

**A Randomized Controlled Trial of the Effects of RECALL (Reading to Engage Children with Autism in Language and Learning) for Preschoolers with Autism Spectrum Disorder**

Jennie Ying Tung Lo<sup>1</sup>

Kathy Kar-Man Shum<sup>2</sup>

<sup>1</sup>**J. Y. T. Lo**

Department of Psychology, The University of Hong Kong,  
Pokfulam Road, Hong Kong, China.

<sup>2</sup>**K. K. M. Shum (Corresponding Author)**

Department of Psychology, The University of Hong Kong,  
Pokfulam Road, Hong Kong, China.

Email: [kkmslum@hku.hk](mailto:kkmslum@hku.hk)

Phone: (852) 39174223

Fax: (852) 28583518

**Conflict of Interest:**

J. Y. T. Lo and K. K. M. Shum declare that they have no conflict of interest.

### **Abstract**

This study investigated the effects of a parent-implemented dialogic reading approach—Reading to Engage Children with Autism in Language and Learning (RECALL)—on the engagement in reading and inference-making ability for preschoolers with autism spectrum disorder (ASD). Thirty-one preschoolers (mean age=5.90y, SD=0.69; 26 boys, 5 girls) were randomly assigned to a treatment or control group. Six weeks of RECALL significantly enhanced story comprehension, emotion knowledge, and reading engagement among preschoolers in the treatment group. This might be the first randomized controlled trial testing the effects of RECALL on children with ASD. Our findings suggest that additional instructional support such as the application of a prompting hierarchy during dialogic reading might help children with ASD reap greater benefits from shared book reading.

### **Keywords:**

autism spectrum disorder; preschoolers; dialogic reading; intervention; randomized controlled trial

**A Randomized Controlled Trial of the Effects of RECALL (Reading to Engage Children with Autism in Language and Learning) for Preschoolers with Autism Spectrum Disorder**

Shared book reading, where an adult reads a storybook with a child and encourages interaction through questioning and discussion about the book (Hudson & Test, 2011), has been shown to benefit oral language and emergent literacy skills (Sénéchal & Young, 2008; Trivette, Dunst, & Gorman, 2010; Van Kleeck, Vander Woude, & Hammett, 2006). Nonetheless, young children with ASD are found to enjoy shared book reading less (Lanter, Freeman, & Dove, 2013) and spend less time on it than their language-matched peers (Watson, Andrews, & Orovitz, 1996).

Difficulties experienced by children with ASD in shared book reading may partly stem from the social and communicative demands of the activity. In particular, it requires children to be able to sustain social interaction by asking and responding to questions based on the content of the book. This can be challenging for children with ASD as they often show marked difficulty in establishing joint attention and social reciprocity, and exhibit delays in language development (Tager-Flusberg, Paul, & Lord, 2005). Moreover, due to impaired social cognition, children with ASD may find it hard to discern others' thoughts and feelings both in conversation and in text (Loveland & Tunali-Kotoski, 2005), and have trouble understanding what they read (Brown, Oram-Cardy, & Johnson, 2013; Ricketts, Jones, Happé, & Charman, 2013). The ability to draw inferences based on implicit information predicts future reading comprehension (Nation & Norbury, 2005; Oakhill & Cain, 2007). Indeed, children with ASD have been reported to display a decoding-comprehension discrepancy and poor reading comprehension (Chiang & Lin, 2007; El Zein, Solis, Vaughn, & McCulley, 2014; Finnegan & Mazin, 2016) despite having relatively intact word recognition skills (Davidson & Weismer, 2014; Huemer & Mann, 2010; Nation, Clarke, Wright, & Williams, 2006).

