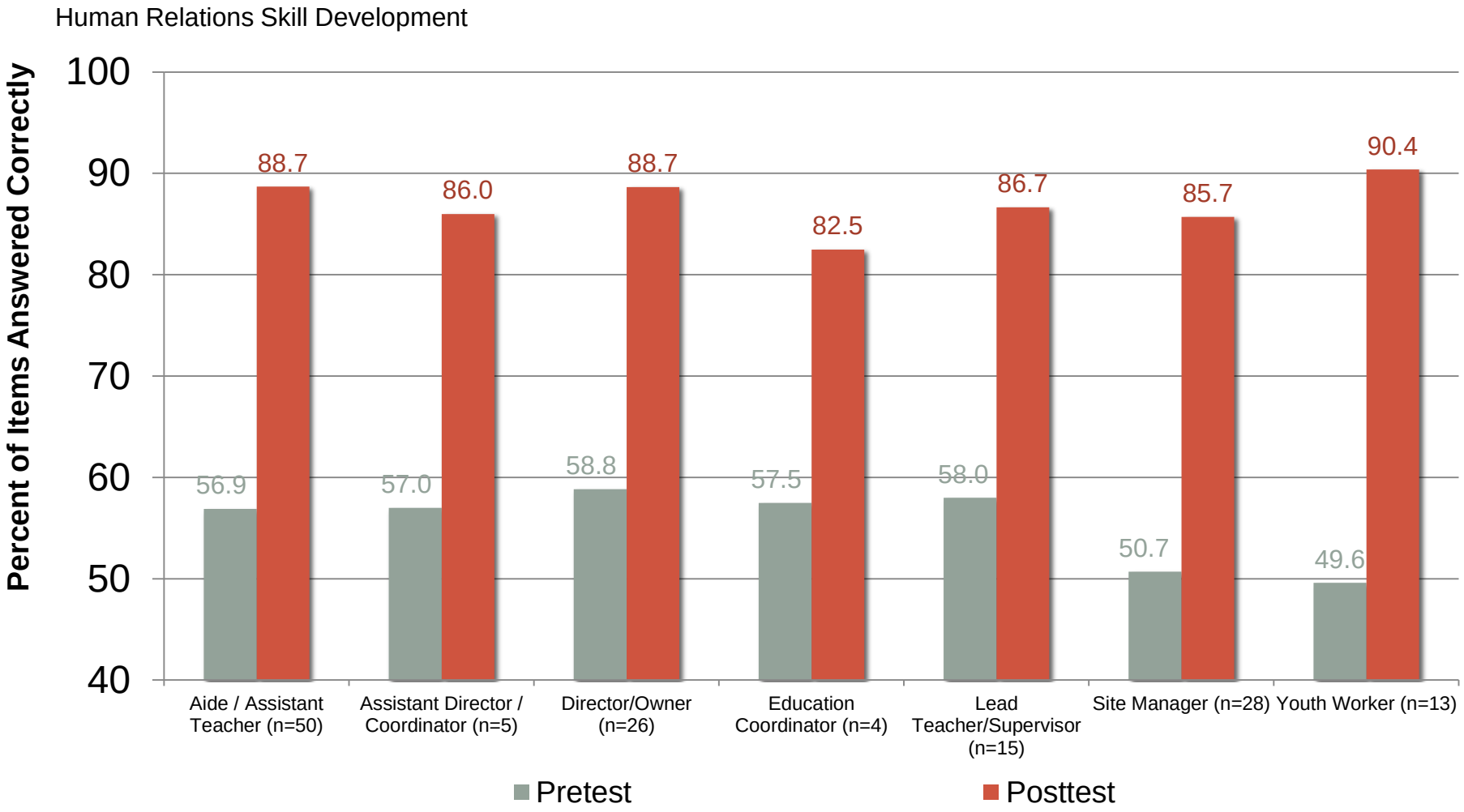
- Pre- to posttest differences for Aide/Assistant Teacher, Director/Owner, Lead Teacher/Supervisor and Site Manager are statistically significant. Small sample sizes limit the ability to analyze for the remaining groups.
- Posttest scores did not differ significantly based on position for the groups referenced by name in the preceding bullet. Small sample sizes limit the ability to analyze for the remaining groups.

