# Annotated Bibliography

## for *The JASPER Model for Children with Autism: Promoting Joint Attention, Symbolic Play, Engagement, and Regulation*

***Note.*** Asterisks indicate a study that is also a community implementation trial.

## Original JA-SP Trial

### Primary Study

Kasari, C., Freeman, S., & Paparella, T. (2006). Joint attention and symbolic play in young children with autism: A randomized controlled intervention study. *Journal of Child Psychology and Psychiatry, 47*(6), 611–620.

The 58 children in this study were between 3 and 4 years old and were receiving 30 hours per week of high-quality early intervention. The children were randomized to receive 30 minutes of instructional time targeting joint attention, 30 minutes of instruction targeting symbolic play, or 30 minutes of typical instructional time with their teacher. Those who received the joint attention instruction improved in both their initiations and their responses to joint attention. Those who received the symbolic play instruction improved in their diversity of symbolic play and their overall developmental level of play skills.

### Secondary Studies

Freeman, S. F., Gulsrud, A., & Kasari, C. (2015). Brief report: Linking early joint attention and play abilities to later reports of friendships for children with ASD. *Journal of Autism and Developmental Disorders, 45*(7), 2259–2266.

Children who had better joint attention when they were 3 years old had better friendship quality at age 8, and those with higher play at age 3 rated their friends as more helpful at age 8. Linking early foundational social skills to later social success.

Gulsrud, A. C., Hellemann, G. S., Freeman, S. F., & Kasari, C. (2014). Two to ten years: Developmental trajectories of joint attention in children with ASD who received targeted social communication interventions. *Autism Research, 7*(2), 207–215.

This study followed up on the children 5 years later and found that children in the control group had slower increases in their expressive language over the 8-year period and the joint attention group had more rapid growth in certain joint attention skills, such as eye contact and showing.

This is a supplementary resource to *The JASPER Model for Children with Autism: Promoting Joint Attention, Symbolic Play, Engagement, and Regulation* by Connie Kasari, Amanda C. Gulsrud, Stephanie Y. Shire, and Christina Strawbridge. Copyright © 2022 The Guilford Press.

Gulsrud, A. C., Kasari, C., Freeman, S., & Paparella, T. (2007). Children with autism's response to novel stimuli while participating in interventions targeting joint attention or symbolic play skills. *Autism, 11*(6), 535–546.

Children in the joint attention group were able to generalize the skills they gained in real-world scenarios and probes, such as someone knocking on the door or a ball bouncing by. The children in the joint attention group acknowledged the probes more often and engaged in shared interactions with the adult during these situations more often as well.

Kasari, C., Gulsrud, A., Freeman, S., Paparella, T., & Hellemann, G. (2012). Longitudinal follow-up of children with autism receiving targeted interventions on joint attention and play. *Journal of the American Academy of Child and Adolescent Psychiatry, 51*(5), 487–495.

This study followed up on the children 5 years later and found that for those children who were using spoken language at age 8 years, several baseline behaviors predicted their later ability, including earlier age of entry into the study, initiating joint attention skill, play level, and assignment to either the joint attention or the symbolic play intervention group.

Kasari, C., Paparella, T., Freeman, S., & Jahromi, L. B. (2008). Language outcome in autism: randomized comparison of joint attention and play interventions. *Journal of Consulting and Clinical Psychology, 76*(1), 125–137.

This study followed up on the children 1 year later and found that those children who received the joint attention or symbolic play instruction had better expressive language outcomes than those who were receiving the typical classroom instruction.

Lawton, K., & Kasari, C. (2012). Brief report: Longitudinal improvements in the quality of joint attention in preschool children with autism. *Journal of Autism and Developmental Disorders, 42*(2), 307–312.

This study followed up on the children 1 year later and found that not only the quantity but also the quality of joint attention had improved more in the joint attention and symbolic play instruction groups. Quality was measured as both shared affect and pairing joint attention with verbal utterances.