Therefore, children with ASD likely require additional instructional strategies and support to engage in and benefit from shared book reading (Mucchetti, 2013). Whalon, Delano,

and Hanline (2013) proposed a modified paradigm of dialogic reading, known as Reading to Engage Children with Autism in Language and Literacy (RECALL), which incorporates practices for supporting learners with ASD within the dialogic reading framework of instructional sequence (PEER: prompt, evaluate, expand, and repeat) and prompting (CROWD: completion, recall, open-ended, wh-questions, and distancing). More information on the RECALL model is provided as supplementary materials online.

Suggestive evidence on the effectiveness of RECALL has been gathered from a few studies involving only very few participants. For example, using a multiple baseline design on four children with ASD (aged 3-5), Whalon, Martinez, Shannon, Butcher, and Hanline (2015) reported improved correct spontaneous responding to both fact- and inference-based questions on the test story after 2.5 months of RECALL intervention. Another case study showed enhanced correct spontaneous responding in a 4-year-old boy with autism after six weeks of parent-implemented RECALL intervention (Whalon, Hanline, & Davis, 2016). Increased rates of verbal participation and longer duration of engagement with the printed material were observed in two other studies, with three and nine participants respectively in each study (Fleury, Miramontez, Hudson, & Schwartz, 2014; Fleury & Schwartz, 2017). These suggestive findings hint at a distinct possibility that young children with ASD can participate in and benefit from dialogic reading interventions when extra instructional support is provided. However, the very small sample sizes and lack of control groups in prior studies on RECALL substantially lower the external validity of the results and make generalization difficult.

The present study used a randomized controlled trial to investigate the effectiveness of parent-implemented RECALL on enhancing the engagement in shared reading and inference-making ability of preschoolers with ASD. We hypothesized that children would show improved language skills, emotion understanding, story comprehension, and social reciprocity after a six-week reading intervention at home. Parent-reported relationship with child, child's interest in

reading, and parents' self-efficacy in helping child read and learn were also examined to explore their associations with parents' implementation of parent-child reading at home.

## **Method**

### **Participants**

Thirty-one Chinese preschoolers (mean age=5.90 years, SD=0.69; 26 boys and 5 girls) were recruited along with their caregivers from eleven preschool rehabilitation centers in Hong Kong. Child participants were included based on the following criteria: 1) aged 3 to 6; 2) with a clinical diagnosis of ASD or displaying significant ASD symptoms as reported by clinicians; 3) Cantonese-Chinese was the primary language spoken at home; 4) without the diagnosis of hearing, visual, or physical impairments that might hinder participation in reading activities. The parent-child dyads were randomly assigned to the experimental group ( $n=17$ ; mean age=5.93 years, SD=0.74) or the control group ( $n=14$ ; mean age=5.88 years, SD=0.66). Table 1 shows the demographic data and the baseline reading profiles of the participants. Comparisons of the two groups did not reveal significant differences in the background characteristics of the children and their caregivers, except for the age of caregivers ( $P=.04$ , two-sided Fisher's exact test).

### **Intervention and Procedures**

The parents in the experimental group attended a 1.5-hour training workshop on RECALL delivered by the first author. The workshop included live demonstrations on the use of the instructional sequence (PEER: **p**rompt, **e**valuate, **e**xpand, and **r**epeat), followed by small group coaching in which the parents practised in groups of 2 to 3 on asking the various types of questioning prompts (CROWD), and employing the steps of PEER and the four-level prompting hierarchy (see supplementary materials for more details). Parents were given feedback during the small group time on their performance in conducting RECALL. Reading materials (i.e., a set of six storybooks) were provided to the parents at the end of the workshop, along with visual prompt booklets compiled by the research team to assist parents in conducting RECALL at

home. The storybooks were selected from a children book series based on their suitability for preschoolers in terms of the difficulty level of text and appropriateness of story settings (e.g., having birthday party, going to beach, getting sick). Each book was approximately 27 pages long, with colored illustrations and about 15-30 words per page. Parents in the control group did not attend any training prior to the intervention, but they were provided with the same reading materials as the experimental group, except without the visual prompt booklets. These parents were asked to read with their children twice per week at home using the materials provided during the 6-week period.

