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Review-Treatment

Does use of the Picture Exchange Communication System (PECS) and Focused Playtime Intervention (FPI) improve the communication of children with autism spectrum disorder who are minimally verbal?[1]

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Q What are the effects of PECS and FPI on communication for individuals with ASD who are minimally verbal?

METHOD

Design: Systematic review

Data sources: Brignell et al. (2018) searched 18 registries and trial databases in November 2016 and again in November 2017. References of included articles and similar literature reviews were also searched. Contacts were made to researchers regarding research in progress, additional studies not captured in the search, and any unpublished studies.

Study selection and assessment: The authors screened 6333 records, but only two randomized controlled trials met the inclusion criteria. Participants had to have been described as having autism, ASD, autistic disorder, Asperger's Syndrome, Pervasive Developmental Disorder (PDD), or PDD-NOS (Pervasive Developmental Disorder-Not Otherwise Specified). Individuals in included studies were under 12 years of age, minimally verbal, and cognitively ready for verbal expression. Interventions focused on expressive language or augmentative and alternative communication (AAC). Outcomes centered around expressive language, non-verbal language, adaptive behavior skills, behavior, and parent quality of life ratings. Studies were excluded if interventions did not focus primarily on social communication skills, independent communication was not targeted, or if there was no control group. Study quality was assessed by comparing studies to the risk of bias criteria in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins & Green, 2011). Data related to methods, participants, interventions, outcome measures, and other information were collected for each included article and extracted by two authors. Two raters assessed the risk of bias. Each article was given a rating of low, high, or unclear risk of bias on seven domains. The GRADE approach, a study quality rating tool used by numerous reputable organizations, was used to appraise the quality of the evidence (Guyatt, Oxman, Schünemann, Tugwell, & Knottnerus, 2011). Disagreements at all stages were resolved through discussion or in collaboration with another author. Risk of bias ratings for both studies revealed a high or unclear risk of bias. Results of the GRADE appraisal revealed a low quality of evidence for both studies.

[1] **Abstracted from**: Brignell, A., Chenausky, K. V., Song, H., Zhu, J., Suo, C., & Morgan, A. T. (2018). Communication interventions for autism spectrum disorder in minimally verbal children. *Cochrane Database of Systematic Reviews*, (11). doi: https://doi.10.1002/14651858.CD012324.pub2

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Outcomes: Effect sizes were measured using odds ratios for dichotomous variables, mean differences for continuous variables, or report of ordinal data as risk per 1000. Heterogeneity was assessed by comparing participant characteristics, interventions, and outcomes for each study. Reporting bias and data synthesis were not completed due to the small number of studies which met inclusion criteria.

MAIN RESULTS

The results indicated a medium-large effect size for the expressive language skills of individuals beginning the study with smaller expressive vocabulary. Interventions implemented in the included studies were the Focused Playtime Intervention (FPI) (Howlin, Gordon, Pasco, Wade, & Charman, 2007) and Picture Exchange Communication System (PECS) (Siller, Hutman, & Sigman, 2013). FPI is a parent implemented treatment program focusing on verbal communication during parent child play interactions and PECS is a tiered approach to communication that uses picture symbols to teach expressive communication. No main effects for expressive language skills were found with the PECS intervention. Individuals participating in the PECS intervention were found to use more symbols and initiate more following cessation of the intervention, but did not demonstrate skill retention 10 months after the intervention ceased. An overall low study quality was recorded for both included studies.

AUTHORS' CONCLUSIONS

Based on their analysis of the two included studies, Brignell et al. (2018) concluded that expressive language skills improved more for individuals with a smaller expressive language vocabulary during baseline. In addition, AAC gains did not maintain after treatment, but maintenance was not reported in the parent directed study. The authors argue for additional randomized controlled trials related to communication interventions with a control group or older children who are minimally verbal.

COMMENTARY

The need for effective communication interventions for individuals on the autism spectrum is pressing as many are left without a way to communicate. Teachers struggle to find ways to address the communication challenges of individuals in this population who are minimally verbal. Child deficits in social communication skills necessitates increased parental responsiveness to the child which can sometimes cause stress, anxiety, and depression (Catalano, Holloway, & Mpofu, 2018). In addition, the language deficits that many children with ASD face may further exacerbate the disruption of familial routines and rituals already under stress due to the presence of service providers in homes, financial burdens related to the provision of specialized services, and presence of child disruptive behaviors which are often caused by deficits in communication (Karst & Van Hecke, 2012). Hence, a review of literature highlighting interventions addressing these deficits is timely.

PECS and parent implemented interventions have become widely used types of interventions for this population.

Results for the PECS intervention (Howlin et al., 2007) align with the results of other reviews and meta-analyses on the topic (Flippin, Reszka, & Watson, 2010; Ganz et al., 2014). For example, Ganz et al. (2014) reviewed single-case experimental studies and also found higher effect sizes for participants beginning the study with a smaller expressive vocabulary in addition to low to moderate effect sizes for speech outcomes. Similarly, Siller et al. (2013) indicated that children with skills below age 12 months at the beginning of treatment made gains. In a more recent review of literature pertaining to parent directed interventions, children with developmental language disorders, with presumably more communication challenges as a whole, were also reported to make greater gains (Roberts, Curtis, Sone, & Hampton, 2019). Still, gains were not adequate to bring these children to a level close to that of same age peers making the search for efficacious interventions a necessity.

The current study has numerous strengths and some shortcomings. Authors provided clearly defined inclusion and exclusion criteria as well as a list of keywords used for each data collection source. Searches appeared comprehensive, collecting potential articles from electronic sources, gray literature, and contacts with researchers in the field. While a specific protocol and corresponding percentages for inter-rater reliability were not detailed, authors did report that two raters screened the articles and a disagreement resolution plan was in place. Overall, data extraction procedures, data analysis, and conclusions appear to be appropriate. However, conclusions should be made with caution due to the limited number of studies included in the review (n = 2).

Several meta-analyses and systematic reviews of single-case experimental and group design studies (Millar, Light, & Schlosser, 2006; O'Neill, Light, & Pope, 2018; Shire & Jones, 2015) as well as single-case experimental design studies (Ganz, Davis, Lund, Goodwyn, & Simpson, 2012; Ganz et al., 2017; Kent-Walsh, Murza, Malani, & Binger, 2015) have been previously published on the topic. Thus, the inclusion of strictly randomized controlled trials excludes a large literature base of studies from which valuable conclusions regarding the efficacy of these types of interventions can be drawn. In addition, the reviews and meta-analyses previously conducted on the topic indicated effects between potentially positive to highly effective which contradicts the conclusions of the present review of literature. Finally, a rationale for the use of the GRADE approach would have been helpful.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

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