Pretest to Posttest Gains: Course 6, by Position



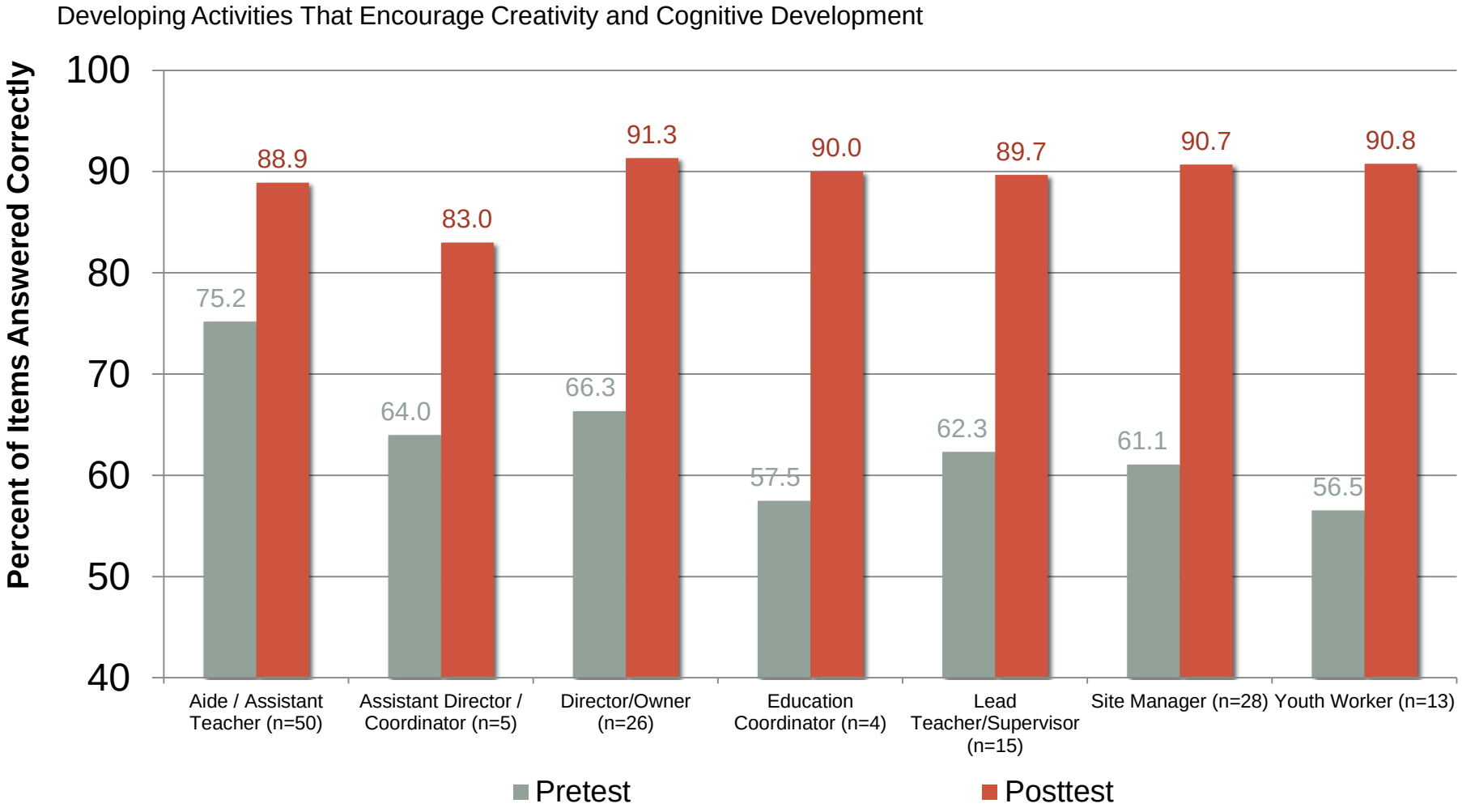
- Pre- to posttest differences for Aide/Assistant Teacher, Director/Owner, Lead Teacher/Supervisor and Site Manager are statistically significant. Small sample sizes limit the ability to analyze for the remaining groups.
- Posttest scores did not differ significantly based on position for the groups referenced by name in the preceding bullet. Small sample sizes limit the ability to analyze for the remaining groups.

Pretest to Posttest Gains: Course 8, by Position



- Pre- to posttest differences for Aide/Assistant Teacher, Director/Owner, Lead Teacher/Supervisor and Site Manager are statistically significant. Small sample sizes limit the ability to analyze for the remaining groups.
- Posttest scores did not differ significantly based on position for the groups referenced by name in the preceding bullet. Small sample sizes limit the ability to analyze for the remaining groups.

