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This critical review examines the potential for three pivotal language skills, imitation, joint attention, and level of play to predict expressive and receptive language outcomes in school-age children with autism spectrum disorder (ASD). Each study employed a longitudinal, prospective design. The weight of the evidence reviewed provides compelling evidence that imitation, joint attention and toy play can be predictive of later language outcomes in children with ASD. Recommendations for future research and clinical implications are discussed.

Introduction

Children with autism demonstrate significant deficits in both expressive and receptive language, specifically in joint attention, imitation, and play (Paul et al., 2008). Pivotal skills are abilities that act as a foundation for learning a new higher-level skill. Pivotal skills in language development include imitation (Ingersoll &

Results of the literature search yielded nine articles consistent with the selection criteria for inclusion in this review. Included studies were prospective, longitudinal designs. The intent of this review was to focus on imitation, joint attention, and play as potential

findings from Charman et al. (2003) do not suggest joint attention and play are predictive of outcome. It was judged that the young age of participants and small sample size affected the outcome, thus results should be interpreted with caution. Although there is a smaller body of evidence to support imitation and toy play as predictive variables, the studies were judged to be well designed, thus are good indicators that these skills are predictive of later outcome.

Each study employed a longitudinal design, which is appropriate based on the research purpose. Growth curve analysis and trajectories were used appropriately in 5 of the aforementioned studies, as they included at least three or more waves of data in the analysis. Given

- Ingersoll, B. & Schreibman, L. (2006). Teaching reciprocal imitation skills to young children with autism using a naturalistic behavioral approach: effects on language, pretend play, and joint attention. *Journal of Autism and Developmental Disorders*, 36, 487-505.
- Kasari, C. (2002). Assessing change in early intervention programs for children with autism. *Journal of Autism and Developmental Disorders*, 32, 447-461.
- Kasari, C., Paparella, T., & Freeman, S. (2008). Language outcome in autism: randomized comparison of joint attention and play interventions. *Journal of Consulting and Clinical Psychology*, 76, 125-137.
- Koegel, L. K., Koegel, R. L., Shoshan, Y., & McNerney, E. K.