## Primary Study

Kaale, A., Smith, L., & Sponheim, E. (2012). A randomized controlled trial of preschool-based joint attention intervention for children with autism. *Journal of Child Psychology and Psychiatry, 53*(1), 97–105.

Sixty-one children age 2–5 in Norway were randomized to receive either 8 weeks of the Joint Attention Symbolic Play (JA-SP) intervention in their preschool classrooms or their regular preschool curriculum. Children in the JA-SP intervention had a greater number of joint attention initiations and spent more time jointly engaged with their mothers.

## Secondary Study

Kaale, A., Fagerland, M. W., Martinsen, E. W., & Smith, L. (2014). Preschool-based social communication treatment for children with autism: 12-month follow-up of a randomized trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 53*(2), 188–198.

This study followed up on the children 1 year later and found that children in the JA-SP intervention had better joint attention and joint engagement than those who had received the standard preschool curriculum.

# Caregiver Mediated

## Primary Study

Kasari, C., Gulsrud, A. C., Wong, C., Kwon, S., & Locke, J. (2010). Randomized controlled caregiver mediated joint engagement intervention for toddlers with autism. *Journal of Autism and Developmental Disorders, 40*(9), 1045–1056.

Children 1½–3 years old were randomized to receive 24 caregiver-mediated JASPER sessions. The children in the JASPER group saw significant improvements in joint engagement, responsiveness to joint attention, and diversity of functional play. These skills maintained 1 year later.

## Secondary Study

Gulsrud, A. C., Jahromi, L. B., & Kasari, C. (2010). The co-regulation of emotions between mothers and their children with autism. *Journal of Autism and Developmental Disorders, 40*(2), 227–237.

The children receiving JASPER had a greater reduction in the number of negative episodes, and their mothers increased both their emotional and their motivational scaffolding. JASPER improved the co-regulation of children with their caregivers.

## Primary Study

Kasari, C., Lawton, K., Shih, W., Barker, T. V., Landa, R., Lord, C., . . . Senturk, D. (2014). Caregiver-mediated intervention for low-resourced preschoolers with autism: An RCT. *Pediatrics, 134*(1), e72–e79.*

The 112 preschoolers in this study were randomized to receive 3 months of group caregiver education courses or individualized caregiver-mediated JASPER. The JASPER group saw greater increases in initiations of joint attention and joint engagement as well as symbolic play. The results for joint engagement were maintained at follow-up.

## Secondary Study

Carr, T., Shih, W., Lawton, K., Lord, C., King, B., & Kasari, C. (2016). The relationship between treatment attendance, adherence, and outcome in a caregiver-mediated intervention for low-resourced families of young children with autism spectrum disorder. *Autism, 20*(6), 643–652.

Those families that were randomized to caregiver-mediated JASPER had longer periods of joint engagement, and longer periods of joint engagement were predicted by how well the families adhered to the treatment protocols.

## Primary Study

Kasari, C., Gulsrud, A., Paparella, T., Hellemann, G., & Berry, K. (2015). Randomized comparative efficacy study of parent-mediated interventions for toddlers with autism. *Journal of Consulting and Clinical Psychology, 83*(3), 554–563.

The 86 toddlers age 2–3 in this study were randomized to receive 10 weeks of parent psychoeducation or caregiver-mediated JASPER. Children in the JASPER group saw greater increases in joint engagement that maintained 6 months later and generalized to children's classroom contexts. The JASPER group also saw greater increases in diversity of play.

### Secondary Studies

Gulsrud, A. C., Hellemann, G., Shire, S., & Kasari, C. (2016). Isolating active ingredients in a parent-mediated social communication intervention for toddlers with autism spectrum disorder. *Journal of Child Psychology and Psychiatry, 57*(5), 606–613.

Parents who received JASPER learned to use the intervention strategies. Parents' JASPER strategy use, their buy in, and their involvement (as rated by the interventionist) were positively associated with children's time in joint engagement. More specifically, the strategy of mirrored pacing mediated the relationship between treatment and joint engagement in the positive direction.