Parent-child reading was conducted at home twice per week, about 10-15 minutes each time, for six weeks among the experimental and control groups. A reading log was provided to all parent-child dyads to record the date and duration of reading over the 6-week period. Videos on home-reading sessions were sent by parents from both groups to the research team every week for further monitoring of compliance. Parents were reminded via text messages to send in their videos if they failed to do so. All parents were contacted by the research team for phone consultation on a biweekly basis to promote treatment integrity. Video-based feedback on the use of RECALL techniques was given to the parents in the experimental group over the phone by the research team, while more general feedback on parent-child reading was offered to those in the control group.

Pretest data were collected from all participants in both groups prior to the parent workshop on the day the experimental group attended the training workshop. The posttest was carried out about 7-8 weeks after the pretest when the intervention had completed. All pretest and posttest assessments were conducted at the training centers by experimenters who were only involved in the assessments and not the intervention, and thus blinded to the group assignment of the children.

## **Measures**

**Receptive vocabulary.** Children were asked to select from four pictures the one that best matched the vocabulary they heard. The items were selected from the Peabody Picture Vocabulary Test Form L (PPVT; Dunn & Dunn, 1981). We did not adopt the full scale of the PPVT in the current study due to the length of the original test. Items were selected based on appropriateness in terms of difficulty level and cultural context. While the original version of the PPVT has been used with preschoolers with ASD as an indicator of their oral language abilities in previous studies (Jasmin et al., 2009; Murdock & Hobbs, 2011), this particular version of the PPVT has not been used with preschoolers with ASD. The word list of the selected items was translated into Chinese by the first author and reviewed by the second author. The original format of the PPVT was kept. Two sample items were shown prior to the 40 test items. One point was awarded for each correct answer. Cronbach's alpha for the current sample was .89.

**Emotion situation knowledge.** This task was developed by Garner, Jones, and Miner (1994) to measure children's ability to infer emotions from situational cues, and similar tasks have been used among preschoolers with and without ASD (Beaudoin, Leblanc, Gagner, & Beauchamp, 2020; Garner, Dunsmore, & Southam-Gerrow, 2008; Gallant, Lavis, Mahy, 2020). Social situations commonly encountered by children were presented in pictures, with the facial expressions of the target characters left out (i.e., blank faces were shown). The children were asked to identify the feeling of the target character by either naming the emotion or pointing to the corresponding facial expression out of four options (happy, sad, angry, and afraid) given on the stimulus sheet. There were two sample items followed by 13 test items. The scoring method was based on the study by Denham (1986). Cronbach's alpha for the current sample was .76.

**Responsiveness and engagement in reading session.** A one-on-one reading session was conducted and scored by the experimenter to measure the child's social reciprocity, understanding of the story and the ability to make inferences, along with the overall involvement in shared reading. The reading session was conducted based on a selected storybook similar to

those used in the intervention, but one that the participants had not read before. Thirty scripted questions—including both factual and inference-based questions—conceived by the research team were embedded throughout the reading session to test the children’s understanding of the plot and the characters’ feelings and intentions. The children were scored on the following: 1) ***Story comprehension***: the number of correct responses to the test questions; either verbal or pointing response was accepted. Each correct answer was worth one point. 2) ***Responsiveness***: this measured the spontaneity in reciprocal communication during reading. Two points were given for a spontaneous response to the test question without prompting; one point for a response given after some prompting; no mark for no response even with prompting. 3) ***Engagement***: the engagement of the children was rated on a 3-point Likert scale ranging from “0” (*not engaged*) to “2” (*highly engaged*) in three aspects—eye contact (eyes directed to the experimenter or the storybook), physical involvement (body oriented towards the experimenter or the storybook, and interaction with the storybook such as touching or pointing), and also verbal participation (initiation of questions and comments on the storybook). The three scores were summed to obtain the total score for engagement in the reading session. The measures for responsiveness and engagement in reading have previously been used in other studies on dialogic reading (Fleury et al., 2014; Fleury & Schwartz, 2017; Whalon et al., 2015; Whalon et al., 2016). Cronbach’s alphas for story comprehension, responsiveness, and reading engagement were .89, .93, and .73 respectively.