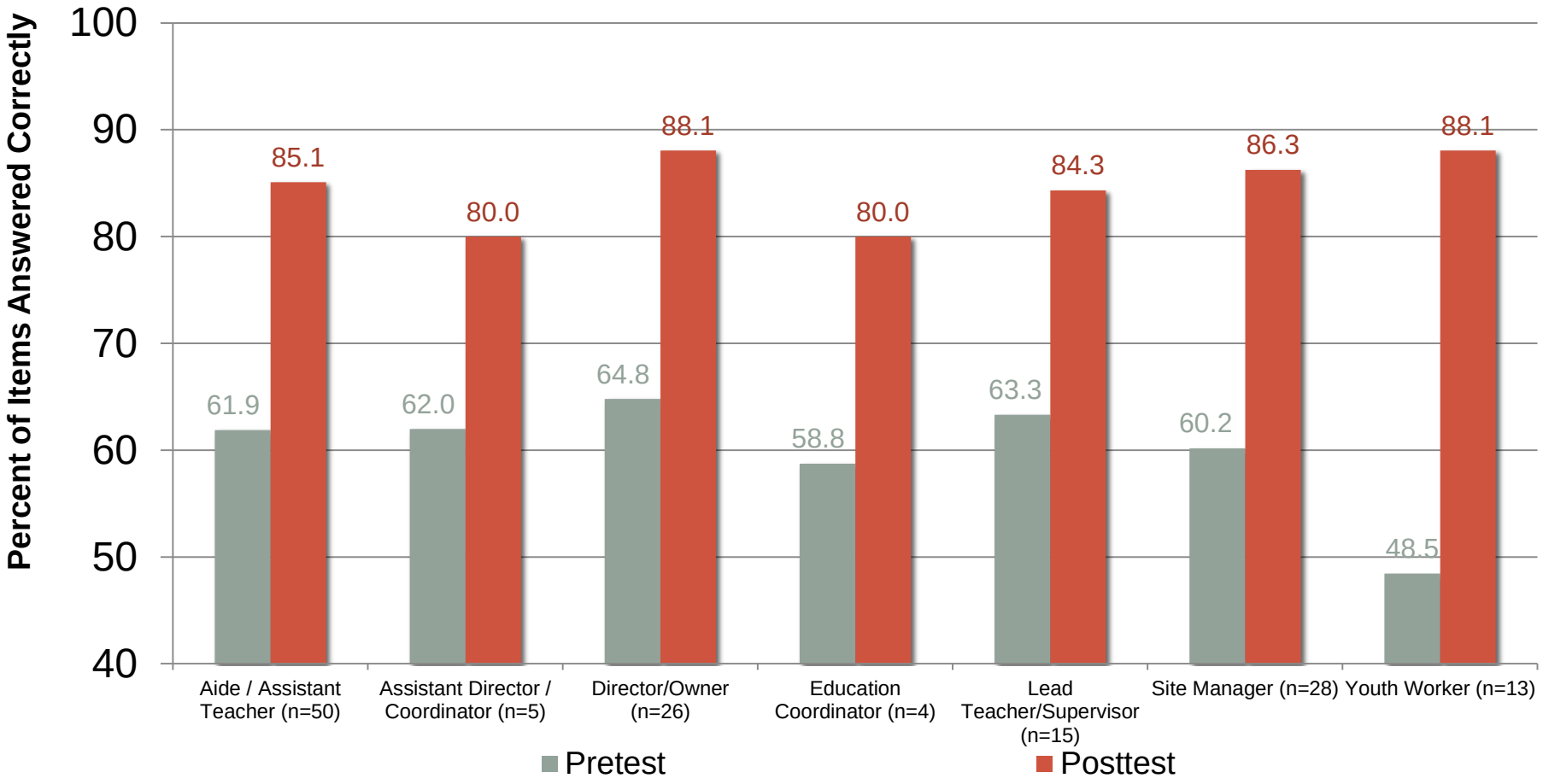
Pretest to Posttest Gains: Course 20, by Position



- Pre- to posttest differences for Aide/Assistant Teacher, Director/Owner, Lead Teacher/Supervisor and Site Manager are statistically significant. Small sample sizes limit the ability to analyze for the remaining groups.
- Posttest scores did not differ significantly based on position for the groups referenced by name in the preceding bullet. Small sample sizes limit the ability to analyze for the remaining groups.

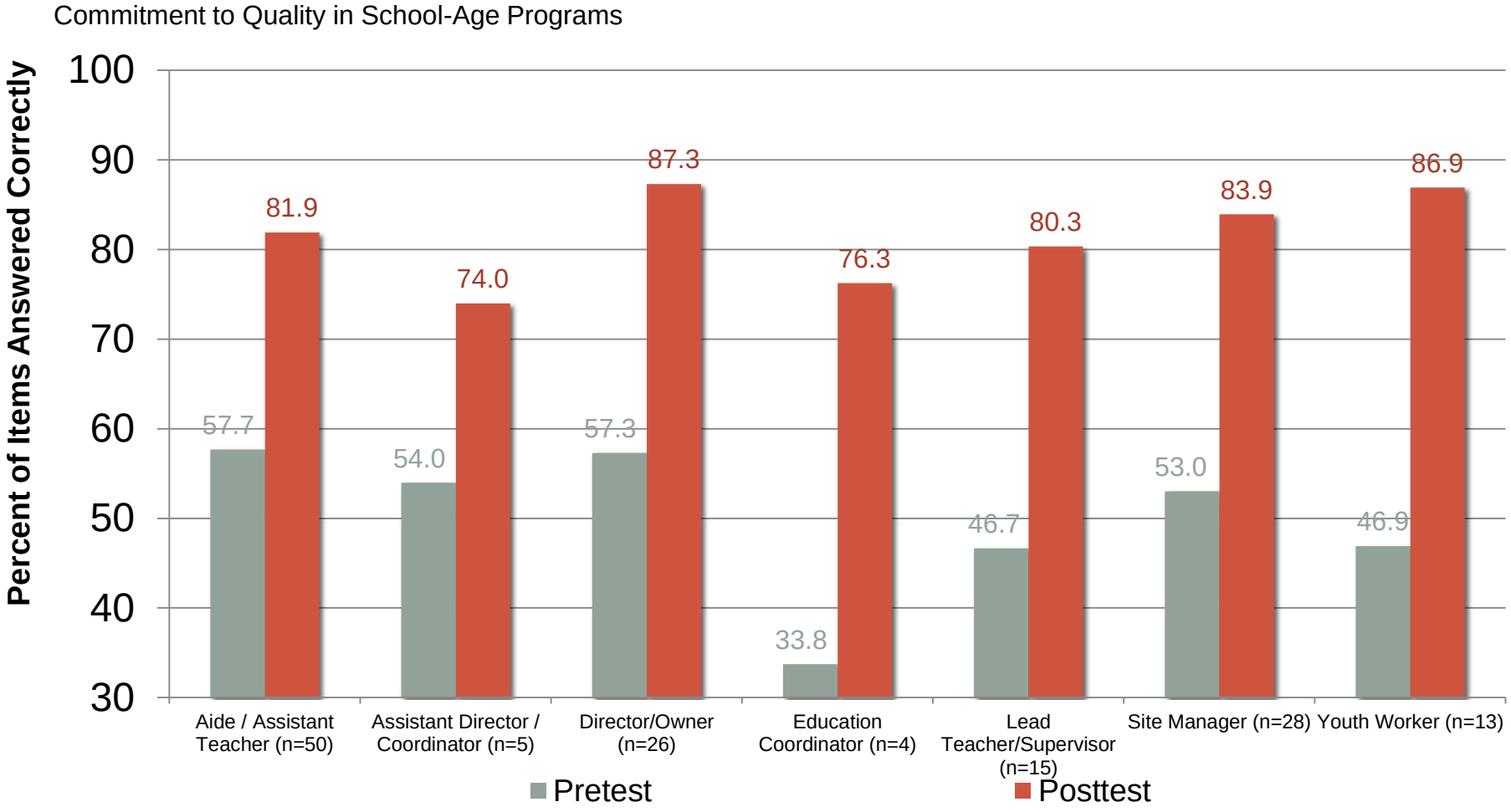
Pretest to Posttest Gains: Course 24, by Position