Harrop, C., Gulsrud, A., Shih, W., Hovsepyan, L., & Kasari, C. (2017). The impact of caregiver-mediated JASPER on child restricted and repetitive behaviors and caregiver responses. *Autism Research, 10*(5), 983–992.

Toddlers' RRBs in the study were stable following intervention but increased when the children returned at 6 months. JASPER parents responded to a greater number of their child's RRBs and their responses were rated as more successful.

Shire, S. Y., Gulsrud, A., & Kasari, C. (2016). Increasing responsive parent–child interactions and joint engagement: Comparing the influence of parent-mediated intervention and parent psychoeducation. *Journal of Autism and Developmental Disorders, 46*(5), 1737–1747.

Higher rates of parent responsivity to their children and parent's adoption of JASPER strategies worked synergistic to improve children's time jointly engaged more than responsivity or JASPER strategies alone.

## JASPER in Schools/Teacher Mediated

### Primary Study

Lawton, K., & Kasari, C. (2012). Teacher-implemented joint attention intervention: Pilot randomized controlled study for preschoolers with autism. *Journal of Consulting and Clinical Psychology, 80*(4), 687.*

Sixteen preschoolers with ASD and their public school teachers were randomly assigned to either 6 weeks of JASPER or a control group in this pilot study. JASPER teachers used more JASPER strategies than the control teachers, and JASPER preschoolers used more joint attention in their classroom than control children. JASPER children also spent more time in supported engagement and less time in object engagement than control preschoolers.

### Secondary Study

Lawton, K., & Kasari, C. (2013). Teacher implementation of joint attention intervention in preschool classrooms: Fidelity and context. *Autism, 3*(108), 2.

Teachers who were trained in JASPER were able to successful implement JASPER strategies both in one-to-one contexts with their students as well as in more general group classroom settings.*

### Primary Studies

Chang, Y. C., Shire, S. Y., Shih, W., Gelfand, C., & Kasari, C. (2016). Preschool deployment of evidence-based social communication intervention: JASPER in the classroom. *Journal of Autism and Developmental Disorders, 46*(6), 2211–2223.*

Sixty-six preschool children with autism were randomized to receive immediate JASPER training or were waitlisted for 3 months with a 1-month follow-up. JASPER children saw greater increases in

initiations of joint engagement, joint attention gestures, and language and play skills as well as greater increases in standardized cognitive measures. JASPER teachers also achieved and maintained high fidelity.

Shire, S. Y., Chang, Y. C., Shih, W., Bracaglia, S., Kodjoe, M., & Kasari, C. (2017). Hybrid implementation model of community-partnered early intervention for toddlers with autism: A randomized trial. *Journal of Child Psychology and Psychiatry, 58*(5), 612–622.*

One hundred and thirteen children enrolled in public early intervention classrooms in low-resource neighborhoods were randomized to JASPER or treatment as usual for 10 weeks with a 1-month follow-up. JASPER teaching assistants were able to deliver JASPER at adequate fidelity, and JASPER children saw greater gains in joint engagement, joint attention, and play skills that were maintained at follow-up.

### Secondary Studies

Shire, S. Y., Shih, W., Bracaglia, S., Kodjoe, M., & Kasari, C. (2020). Peer engagement in toddlers with autism: Community implementation of dyadic and individual Joint Attention, Symbolic Play, Engagement, and Regulation intervention. *Autism, 24*(8), 2142–2152.

One hundred and thirteen children enrolled in public early intervention classrooms in low-resource neighborhoods were randomized to either individual JASPER or JASPER with a peer. Both groups made significant gains in social communication and play. Children in the peer condition were more engaged with peers when an adult was present than when unsupported.

Shire, S. Y., Shih, W., Chang, Y. C., Bracaglia, S., Kodjoe, M., & Kasari, C. (2019). Sustained community implementation of JASPER intervention with toddlers with autism. *Journal of Autism and Developmental Disorders, 49*(5), 1863–1875.*

Teaching assistants who were only actively receiving JASPER support from within their school team sustained JASPER intervention strategies though higher-level strategies were more difficult to maintain. Children made comparable gains in joint attention.

