

Capturing Meaningful Change

The Influence of Measurement Decisions
on Evaluations of Intervention
Effectiveness

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Measurement decisions that can influence --- our perception of intervention effectiveness

Boundedness

Characterizes the extent to which an outcome is generalized

Proximity

Characterizes the extent to which the outcome was directly taught or modeled

Correlated Measurement Error

Characterizes the risk associated with training parents/teachers as interventionists and including them as assessors

How do we think about learning that extends beyond intervention?

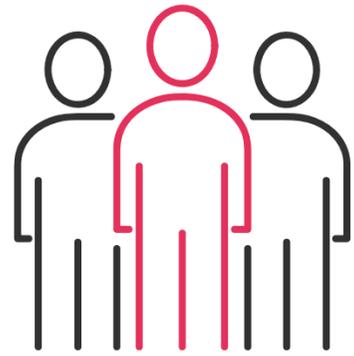


Near/Far Transfer

Proximal/Distal

Generalization

Previous Conceptions



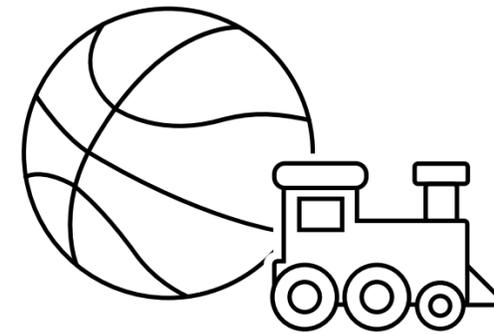
Different People

Different interaction partners



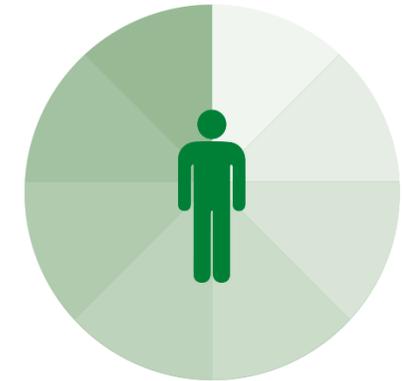
Different Settings

Meaningfully different settings (not just different rooms, but different contexts)



Different Materials

Meaningfully different relevant items (e.g., different types of toys rather than toys that are superficially different)



Different Behaviors

Responses that were not directly targeted in the intervention

"Setting/Stimulus Generalization"

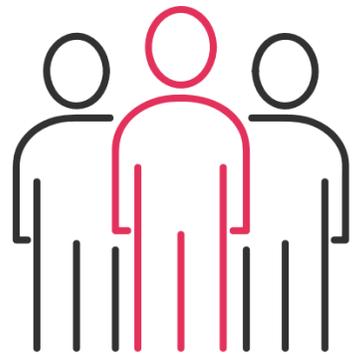
"Response Generalization"

A Continuum of Difference in Context

Context-bound



Highly Generalized



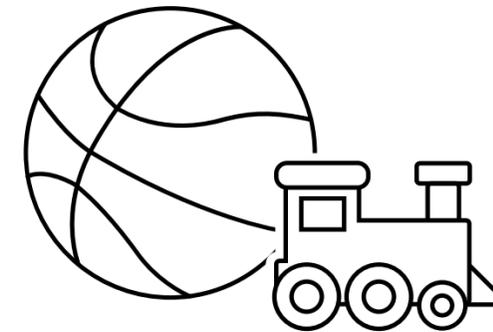
Different People

Different interaction partners



Different Settings

Meaningfully different settings (not just different rooms, but different contexts)



Different Materials

Meaningfully different relevant items (e.g., different types of toys rather than toys that are superficially different)



Different Interaction Style

Difference in the structure of the interaction (e.g., more naturalistic or playful versus structured and adult-led)

A Continuum of Difference in Learning

Proximal



Distal



Exact Targets



**Similar
Nontargets**



**Broad Change
Within Domain**



**Broad Change
Across Domains**



The implicit assumption is that learning that extends far beyond the context and targets of intervention reflects a *change in development.*