Helping Children with ADD Succeed in School-Age Programs



- Pre- to posttest differences for Aide/Assistant Teacher, Director/Owner, Lead Teacher/Supervisor and Site Manager are statistically significant. Small sample sizes limit the ability to analyze for the remaining groups.
- Posttest scores did not differ significantly based on position for the groups referenced by name in the preceding bullet. Small sample sizes limit the ability to analyze for the remaining groups.

Pretest to Posttest Gains: Course 28, by Position



- Pre- to posttest differences for Aide/Assistant Teacher, Director/Owner, Lead Teacher/Supervisor and Site Manager are statistically significant. Small sample sizes limit the ability to analyze for the remaining groups.
- Posttest scores did not differ significantly based on position for the groups referenced by name in the preceding bullet. Small sample sizes limit the ability to analyze for the remaining groups.

PARTICIPANT BELIEFS

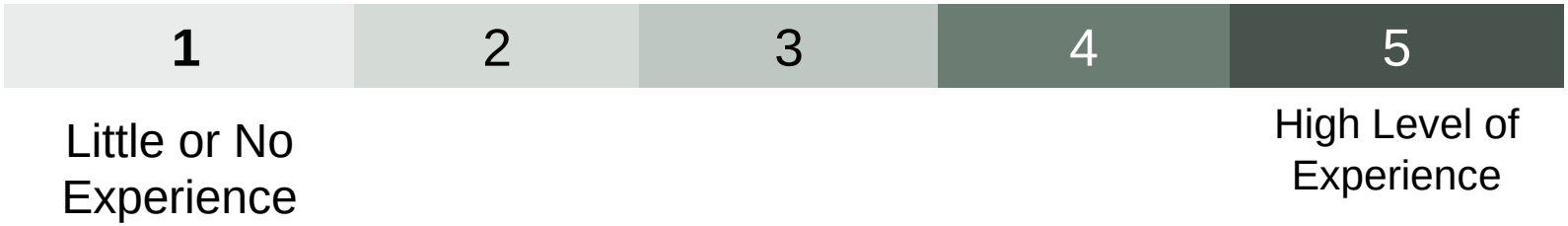
A comparison of participant self-assessment responses—prior to, and following, instruction

Presurvey to Postsurvey Comparisons

Project participants completed the same survey prior to their first course, and following their sixth course. The instrument challenged participants to self-assess their understanding of key concepts from each of the six courses.

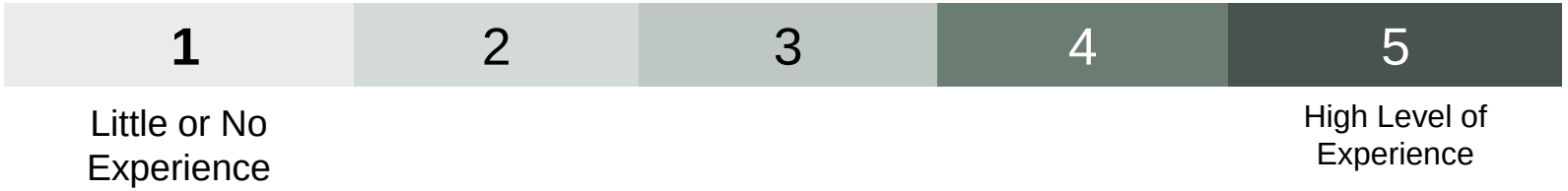
Participants were instructed as follows:

On a Scale of 1-5 (with 1 being very little to no experience and 5 being high level of experience) would you rate your current knowledge of [key concept]



Survey Questions

Our analysis used mean scores to understand pre-to-postsurvey differences. Mean scores represent the average score across the full group of participants on the provided rating scale.