## Minimally Verbal

### Primary Studies

Goods, K. S., Ishijima, E., Chang, Y. C., & Kasari, C. (2013). Preschool based JASPER intervention in minimally verbal children with autism: Pilot RCT. *Journal of Autism and Developmental Disorders, 43*(5), 1050–1056.

Pilot study of 15 minimally verbal children age 3–5 received either JASPER or regular preschool services for 12 weeks, with two 30-minute sessions per week. JASPER children showed greater play diversity, more requesting gestures, and less time unengaged during a classroom observation.

Kasari, C., Kaiser, A., Goods, K., Nietfeld, J., Mathy, P., Landa, R., . . . Almirall, D. (2014). Communication interventions for minimally verbal children with autism: A sequential multiple assignment randomized trial. *Journal of the American Academy of Child and Adolescent Psychiatry, 53*(6), 635–646.

Sixty-one minimally verbal children with autism, age 5–8, were randomized to a blended developmental/behavioral intervention (JASPER+EMT) with or without the augmentation of a speech-generating device (SGD) for 6 months with a 3-month follow-up. Improvements in spontaneous communicative utterances, novel words, and comments all favored the blended behavioral intervention that began by including an SGD (JASP+EMT+SGD). Results also suggest that the adaptive intervention including the SGD led to better outcomes.

## Secondary Studies

Almirall, D., DiStefano, C., Chang, Y. C., Shire, S., Kaiser, A., Lu, X., . . . Kasari, C. (2016). Longitudinal effects of adaptive interventions with a speech-generating device in minimally verbal children with ASD. *Journal of Clinical Child and Adolescent Psychology, 45*(4), 442–456.

The adaptive interventions that began with JAPSER+EMT augmented by a speech-generating device had the most positive outcomes. The children in that condition had both greater language growth and more initiations of joint attention.

Chang, Y. C., Shih, W., Landa, R., Kaiser, A., & Kasari, C. (2018). Symbolic play in school-aged minimally verbal children with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 48*(5), 1436–1445.

Minimally school-age children receiving JASPER saw increases in their play skills both during sessions and in standardized contexts with unfamiliar assessors. Additionally, increases in symbolic play were positively associated with language growth.

DiStefano, C., Shih, W., Kaiser, A., Landa, R., & Kasari, C. (2016). Communication growth in minimally verbal children with ASD: The importance of interaction. *Autism Research, 9*(10), 1093–1102.

Over the course of the study children initiated more communication exchanges with adults, and the length of these exchanges increased as well; those who received a speech-generating device saw even greater growth. Those who had more exchanges at entry saw more growth in expressive language.

Shire, S. Y., Goods, K., Shih, W., Distefano, C., Kaiser, A., Wright, C., . . . Kasari, C. (2015). Parents' adoption of social communication intervention strategies: Families including children with autism spectrum disorder who are minimally verbal. *Journal of Autism and Developmental Disorders, 45*(6), 1712–1724.

Parents of minimally verbal school-aged children were able to master about 70% of JASPER strategies. They learned some of these skills through observing sessions, but most of the progress happened through active coaching. Parent strategy use was positively associated with children's joint engagement.

Shire, S. Y., Shih, W., & Kasari, C. (2018). Brief report: Caregiver strategy implementation—Advancing spoken communication in children who are minimally verbal. *Journal of Autism and Developmental Disorders, 48*(4), 1228–1234.

Children's language growth was associated with parent's implementation of JASPER strategies. Specifically, those parents who reached at least 75% fidelity had children who had the most positive language outcomes.

# Community Implementation

Shire, S. Y., Worthman, L. B., Shih, W., & Kasari, C. (2020). Comparison of face-to-face and remote support for interventionists learning to deliver JASPER intervention with children who have autism. *Journal of Behavioral Education,* 1–22.

Fifty children with ASD age 2–9 were trained by JASPER therapists who were trained and supported either remotely or through in-person training. Both groups of therapists had similar levels of implementation fidelity, and the children saw significant growth in initiations of joint attention, requesting skills, and play diversity.