**Parent questionnaire.** A parent questionnaire was administered at the pretest and posttest to measure five parent variables with seven items each: 1) relationship with the child, 2) self-perceived efficacy in providing reading support to child, 3) self-perceived efficacy in helping child learn, 4) motivation to read with child, and 5) perceived child interest in reading. This questionnaire was developed by the research team with reference to existing measures, including the Child-Parent Relationship Scale (Pianta, 1992) and the Parenting Sense of



Competence Scale (Johnston & Mash, 1989), which have been translated into Chinese and validated in other studies (Ngai, Chan, & Holroyd, 2007; Zhang & Chen, 2010). The parents indicated how much they agreed with each statement on a 5-point Likert scale ranging from “1” (*strongly disagree*) to “5” (*strongly agree*). The mean score of the seven items was calculated for each measure. Cronbach’s alphas obtained for the current sample were .60, .81, .85, .69, and .81 respectively for the five variables listed above.

## Results

Means and standard deviations of the raw scores for measures at pretest and posttest and the reliability coefficients of these measures are presented in Table 2. Independent samples *t*-tests showed no significant differences in the baseline measures of all child and parent variables (all  $p \geq .16$ ). Based on the reading log record, the mean total number of times parents read with their child during the 6-week intervention was 14.00 ( $SD=7.74$ ) for the experimental group and 11.33 ( $SD=7.80$ ) for the control group, and the mean duration for each parent-child reading session was 12.10 min ( $SD=4.37$ ) and 12.01 min ( $SD=4.58$ ) for the experimental and control groups respectively. One-way analyses of variance (ANOVAs) showed no significant differences in the number of reading sessions ( $F[1,25]=0.76, p=.39$ ) and the mean duration of each session ( $F[1,25]=0.002, p=.96$ ) between the experimental and control groups. There was no attrition from either group in this study.

### Intervention Effects of RECALL

Repeated-measures ANOVAs were conducted to explore the intervention effects on the outcome variables. In each analysis, time (pretest vs posttest) was entered as the within-subject factor, and training condition (experimental vs control) as the between-subject factor. Results are summarized in Table 3. Results of the ANOVAs revealed significant interaction effects (time X condition) for emotion situation knowledge ( $F[1,29]=6.28, p=.02, \eta_p^2=.18$ ) and story comprehension ( $F[1,29]=4.86, p=.04, \eta_p^2=.14$ ) and marginally significant effect for engagement

in reading ( $F[1,29]=3.27, p=.08, \eta_p^2=.10$ ), while interaction effects for other variables were not significant. These results indicated that children in the experimental group improved significantly more than those in the control group on emotion situation knowledge, story comprehension, and possibly on reading engagement. On the other hand, there were no significant interaction effects for the parent-report measures on parent-child relationship ( $F[1,29]=0.62, p=.44$ ), parents' self-efficacy in supporting child's reading ( $F[1,29]=1.67, p=.21$ ) and learning ( $F[1,29]=1.15, p=.29$ ), parents' motivation ( $F[1,29]=0.05, p=.83$ ) and perceived child interest in reading ( $F[1,29]=0.18, p=.68$ ).