As an example, a mean score of 4.75 for a given item would indicate a considerable level of experience that approaches the “High Level of Experience” category (equal to 5).

Summary of Survey Results

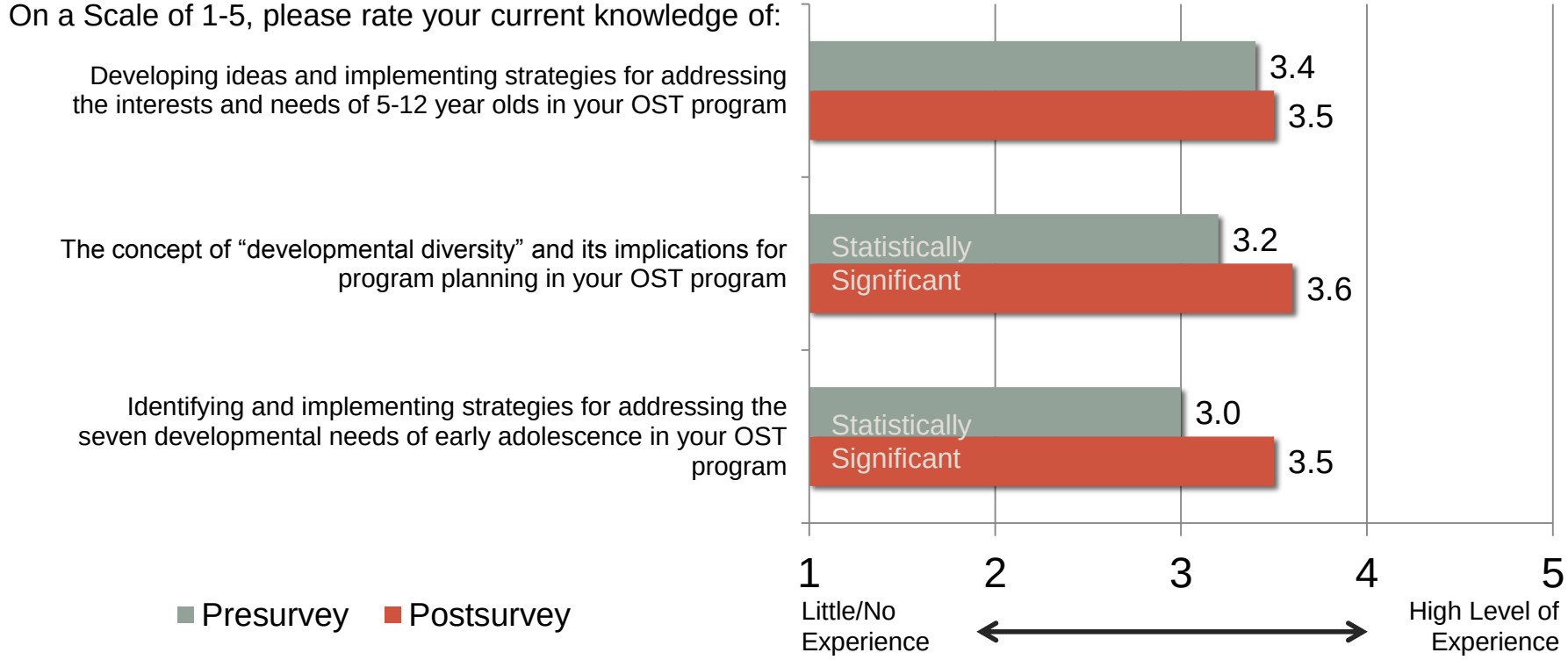
- All postsurvey ratings were higher relative to presurvey ratings, save a single item where the pre- and postsurvey means were identical.
- For 22 of 27 items, the participant-indicated growth was analyzed to be statistically significant (Paired *t*-Test procedure), indicating little to no chance the observed difference resulted from random chance.
- The highest levels of growth across a given course's content was observed for two of the most applied courses—*Developing Activities that Encourage Creativity and Cognitive Development,* and *Helping Children with ADD Succeed in School-Age Programs*
- As with the objective measures, postsurvey ratings did not differ significantly when participants were compared based on age, computer skills and education level.

Course 3

Exploring Developmental Needs and Characteristics of Different Age Groups: Implications for Programming

Cognitive Results (for reference)	Pretest	Posttest	Gain
Exploring Developmental Needs and Characteristics of Different Age Groups	56.1%	83.9%	+27.8

On a Scale of 1-5, please rate your current knowledge of:

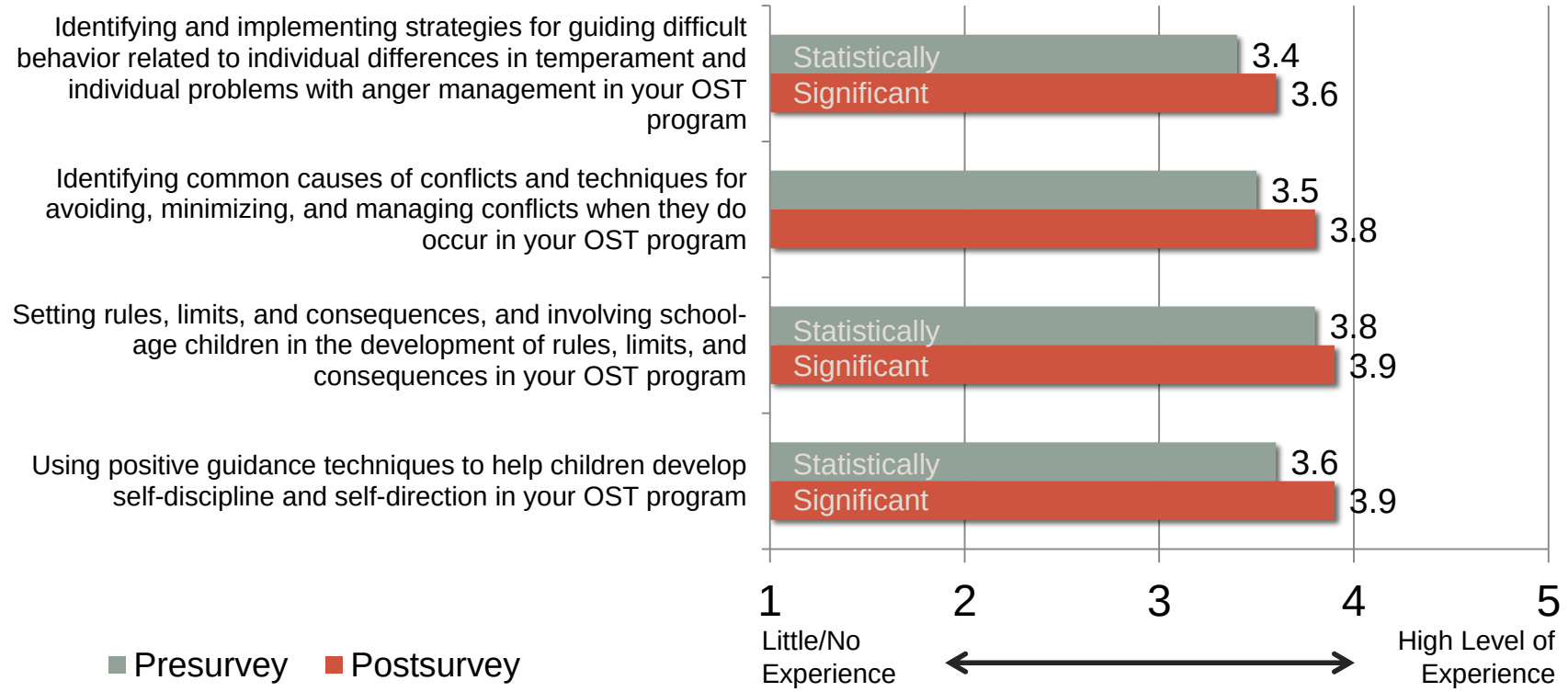


Course 6

Guiding the Behavior of Individual Children

Cognitive Results (for reference)	Pretest	Posttest	Gain
Guiding the Behavior of Individual Children	70.2%	87.7%	+17.5

On a Scale of 1-5, please rate your current knowledge of:

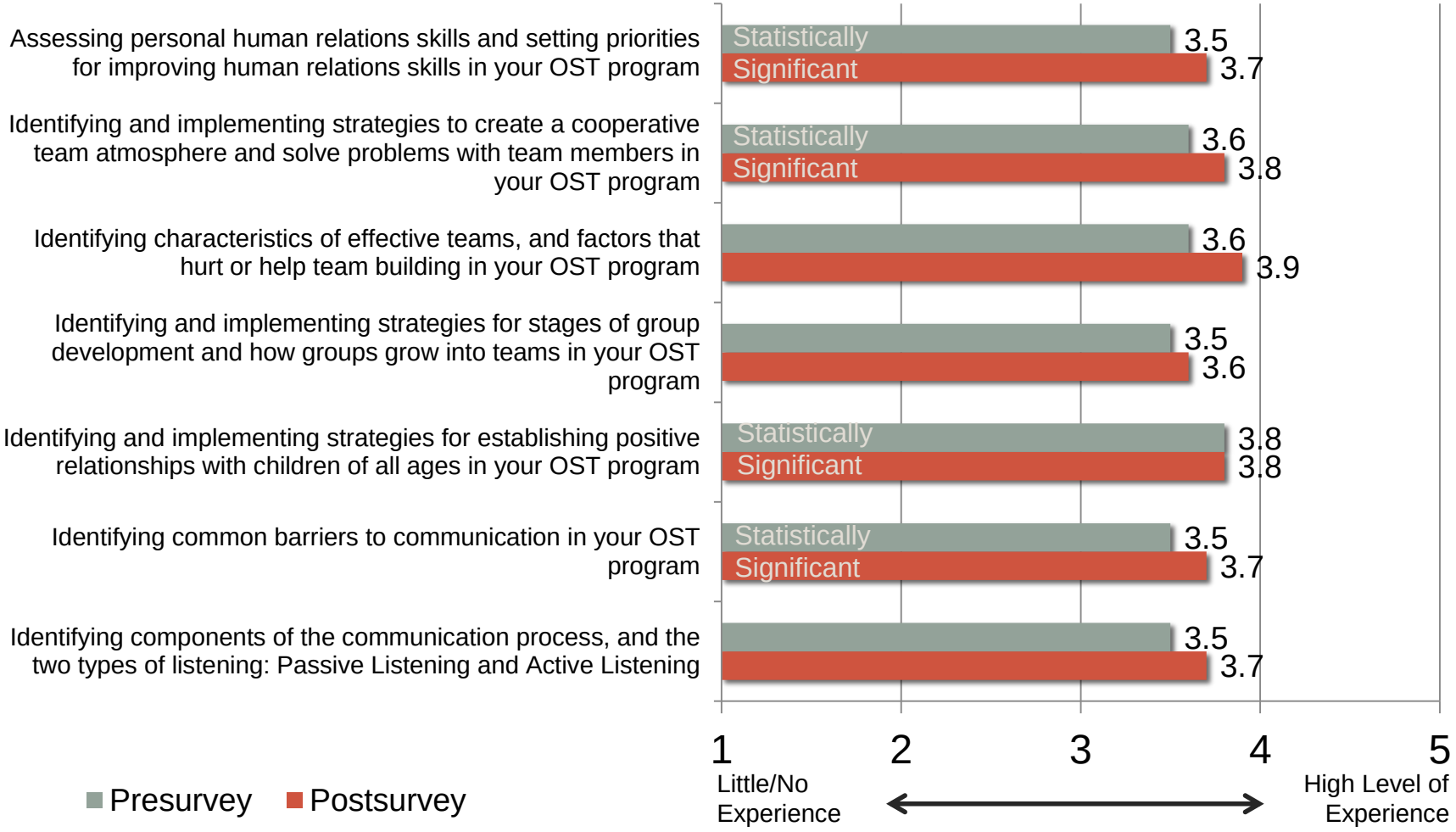


Course 8

Human Relations Skill Development

Cognitive Results (for reference)	Pretest	Posttest	Gain
Human Relations Skill Development	55.0%	87.7%	+32.7

On a Scale of 1-5, please rate your current knowledge of:

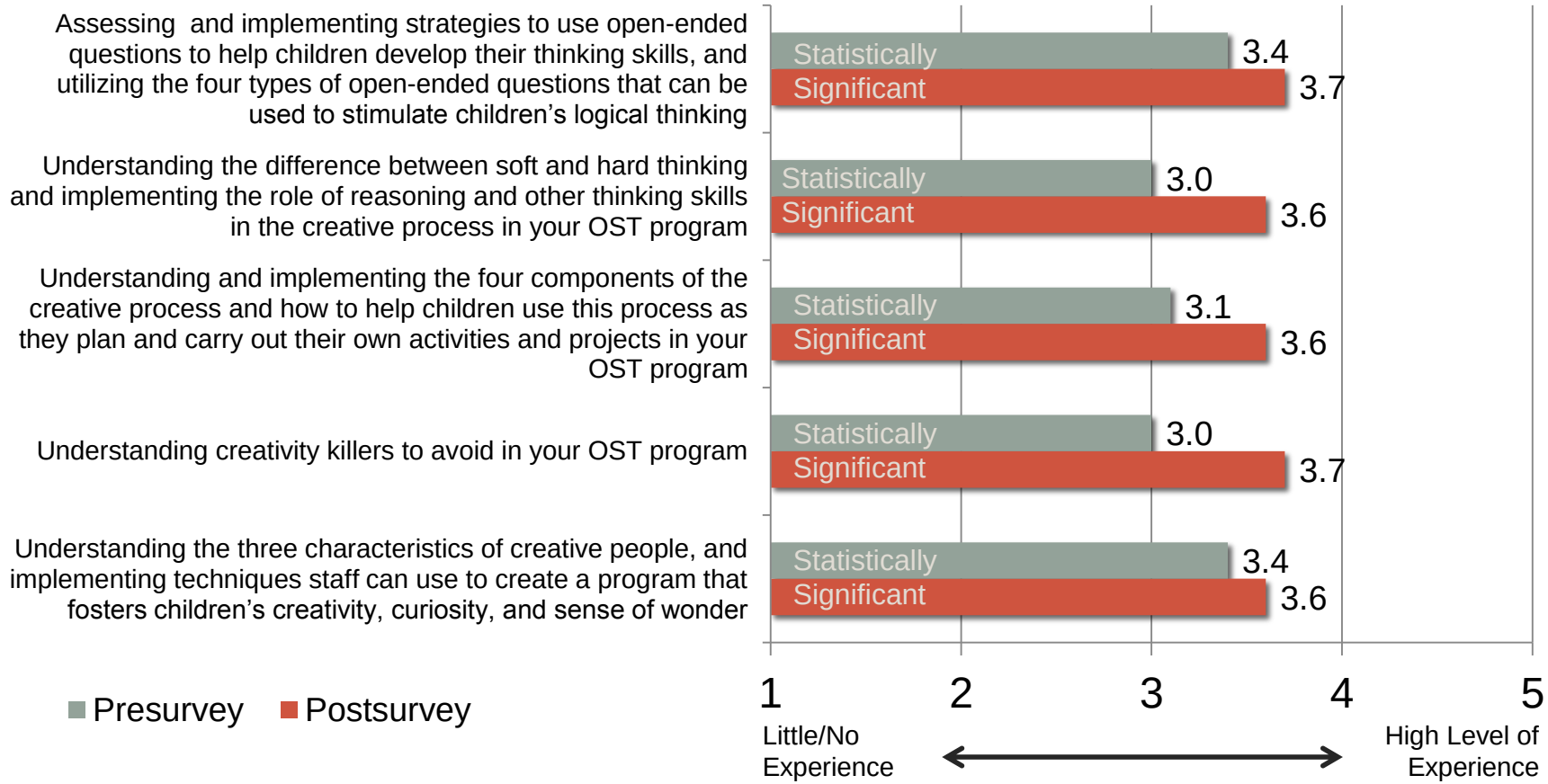


Course 20

Developing Activities That Encourage Creativity and Cognitive Development

Cognitive Results (for reference)	Pretest	Posttest	Gain
Developing Activities that Encourage Creativity and Cognitive Development	66.0%	89.8%	+23.8