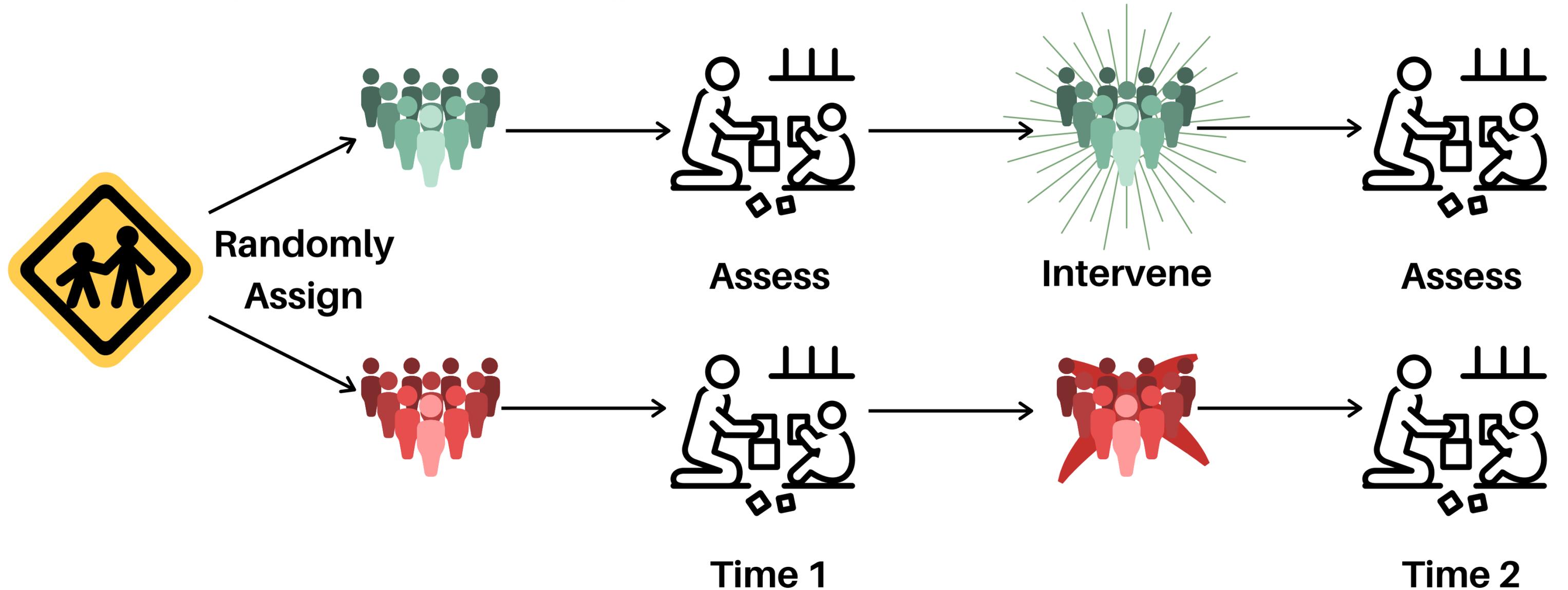
Measurement Challenges When Caregivers are Agents of Change



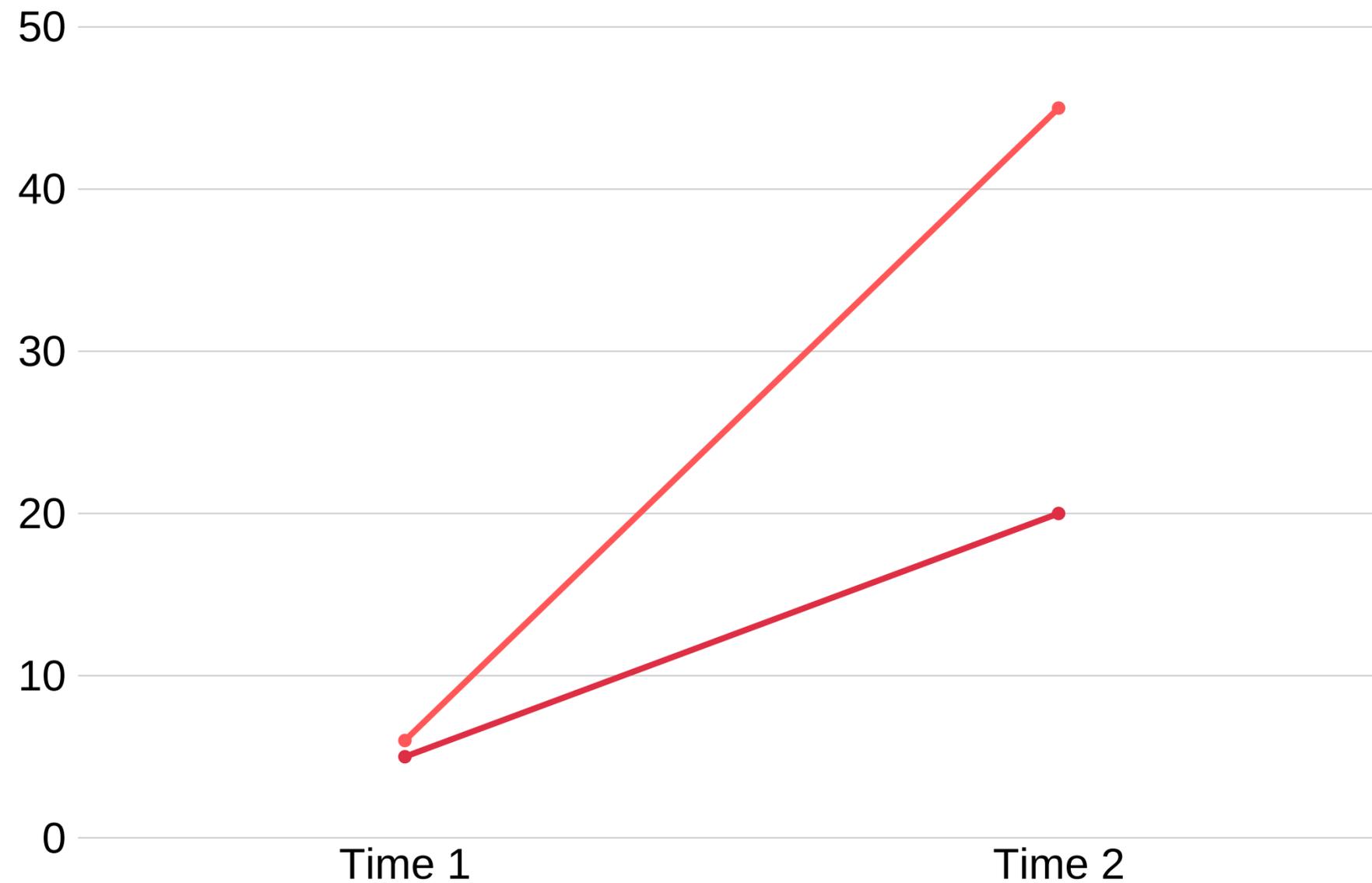
- **Ideal Agents of Generalized Change**
- **Natural Interaction Partners**
- **Present for large swaths of a child's day**



Measurement Challenges When Caregivers are Agents of Change



Measurement Challenges When Caregivers are Agents of Change



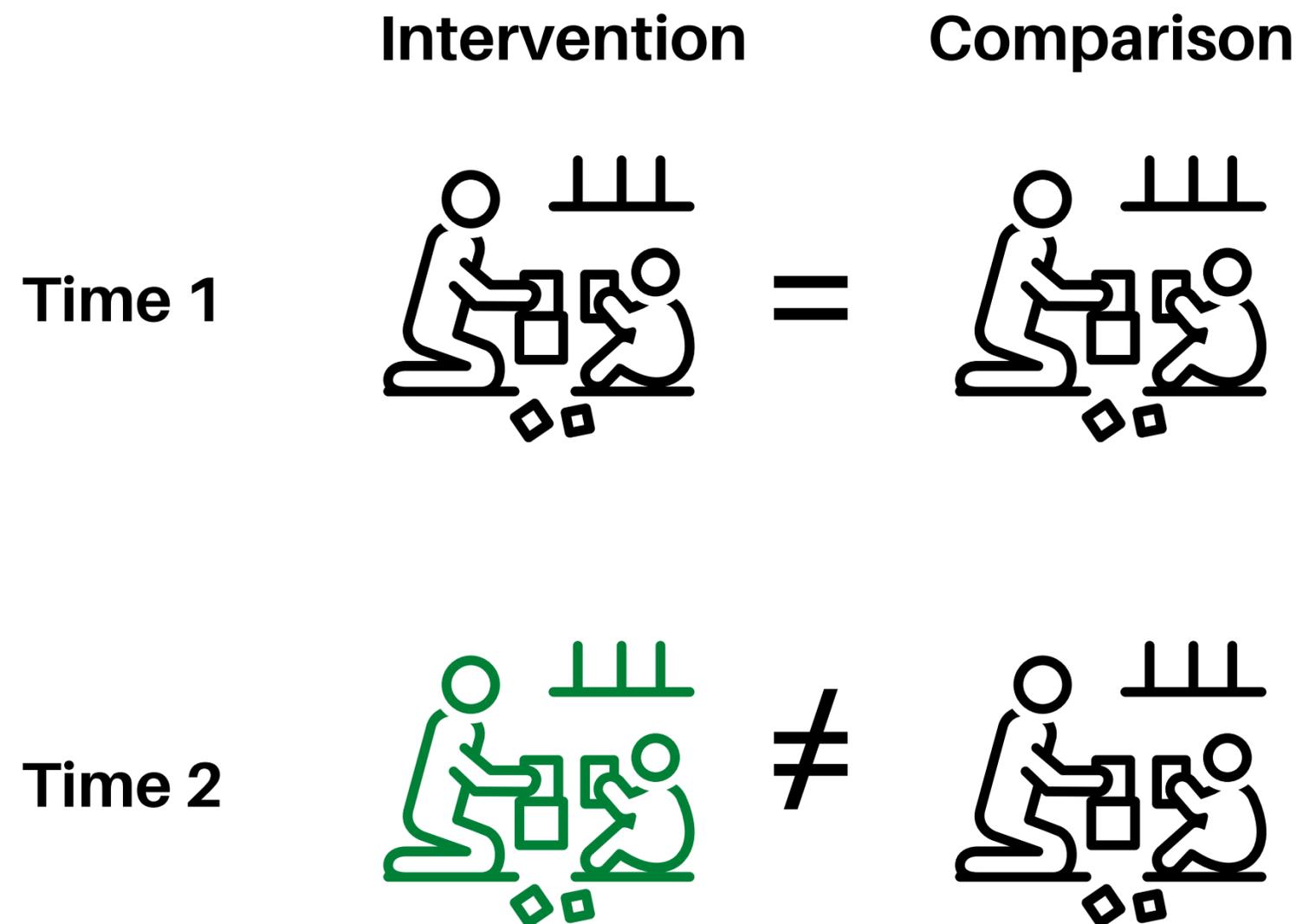
Problems with Interpretation

We may conclude that our intervention facilitated improvements, but in fact we have systematically biased our results in favor of the intervention group

Measurement Challenges When Caregivers are Agents of Change

The assessment context has changed, but only for one group.

Although outcomes in both groups are being assessed in the context of a parent-child free play session, the assessment context for the intervention group is parent-child free play with a uniformly responsive caregiver, and the assessment context for the comparison group is parent-child free play with an untrained (and potentially less responsive) caregiver.



Do these measurement characteristics have a quantifiable impact on intervention effects in autism intervention research?



Project AIM: Autism Intervention Meta-analysis



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Project AIM: Autism Intervention Meta-analysis



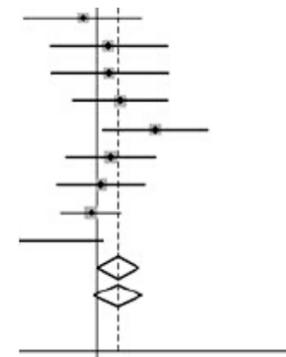
Comprehensive

Identified all group design studies of interventions for all outcomes for children with autism age 0-8 which featured an intervention and comparison group



Systematic

Systematically reviewed studies in terms of quality, and coded for participant, intervention, and outcome characteristics



Meta-analytic

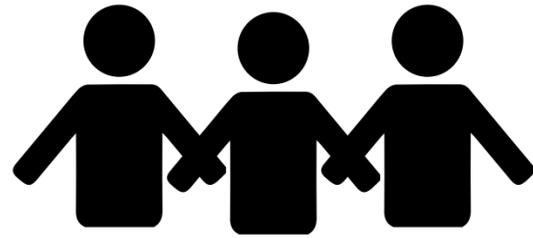
Meta-analysis allowed us to estimate the overall effect of different intervention approaches for different types of outcomes.



Ongoing

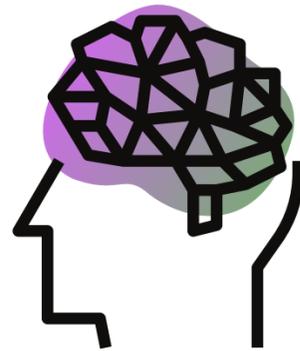
Now that we have estimated overall effects, we are examining the participant and intervention characteristics that influence intervention effectiveness for different outcomes.

Search Terms



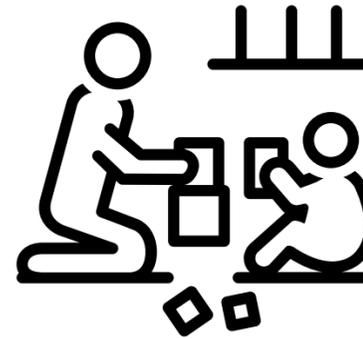
Young Children (age 0-8)

Child*
young
early



Autism

Autis*
ASD
PDD
Aspergers



Nonpharmacological Intervention

Intervention
therapy
teach*
treat*
program
package



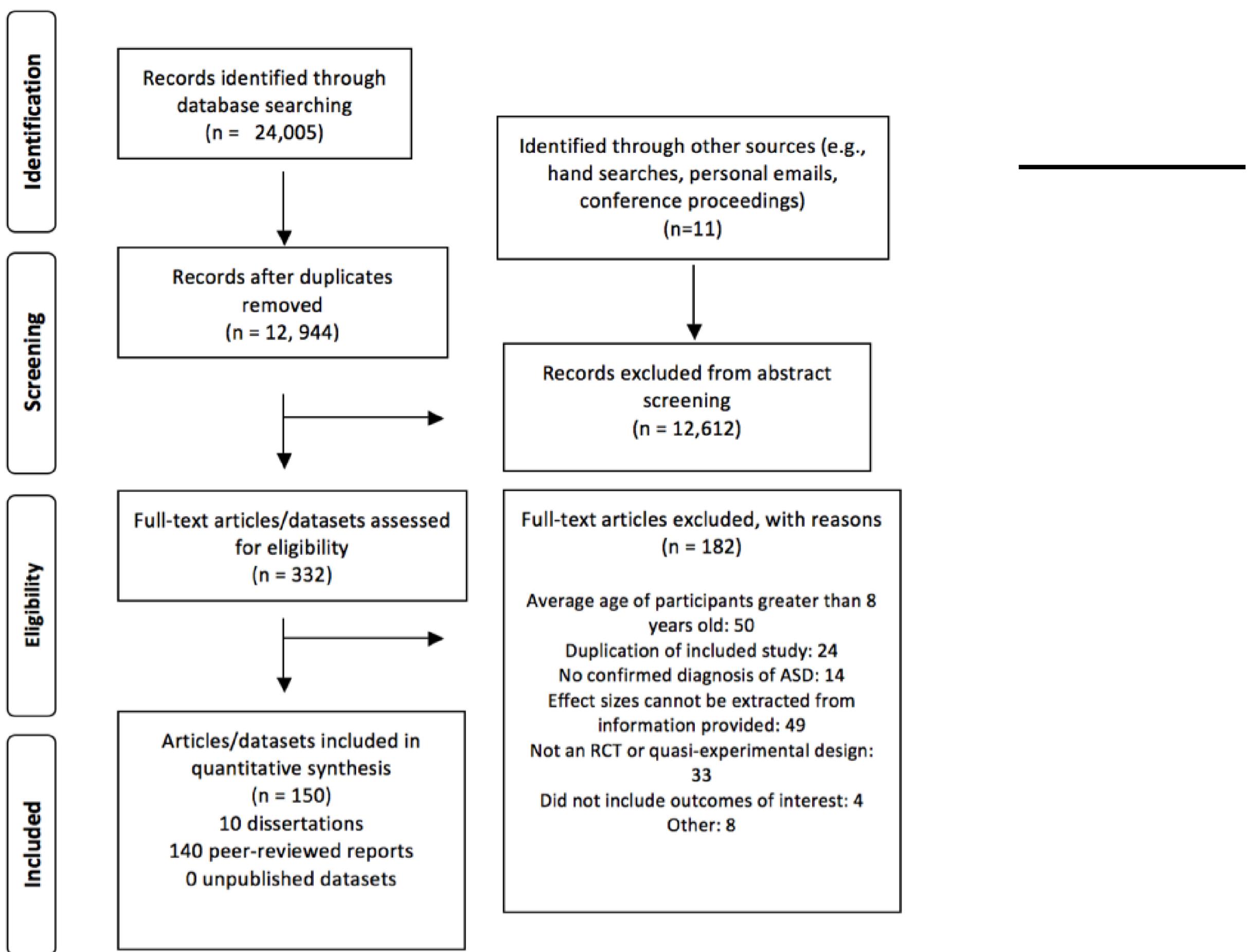
Usual Treatments or Control

Assign*
"Control group"
BAU
"wait list"
RCT
Random*
Quasi
"treatment group"
"intervention group"
"group design"
trial

OR

AND

PRISMA



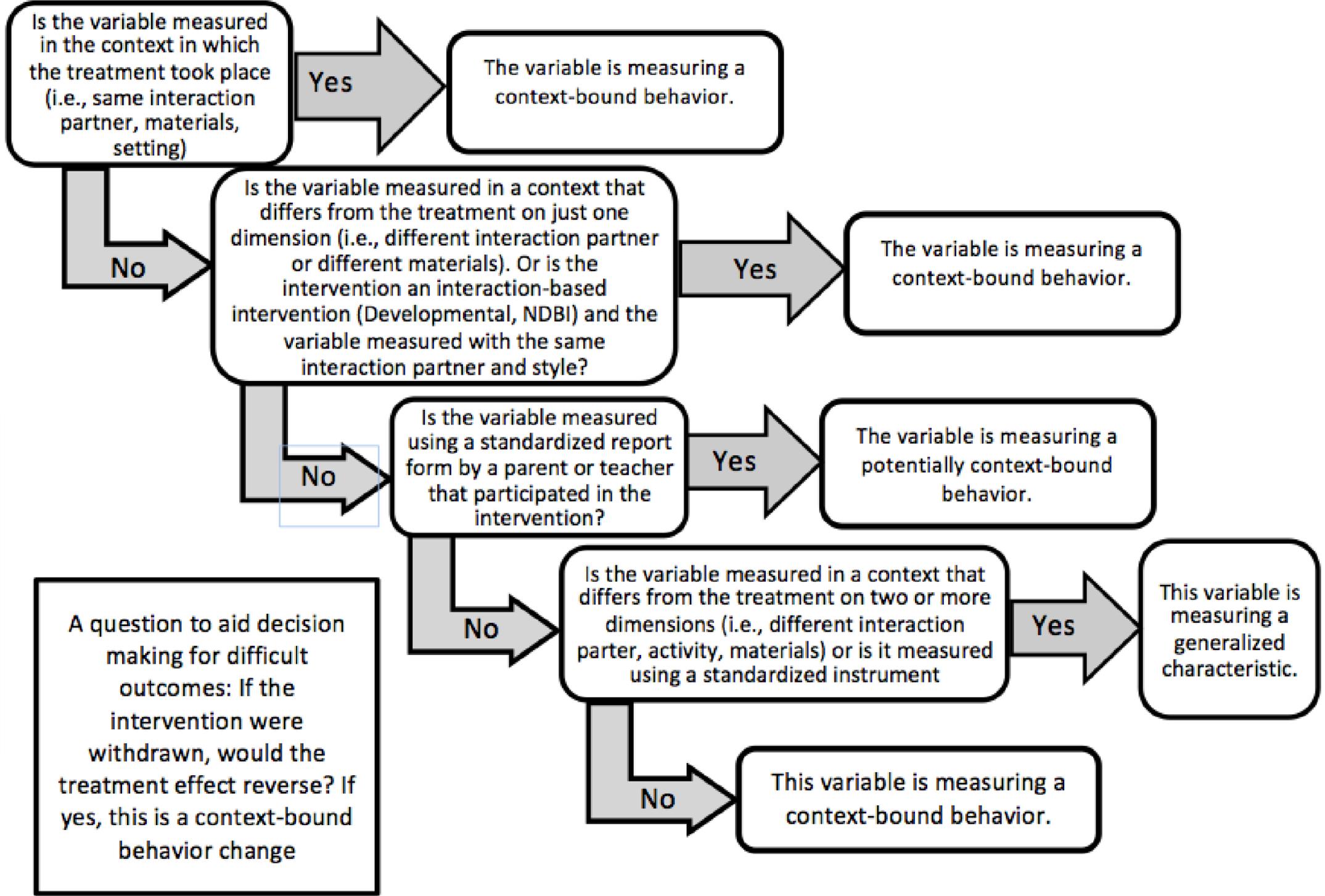


150 reports
130 studies
87 RCTs
6,240 participants
1,615 effect sizes

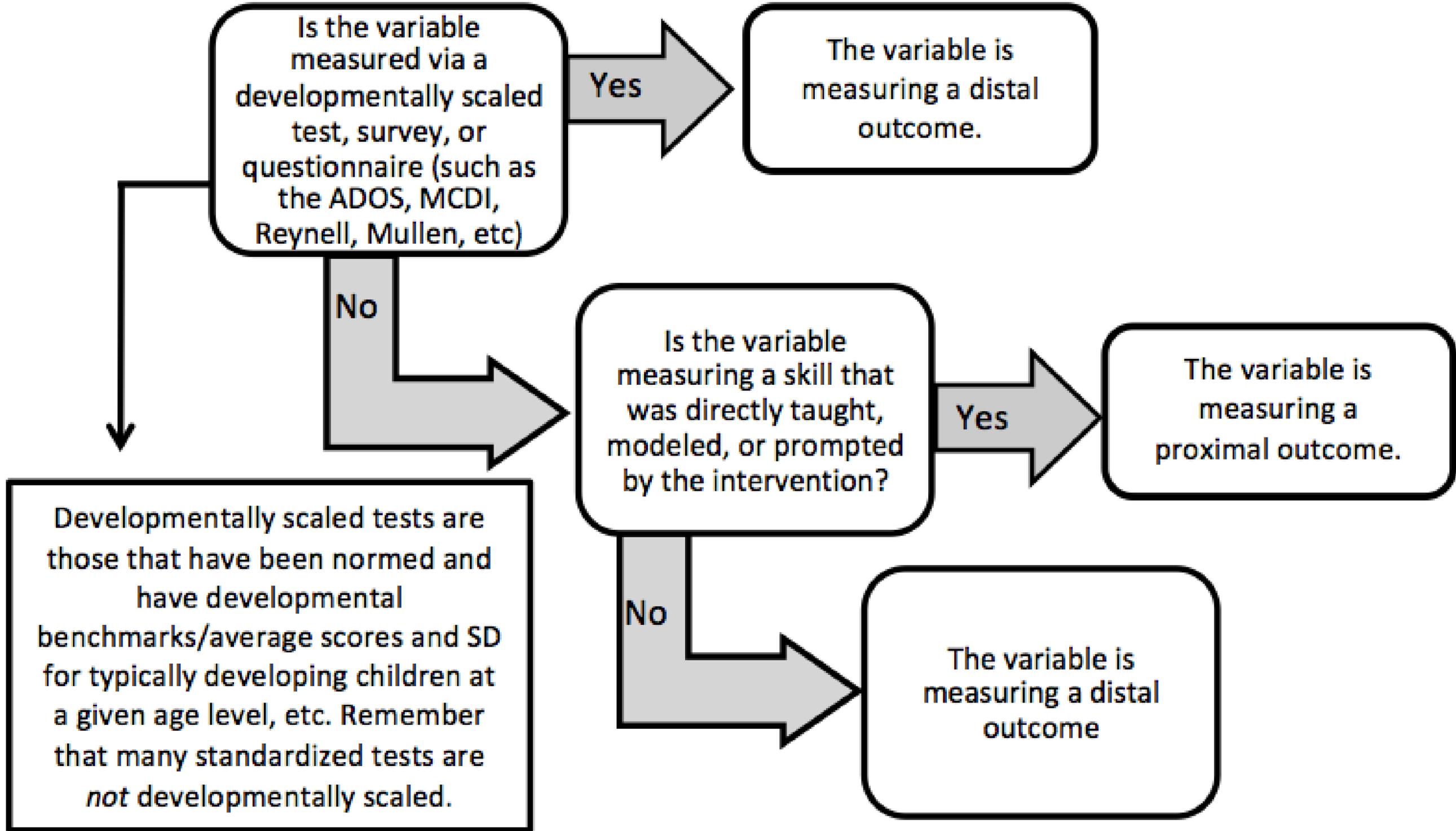
19

<http://dx.doi.org/10.26153/tsw/5683>

Coding Boundedness



Coding Proximity



Coding Parent/Teacher Training CME

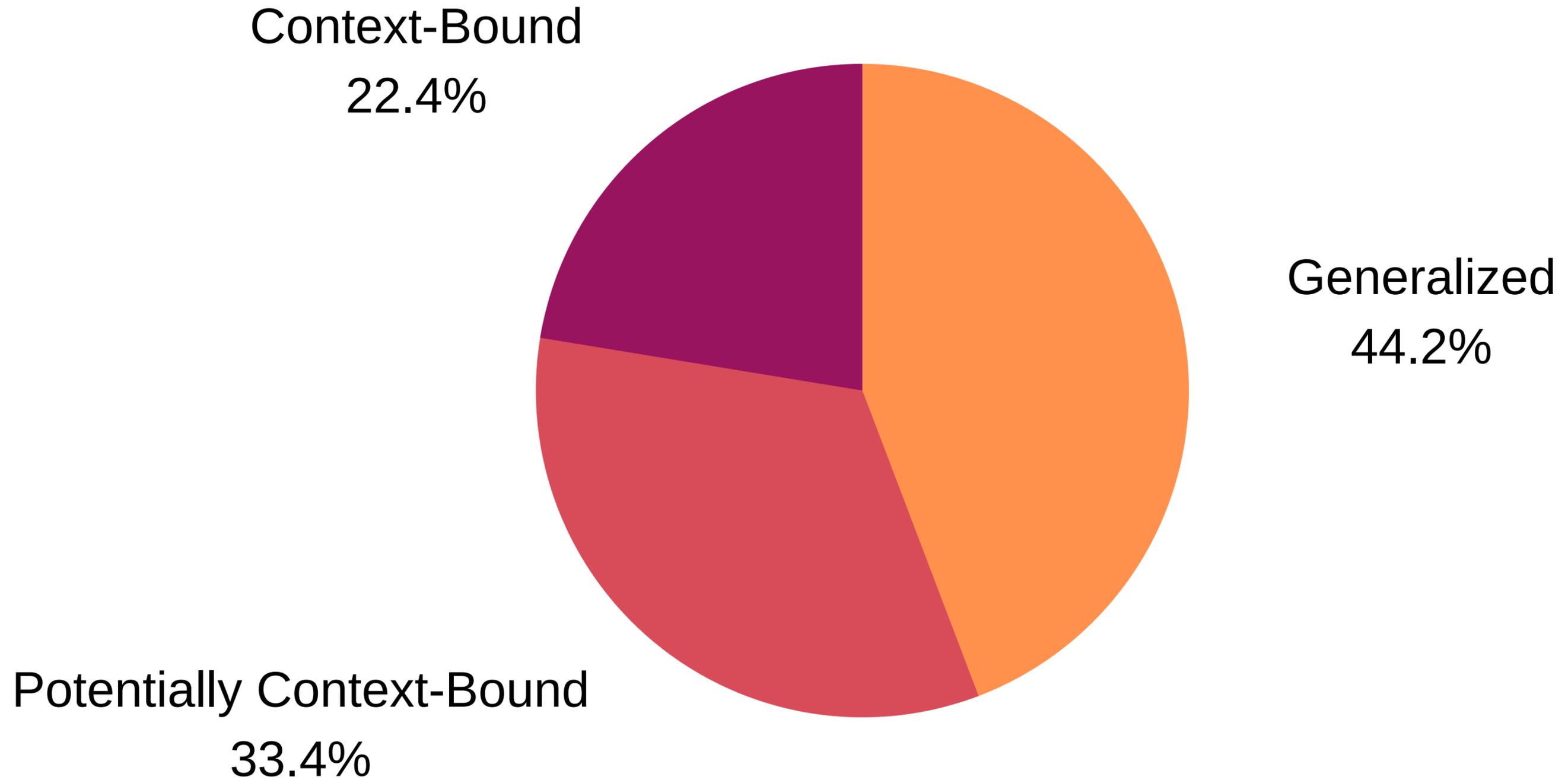


Were parents or teachers in the intervention group alone trained in the intervention?

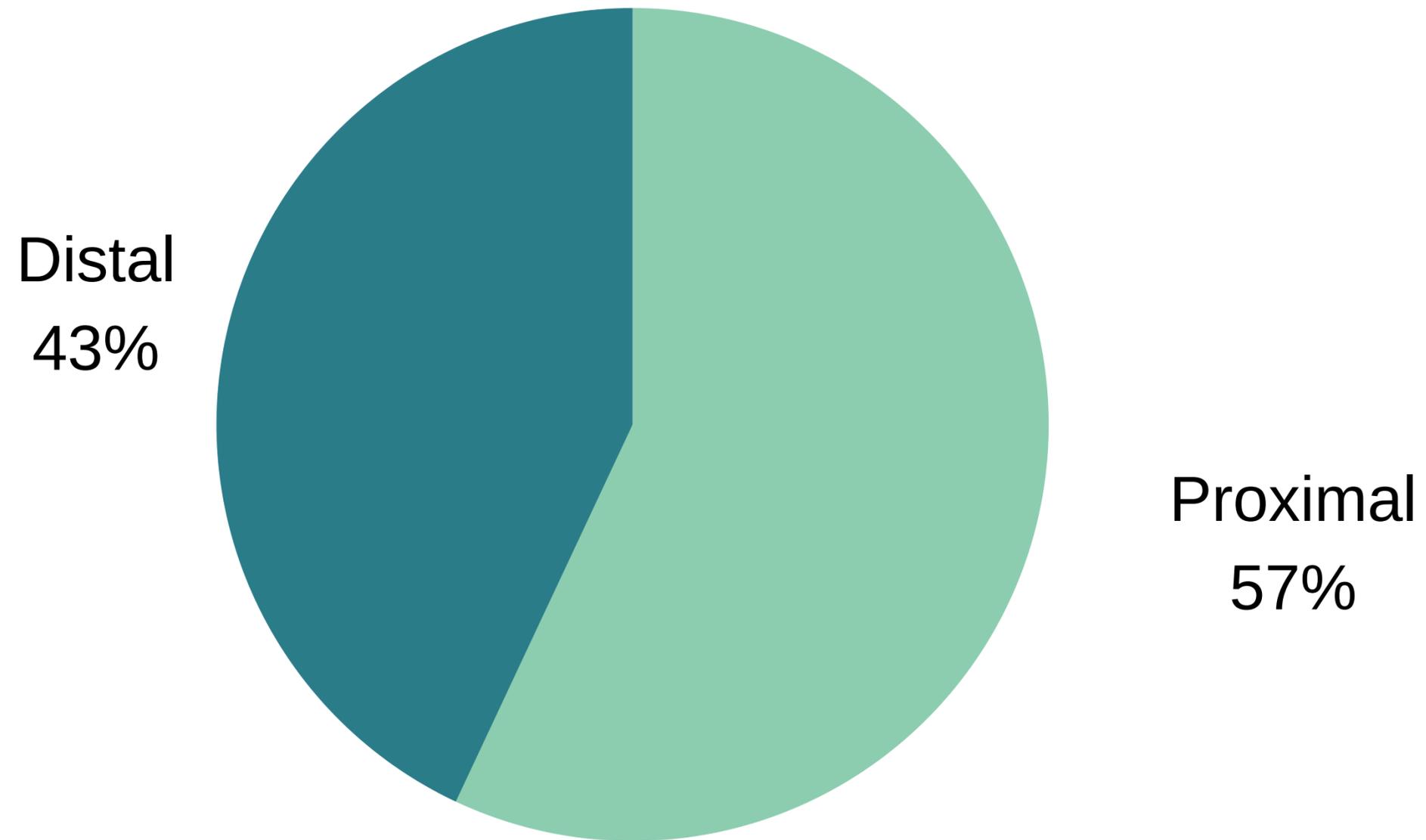
Did they participate in child assessment, either as interaction partners or reporters?

If yes to both, risk of parent/teacher CME is high.

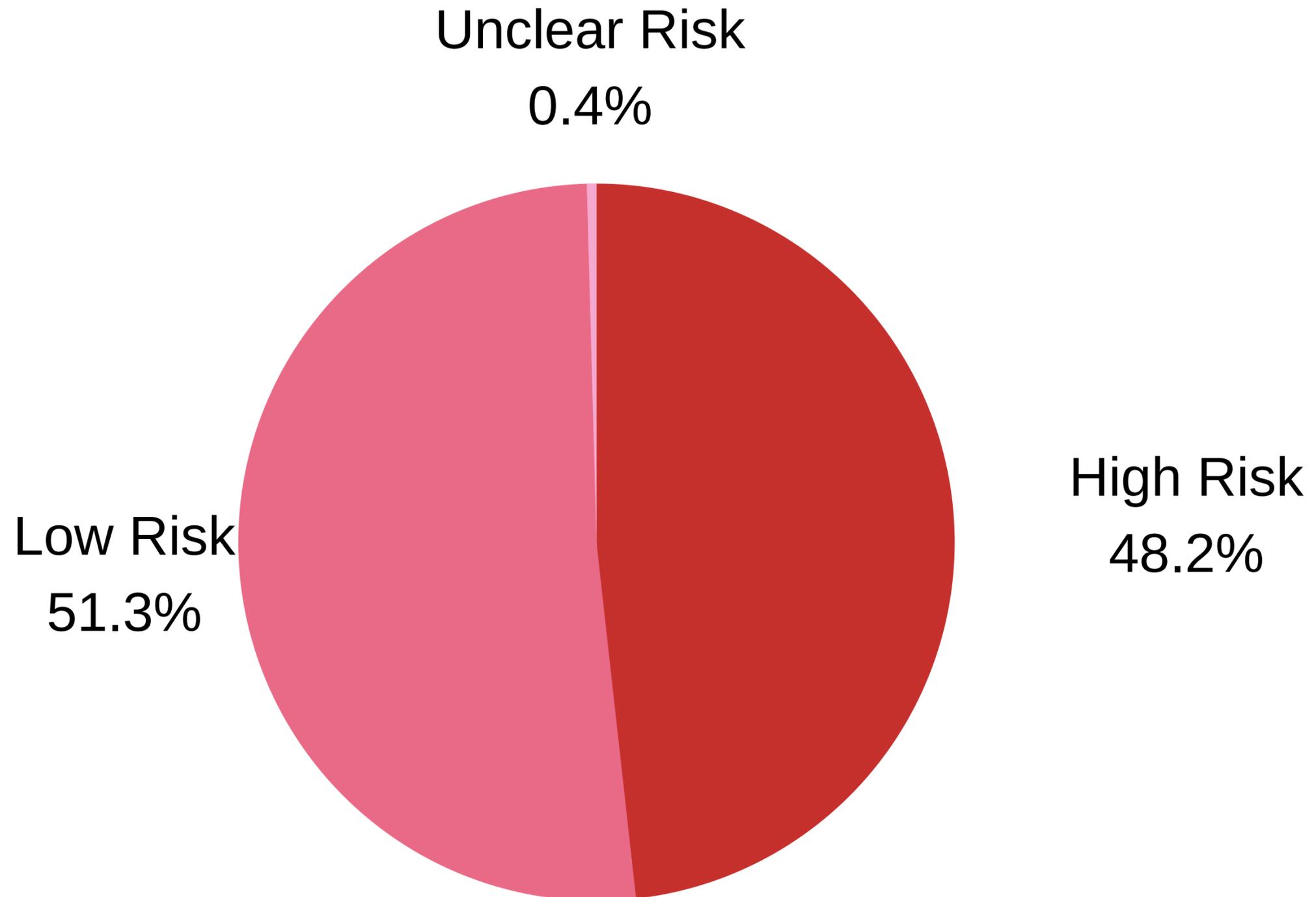
Boundedness



Proximity



Parent/Teacher Training CME



Do these outcome characteristics significantly moderate intervention effects?

Boundedness

Effects on generalized outcomes were significantly smaller than effects on context-bound or potentially context-bound outcomes.

Proximity

Effects on proximal outcomes were significantly larger than effects on distal outcomes.

Parent/Teacher Training CME

Effects on outcomes subject to high risk of Parent/teacher CME were smaller but not significantly different than those that were not at risk

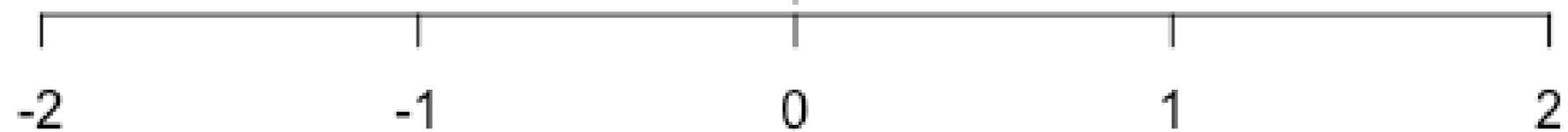
Boundedness



Context-bound 0.39 [0.25, 0.52]

Potentially Context-Bound 0.27 [0.18, 0.36]

Generalized 0.22 [0.13, 0.31]



Small Sample RVE Summary Estimates

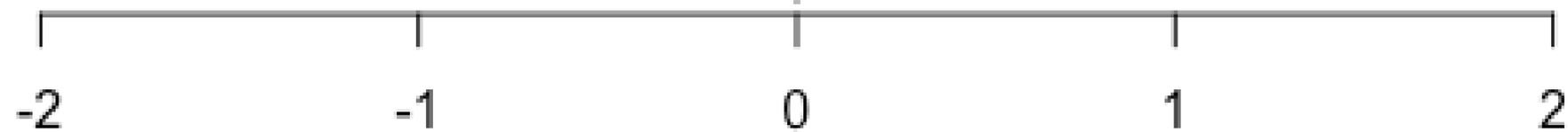
Proximity

Proximal

0.40 [0.28, 0.52]

Distal

0.25 [0.17, 0.32]



Small Sample RVE Summary Estimates