Post hoc pairwise comparisons were further conducted to look at the improvements between pretest and posttest in the experimental and control groups (Table 3). Bonferroni correction was employed to adjust for multiple comparisons. In the experimental condition, the participants scored significantly higher in the posttest than in the pretest for all the child measures with medium to large effect sizes ( $\eta_p^2$  ranging from .17 to .34;  $\eta_p^2 > .09$  for medium effects,  $\eta_p^2 > .25$  for large effects; Cohen 1988; Miles and Shevlin 2001), including receptive vocabulary, emotion situation knowledge, story comprehension, responsiveness in reading, and engagement in reading (all  $ps < .05$ ). By contrast, only receptive vocabulary was improved in the control group at posttest ( $p=.02, \eta_p^2=.17$ ). All other child measures for the control group did not show significant differences between pretest and posttest ( $ps \geq .17$ ;  $\eta_p^2$  ranging from .004 to .07). These results provided support to the training effects of RECALL on the emotion knowledge and inference-making ability among preschoolers with ASD, in contrast to those who received similar intensity of parent-child reading not based on RECALL.

### **Relations Between Amount of Parent-Child Reading and Parent-Reported Measures**

Spearman's correlations between the amount of parent-child reading and parent-reported variables measured at posttest are presented in Table 4. The amount of parent-child reading during the 6-week intervention, as indicated by the total number of times and duration of

reading, was significantly associated with parent-child relationship (times:  $r_s=.65$ ,  $p<.001$ ; duration:  $r_s=.50$ ,  $p=.01$ ), parent's self-perceived efficacy in providing reading support (times:  $r_s=.48$ ,  $p=.01$ ; duration:  $r_s=.42$ ,  $p=.03$ ) and helping child learn (times:  $r_s=.41$ ,  $p=.04$ ; duration:  $r_s=.35$ ,  $p=.08$ ), as well as parent's motivation to read with child (times:  $r_s=.45$ ,  $p=.02$ ; duration:  $r_s=.40$ ,  $p=.04$ ). That is, the more parents read with their child, the better their relationship with their child, and the more self-confidence they had in providing learning supporting to their child, although the direction of causality could not be inferred.

### Discussion

The current study investigated the effects of the parent-implemented RECALL intervention for preschoolers with ASD and found improvements in story comprehension and emotion knowledge significantly beyond that of the control group after completing the 6-week intervention on RECALL. Post hoc analyses further revealed that children in the RECALL group significantly improved from pretest to posttest in receptive vocabulary, reciprocity in verbal communication, and engagement in shared book reading, in addition to story comprehension and emotion knowledge, with medium to large effect sizes. By contrast, children who received similar intensity of parent-child reading not based on RECALL showed significant improvement only in receptive vocabulary.

The findings added to the existing limited research regarding the effects of RECALL for children with ASD. Previously, Whalon et al. (2015) showed that the four participants in their study gave more frequent correct spontaneous responses during a reading session after training with RECALL. The current study replicated those findings using an expanded sample size and a randomized controlled trial design. Children in the experimental group showed increased spontaneity in responding and better understanding of a story. By contrast, preschoolers in the control group also showed progress in receptive vocabulary, although improvements in other areas were not observed. These findings suggested that parent-child reading per se might help

young children with ASD understand more vocabulary, but the application of RECALL might generate additional benefits on the listening comprehension of stories and verbal responsiveness. The instructional sequence and specific prompts emphasized in RECALL might have contributed to the training outcomes by providing a scaffold for parents to elicit language from their children and a prompting hierarchy appropriate to the preschoolers' cognitive level, thus encouraging the children to process the materials more deeply and consequently construct a better mental representation of the text (Whalon et al., 2013).

Another important finding of the current study was the effect of RECALL on enhancing emotion understanding among preschoolers with ASD. This has never been examined in prior studies on RECALL, and certainly not with a randomized controlled design. The additional prompts on emotion identification and wh-inference outlined in RECALL might have facilitated parents to ask more questions about the facial expressions and feelings of the story characters, and children were prompted to label and explain the emotions of the characters. Parents responded to their children's answers and expanded their answers using the RECALL techniques. We postulated that the explanation of emotions and the responsiveness of parents to their children might have enabled better emotion understanding (Denham, 1998).

Parental involvement in home reading was found to correlate positively with parent's self-efficacy in providing reading and learning support to child, parent's motivation to read with child, and most significantly with parent-child relationship. This may imply that the more parents read with their child, the better their relationship with their child and the more they feel confident in helping their child learn. However, this may also be interpreted the other way round—parents who have high self-efficacy and better relationship with their children would engage more in parent-child reading. The causal relations among these variables warrant further investigation in future studies. Nonetheless, it is plausible that parent-child reading may serve as an opportunity for quality interaction between the parents and their children. Parents who are

equipped with the techniques to read and respond to their child might be in a better position to reap more positive benefits from this activity.

### **Limitations and Conclusion**

The present study contributes to the existing literature on dialogic reading and RECALL intervention. During the 6-week intervention, parents read with their child twice a week for about 15 minutes each time, the intensity of which was clearly manageable. In addition, the parents in our study were able to master the skills after completing the 1.5-hour training workshop. All these suggest that the RECALL approach is an affordable intervention that can be practically implemented by parents at home.

Nonetheless, given the small sample size in the current study and the fact that children were recruited from rehabilitation centers, the generalizability of the results to preschoolers with ASD in different inclusive settings remains to be explored. Studies of larger scale are required to corroborate the findings. Moreover, although we were mindful to recruit children who were clinically diagnosed with ASD or those who had reports from clinicians indicating significant ASD symptoms, we did not confirm the diagnosis of ASD in our study. The lack of information on child participants' cognitive functioning and their severity level of ASD becomes a major limitation of this study. As such, the results here should be interpreted with caution. Besides addressing these limitations, future research may further examine the maintenance of children's improvement in literacy skills and emotion understanding, and explore whether the training benefits can be generalized to their daily learning and social encounters.

**Compliance with Ethical Standards:**

**Funding:** This work was funded by the Research Grants Council of Hong Kong.

**Ethical approval:** All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments.

**Informed consent:** Informed consent was obtained from all individual participants included in the study.

### References

- Beaudoin, C., Leblanc, É., Gagner, C., & Beauchamp, M. H. (2020). Systematic review and inventory of theory of mind measures for young children. *Frontiers in Psychology, 10*, 2905. <https://doi.org/10.3389/fpsyg.2019.02905>
- Brown, H. M., Oram-Cardy, J., & Johnson, A. (2013). A meta-analysis of the reading comprehension skills of individuals on the autism spectrum. *Journal of Autism and Developmental Disorders, 43*(4), 932–955. <https://doi.org/10.1007/s10803-012-1638-1>
- Chiang, H. M., & Lin, Y. H. (2007). Reading comprehension instruction for students with autism spectrum disorders: A review of the literature. *Focus on Autism and other developmental disabilities, 22*(4), 259-267. <https://doi.org/10.1177%2F10883576070220040801>
- Cohen, J. (1988). *Statistical analysis for the behavioral sciences*. Hillsdale: Lawrence Erlbaum.
- Davidson, M. M., & Weismer, S. E. (2014). Characterization and prediction of early reading abilities in children on the autism spectrum. *Journal of Autism and Developmental Disorders, 44*(4), 828-845. <https://doi.org/10.1007/s10803-013-1936-2>
- Denham, S. A. (1986). Social cognition, prosocial behavior, and emotion in preschoolers: Contextual validation. *Child Development, 57*, 194-201. doi:10.2307/1130651
- Denham, S. A. (1998). *Emotional development in young children*. Guilford Press.
- Dunn, L., & Dunn, L. (1981). *Peabody Picture Vocabulary Test-Revised*. Circle Pines, MN: American Guidance Service.
- El Zein, F., Solis, M., Vaughn, S., & McCulley, L. (2014). Reading comprehension interventions for students with autism spectrum disorders: A synthesis of research. *Journal of Autism and Developmental Disorders, 44*(6), 1303-1322. <https://doi.org/10.1007/s10803-013-1989-2>