On a Scale of 1-5, please rate your current knowledge of:

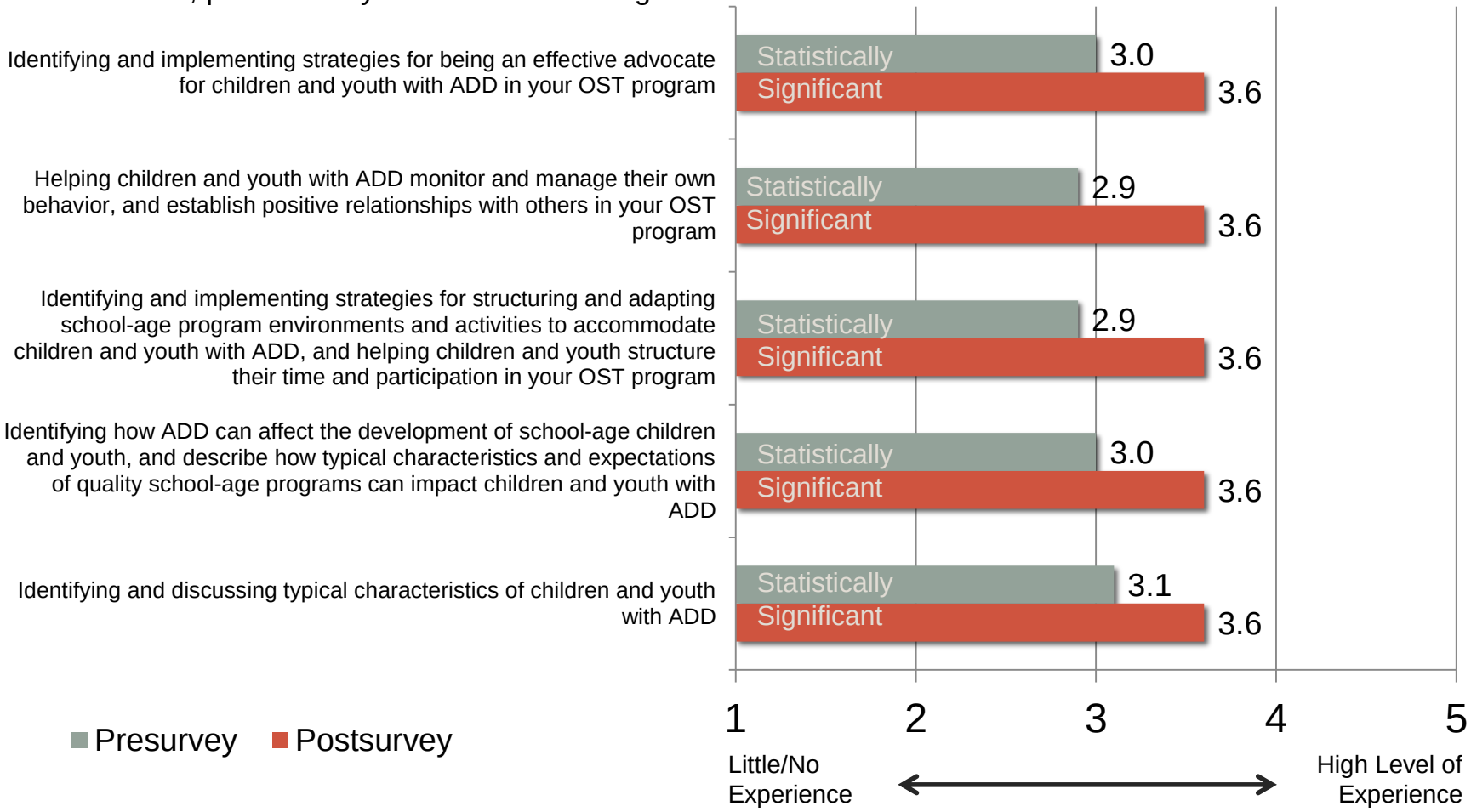


Course 24

Helping Children with ADD Succeed in School-Age Programs

Cognitive Results (for reference)	Pretest	Posttest	Gain
Helping Children with ADD Succeed in School-Age Programs	60.6%	85.6%	+25.0

On a Scale of 1-5, please rate your current knowledge of:



Course 28

Commitment to Quality in School-Age Programs

Cognitive Results (for reference)	Pretest	Posttest	Gain
Commitment to Quality in School-Age Programs	53.2%	83.2%	+30.0

On a Scale of 1-5, please rate your current knowledge of: