Effects of Augmentative and Alternative Communication on Challenging Behavior: A Meta-Analysis

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Background

• Unresolved challenging behavior in children and adolescents can have life-long negative effects.

• Individualized PBS is effective in reducing problem behavior in preschoolers, persons with autism, and others with serious problem behavior.

• Researchers have suggested that the ability of individuals with disabilities to repair communication breakdown contributes in important ways to gaining desired outcomes and avoiding problem behavior.

• Meta-analysis findings may provide teachers and clinicians with guidelines for designing and implementing interventions to address challenging behavior.

Methods

Phase 1 • Initial Search
Phase 2 • Initial Screening
Phase 3 • Inclusion Assessment
Phase 4 • Article Review
Phase 5 • Effect Size Calculation
Phase 6 • Descriptive & Inferential Analyses

Phase 1: Initial Search

• Conducted electronic database search using key search terms.
  • Example search terms: "augmentative and alternative communication", "problem behavior"
• Examined references in articles.
• Included unpublished studies to avoid publication bias.
• Searches resulted in 805 articles.

Phase 2: Initial Screening

• Reviewed abstracts to exclude non-research studies and those not related to education.
• 349 articles in database after initial screening.

Phase 3: Inclusion Assessment

• Articles in database reviewed against 4 inclusion criteria:

Single Subject Design | Participants with Disabilities | Intervention Focused on AAC | Problem Behavior Measured

• 81 articles in database after inclusion assessment.
• Inter-rater agreement across inclusion criteria:
  • Mean kappa = .93 (range: .82-1.00)

Phase 4: Article Review

• Rated articles on 24 variables that described participant and intervention characteristics.
• Inter-rater agreement across coding items:
  • Mean kappa = .88 (range: .60 -1.00)

Phase 5: Effect Size Calculation

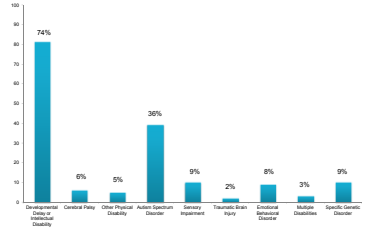
• Extracted data with *UnGraph* computer program.
  • *UnGraph* found to have high reliability and validity (Shadish et al., 2009).
• Calculated Non-Overlap of All Pairs (NAP; Parker & Vannest, 2009) across control and treatment phases.
  • NAP has been shown to equal or outperform other overlap indices in its accuracy and its robust correlation with visual analysis.
•Excluded graphs containing less than 3 data points in initial control phase.
•53 studies and 109 participants in database after applying 3-data-point rule and eliminating participants with unclear graphs.

Phase 6: Descriptive & Inferential Analyses

• Descriptive analysis:
  • Calculated frequencies and mean NAP scores in SPSS.
• Moderator analysis:
  • Compared means with non-parametric analyses (i.e., Kruskal-Wallis and Mann-Whitney U tests) to identify whether statistically significant differences exist in intervention effects.

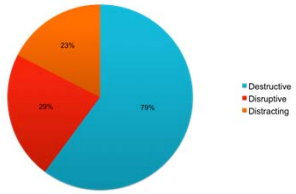
Preliminary Results

Diagnoses of Participants



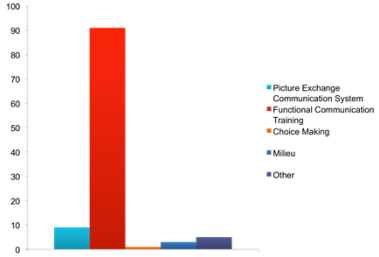
Note: Some participants were identified as having multiple diagnoses.

Targeted Challenging Behavior



Note: Some interventions targeted multiple levels of challenging behavior.
Destructive: Health or life threatening. **Disruptive**: Prevents teaching/learning of participant.
Distracting: Bothersome but causes no harm.

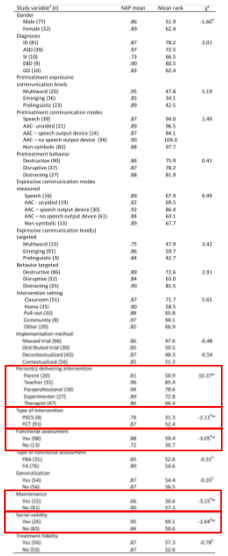
Intervention



Note: Some participants received multiple types of intervention.

Effect Size Analyses

Overall NAP score across comparisons =.87 (n = 109)



Note: NAP Weak effects: ⩽.65; Medium effects: .66-.92; Large or strong effects: .93-1.0.
χ^2 values are derived from Kruskal-Wallis test; ^2z score (Mann-Whitney *U*). $^*p < .05$

Implications

•Effect sizes were significantly higher for participants who received:
  •Teacher-delivered intervention versus parent-delivered intervention
  •FCT versus PECS
  •Prior functional assessment versus no functional assessment
  •No maintenance measurement versus maintenance measurement
  •Social validity assessment versus no social validity assessment

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