- Finnegan, E., & Mazin, A. L. (2016). Strategies for increasing reading comprehension skills in students with autism spectrum disorder: A review of the literature. *Education and Treatment of Children, 39*(2), 187-219. <http://doi.org/10.1353/etc.2016.0007>
- Fleury, V. P., Miramontez, S. H., Hudson, R. F., & Schwartz, I. S. (2014). Promoting active participation in book reading for preschoolers with autism spectrum disorder: A preliminary study. *Child Language Teaching and Therapy, 30*(3), 273-288. <https://doi.org/10.1177/0265659013514069>
- Fleury, V. P., & Schwartz, I. S. (2017). A modified dialogic reading intervention for preschool children with autism spectrum disorder. *Topics in Early Childhood Special Education, 37*(1), 16-28. <https://doi.org/10.1177/0271121416637597>
- Gallant, C. M., Lavis, L., & Mahy, C. E. (2020). Developing an understanding of others' emotional states: Relations among affective theory of mind and empathy measures in early childhood. *British Journal of Developmental Psychology, 38*(2), 151-166. <https://doi.org/10.1111/bjdp.12322>
- Garner, P. W., Dunsmore, J. C., & Southam-Gerrow, M. (2008). Mother-child conversations about emotions: Linkages to child aggression and prosocial behavior. *Social Development, 17*(2), 259-277. <https://doi.org/10.1111/j.1467-9507.2007.00424.x>
- Garner, P. W., Jones, D. C., & Miner, J. L. (1994). Social competence among low-income preschoolers: Emotion socialization practices and social cognitive correlates. *Child Development, 65*(2), 622-637. <https://doi.org/10.1111/j.1467-8624.1994.tb00772.x>
- Grazzani, I., Ornaghi, V., Conte, E., Pepe, A., & Caprin, C. (2018). The relation between emotion understanding and theory of mind in children aged 3 to 8: The key role of language. *Frontiers in Psychology, 9*, 1-10. doi: 10.3389/fpsyg.2018.00724



- Hudson, M. E., & Test, D. W. (2011). Evaluating the evidence base of shared story reading to promote literacy for students with extensive support needs. *Research and Practice for Persons with Severe Disabilities, 36*(1-2), 34-45. <https://doi.org/10.2511/rpsd.36.1-2.34>
- Huemer, S. V., & Mann, V. (2010). A comprehensive profile of decoding and comprehension in autism spectrum disorders. *Journal of Autism and Developmental Disorders, 40*(4), 485-493. <https://doi.org/10.1007/s10803-009-0892-3>
- Jasmin, E., Couture, M., McKinley, P., Reid, G., Fombonne, E., & Gisel, E. (2009). Sensori-motor and daily living skills of preschool children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 39*(2), 231-241. DOI:10.1007/s10803-008-0617-z
- Johnston, C., & Mash, E. J. (1989). A measure of parenting satisfaction and efficacy. *Journal of Clinical Child Psychology, 18*(2), 167-175. [https://doi.org/10.1207/s15374424jccp1802\\_8](https://doi.org/10.1207/s15374424jccp1802_8)
- Lanter, E., Freeman, D., & Dove, S. (2013). Procedural and conceptual print-related achievements in young children with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 28*(1), 14-25. <https://doi.org/10.1177/1088357612459270>
- Loveland, K. A., & Tunali-Kotoski, B. (2005). The school-age child with an autistic spectrum disorder. In F.R. Volkmar, R. Paul, A. Klin, & D. Cohen (Eds.), *Handbook of Autism and Pervasive Developmental Disorders, Volume 1, Third Edition* (pp. 247-287). New York, NY: Wiley.
- Miles, J., & Shevlin, M. (2001). *Applying regression and correlation: A guide for students and researchers*. Thousand Oaks: Sage.

- Murdock, L. C., & Hobbs, J. Q. (2011). Picture me playing: increasing pretend play dialogue of children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 41*(7), 870-878. DOI:10.1007/s10803-010-1108-6
- Mucchetti, C. A. (2013). Adapted shared reading at school for minimally verbal students with autism. *Autism, 17*(3), 358-372. <https://doi.org/10.1177/1362361312470495>
- Nation, K., Clarke, P., Wright, B., & Williams, C. (2006). Patterns of reading ability in children with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 36*(7), 911– 919. <https://doi.org/10.1007/s10803-006-0130-1>
- Nation, K., & Norbury, C. F. (2005). Why reading comprehension fails: Insights from developmental disorders. *Topics in Language Disorders, 25*(1), 21-32.
- Ngai, F. W., Chan, S. W. C., & Holroyd, E. (2007). Translation and validation of a Chinese version of the Parenting Sense of Competence Scale in Chinese mothers. *Nursing Research, 56*(5), 348-354. doi:10.1097/01.NNR.0000289499.99542.94
- Oakhill, J., & Cain, K. (2007). Introduction to comprehension development. In K. Cain & J. Oakhill (Eds.), *Children's comprehension problems in oral and written language: A cognitive perspective* (pp. 3-40). New York, NY: Guilford Press.
- Pianta, R. C. (1992). *Child-parent relationship scale (CPRS)*. Charlottesville, VA: University of Virginia.
- Ricketts, J., Jones, C., Happé, F., & Charman, T. (2013). Reading comprehension in autism spectrum disorders: The role of oral language and social functioning. *Journal of Autism and Developmental Disorders, 43*(4), 807–816. <https://doi.org/10.1007/s10803-012-1619-4>
- Sénéchal, M., & Young, L. (2008). The effect of family literacy interventions on children's acquisition of reading from kindergarten to grade 3: A meta-analytic review. *Review of Educational Research, 78*(4), 880-907. <https://doi.org/10.3102/0034654308320319>

- Tager-Flusberg, H., Paul, R., & Lord, C. (2005). Language and communication in autism. In F.R. Volkmar, R. Paul, A. Klin, & D. Cohen (Eds.), *Handbook of autism and pervasive developmental disorders, Volume 1, Third Edition* (pp. 335-364). New York, NY: Wiley.
- Trivette, C. M., Dunst, C. J., & Gorman, E. (2010). Effects of parent-mediated joint book reading on the early language development of toddlers and preschoolers. *Center for Early Literacy Learning, 3*(2), 1-15.
- Van Kleeck, A., Vander Woude, J., & Hammett, L. (2006). Fostering literal and inferential language skills in Head Start preschoolers with language impairment using scripted book-sharing discussions. *American Journal of Speech-Language Pathology, 15*(1), 85-95. [https://doi.org/10.1044/1058-0360\(2006/009\)](https://doi.org/10.1044/1058-0360(2006/009))
- Watson, L. R., Andrews, M. D., & Orovitz, J. (1996). Emergent literacy in children with autism vs. typical development. In *Meeting of the American Speech-Language-Hearing Association, Seattle, WA*.
- Whalon, K., Delano, M., & Hanline, M.F. (2013). A rationale and strategy for adapting dialogic reading for children with autism spectrum disorder: RECALL. *Preventing School Failure, 57*(2), 93-101. <https://doi.org/10.1080/1045988X.2012.672347>
- Whalon, K., Hanline, M. F., & Davis, J. (2016). Parent implementation of RECALL: A systematic case study. *Education and Training in Autism and Developmental Disabilities, 51*(2), 211-220. <https://www.jstor.org/stable/24827548>
- Whalon, K., Martinez, J. R., Shannon, D., Butcher, C., & Hanline, M. F. (2015). The impact of reading to engage children with autism in language and learning (RECALL). *Topics in Early Childhood Special Education, 35*(2), 102-115. <https://doi.org/10.1177/0271121414565515>
- Zhang, X., & Chen, H. (2010). Reciprocal influences between parents' perceptions of mother-child and father-child relationships: A short-term longitudinal study in Chinese

preschoolers. *The Journal of Genetic Psychology*, 171(1), 22-34.

<https://doi.org/10.1080/00221320903300387>