Supplemental Material S4. Intervention packages, strategies, results and certainty of evidence.

Article	Intervention package title	Intervention strategy						Dependent variables and success estimates or percentages	Dependent variables and mean PND scores	COE
		Train	Model	Opportunities	Prompt	Feedback	Other			
Ballin et al. (2012)	Peer-mediated intervention	Peers	Augmented	Choice Question	—	Expansion Recast	—	SGD^+ 2 of 2	SGD^+ 92%	S*
Bellon-Harn & Harn (2008)	Repeated Reading	—	Augmented Natural speech	Read Scaffold questions	Gestural	Expansion	—	SGD^+ 1 of 1 SGD^{+I} 0 of 1 SGD 0 of 1	SGD^+ 100% SGD^{+I} 0% SGD 0%	I
Biggs et al. (2017)	Peer-mediated intervention	Peers Paras	—	Comment Device Access Proximity Question Read Time delay Vocabulary	Unspecified	Praise Reinforce request	—	SGD^+ 4 of 4 SGD 1 of 4	SGD^+ 96 % SGD 75%	P
Binger et al. (2008)	Training Interaction Strategies	Parents	Augmented Natural speech	Question Read Time delay	—	Expansion Imitate Recast	—	SGD^+ 2 of 2 $SGD^{+I} M = 71\%$	100%	P*
Binger et al. (2010)	Training Interaction Strategies	Paras	Augmented Natural speech	Question Read Time delay	Verbal	Error Correction Expansion Imitate	—	SGD 3 of 3 $SGD^I M = 87\%$	SGD 93%[a]	C
Binger & Light (2007)	Aided Modeling	—	Augmented Natural speech	Time delay	—	—	—	SGD^+ 2 of 3 SGD $M = 62\%$	SGD^+ 94%	P*
Bingham et al. (2007)	Training	Paras	—	Chall. behavior	Gestural Verbal Physical	Reinforce request	—	SGD^+ 1 of 1	SGD^+ 100%[a]	I

Chung & Carter (2013)	Training Peer mediated intervention	Paras Peers	—	Comment Device access Env. arrangements Proximity Question Time delay Vocabulary	Gestural Verbal	Praise Other	Attention	SGD$^+$ 3 of 4 SGD^{+I} 2 of 4 SGD 3 of 4	SGD$^+$ 76% SGD^{+I} 67% SGD 66%[a]	P
Chung & Douglas (2015)	Training Peer mediated intervention	Paras	—	Env. arrangements Proximity Vocabulary	Gestural Verbal	Praise	Peer attention	SGD$^+$ 3 of 3 SGD^{+I} 3 of 3 SGD 3 of 3	SGD$^+$ 100% SGD^{+I} 92% SGD 100%[a]	S
Cosbey & Johnston (2006)	Peer mediated intervention	Peers	—	Env. arrangements Preferred items Time delay	Physical	Reinforce request	Errorless Learning	SGD 3 of 3	100% (after errorless)	C
Datillo & Camarata (1991)	Self-initiated intervention	—	—	Env. arrangements Preferred items	Verbal	Reinforce request	—	SGD$^+$ 1 of 1	SGD$^+$ 75%	S*
Dicarlo & Banajee (2000)	Unspecified "naturalistic methods"	—	Augmented	Env. arrangements Preferred items Question Time delay	Visual Verbal	Reinforce request	—	SGD^{+IR} 2 of 2 SGD^{IR} $M = 54\%$	SGD^{+IR} 78%	S
Douglas et al. (2013)	Training Interaction Strategies	Paras	Augmented	Comments Device access Env. arrangements Preferred items Question Time delay Vocabulary	—	Expansion Other Reinforce request	—	SGD$^+$ 1 of 1	N/A (only 1 intervention point)	I
Durand (1993)	Functional Communication Training	—	—	Chall. behavior Preferred items Time delay	Physical Verbal	Reinforce request	Functional Analysis	SGD^{+IR} 3 of 3	SGD^{+IR} 100%	S
Durand (1999)	Functional Communication Training	—	—	Chall. behavior Preferred items Time delay	Physical Verbal	Reinforce request	Functional Analysis	SGD^{+IR} 5 of 5	SGD^{+IR} 100%[a]	P

Study	Strategy	Agent	Mode	Teaching	Prompts	Consequences	Other	Baseline	Intervention	Outcome
Dyches (1998)	Coincidental or incidental instruction	—	Augmented	Preferred items, Time delay	Physical, Verbal	Reinforce request	—	SGD^{+I} 0 of 4, SGD 0 of 4	SGD^{+I} 19%, SGD 12%	I
Edmister & Wegner (2015)	Repeating Reading	—	Augmented	Comment, Read, Scaffold questions, Time delay	—	Praise	—	SGD^{+} 0 of 3	SGD^{+} 67%	I
Finke et al. (2017)	Least-to-most prompting	—	Augmented, Natural speech	Comment, Question, Time delay	Physical, Verbal	Expansion, Praise, Recast	—	SGD^{+I} 6 of 6	SGD^{+I} 93%	C
Ganz et al. (2015)	—	—	—	Question, Time delay	—	—	—	SGD^{I} 1 of 2, SGD 1 of 2	N/A (no responding for 1)	I
Harding et al. (2009)	Functional Communication Training	—	—	Chall. behavior, Preferred items	Verbal	Reinforce request, Praise	Functional Analysis	SGD^{R} 0 of 2	SGD^{R} 10% (to BSL) 4% (to INT)	I
Iacono & Duncam (1995)	Scripting	—	Augmented, Natural speech, Sign	Comment, Preferred items, Question, Time delay	—	Expand, Praise	—	SGD^{+I} 1 of 1	SGD^{+I} 67% (to BSL) 100% (to INT)	S
Johnston et al. (2003)	—	Peers	Augmented	Env. arrangements, Preferred items, Proximity, Time delay	Verbal, Physical	Reinforce request, Other	—	SGD 2 of 2	SGD 87%	I
Kent-Walsh & Binger (2010)	Training Interaction Strategies	Parents	Augmented	Question, Read, Time delay	—	Other	—	SGD^{+} 6 of 6	SGD^{+} 100%	C
Light et al. (1999)	—	Teach. SLP	Augmented	Comment, Proximity, Question, Time delay	Gestural	Error correction, Praise	Pre-instruction	SGD^{I} 2 of 2	SGD^{I} 95% [a]	I
McGregor et al. (1992)	Unspecified "naturalistic methods"	—	Augmented	Env. arrangements	Verbal	Error correction, Praise	Pre-instruction	SGD^{I} 3 of 3	SGD^{I} 93%	S

McMillan & Renzaglia (2014a,b)	Milieu Teaching Training	Teach.	Augmented	Comment Env. arrangements Time delay Vocabulary	Physical	Error correction Praise Reinforce request	—	SGD^I 4 of 4	SGD^I 96%	P
Olive et al. (2007)	Enhanced Milieu Teaching	—	Augmented	Comment Env. arrangements Follow lead Model play Time delay	Gestural Physical Verbal	Expansion Reinforce request	—	SGD^{IR} 3 of 3 SGD^{+IR} 3 of 3	SGD^{IR} 93%[a] SGD^{+IR} 83%[a]	P
Olive et al. (2008)	Functional Communication Training	Parent	—	Chall. behavior Comment Preferred items Proximity	Verbal Gestural Physical	Reinforce request	Functional Analysis	SGD^{+IR} 2 of 4	SGD^{+IR} 47%	I*
Schepis et al. (1998)	Training Unspecified "naturalistic methods"	Teach. Paras	Augmented	Follow lead Preferred items Proximity Question Time delay	Verbal Gestural Physical	Reinforce request	—	SGD$^+$ 6 of 6 SGD^I $M = 53\%$ SGD $M = 75\%$	SGD$^+$ 100%	I
Taylor & Iacono (2003)	Scripting	—	Augmented Natural speech Sign	Follow lead Model play Time delay	—	Other	—	SGD$^+$ 1 of 3	SGD$^+$ 50% (to speech and sign)	I
Trembath et al. (2009)	Peer mediated intervention Unspecified "naturalistic methods"	Peers	Augmented	Comment Model play Time delay	—	—	—	SGD$^+$ 1 of 3	SGD$^+$ 68% (to BSL) 37% (to INT)	I
Trottier et al. (2011)	Peer mediated intervention	Peers	Augmented	Preferred items Time delay	Verbal Gestural	—	—	SGD^{+I} 2 of 2	SGD^{+I} 87%[a]	P

Note. Paras = paraprofessionals; SLP = speech-language pathologist; teach = teachers; chall. behavior = challenging behavior; env. arrangements = environmental arrangements; SGD= measured speech-generating device responses only; BSL= baseline with no SGD; INT = comparative intervention with no SGD; COE = certainty of evidence; C = conclusive; P = preponderant; S = suggestive; I = inconclusive.
[+]Measured SGD responses and other forms of communication. [I]Defined as independent. [R]Measured only requesting. [a]All baseline scores = 0%. *Rating may be higher if other participants or outcomes included.

References

Ballin, L., Balandin, S., & Stancliffe, R. J. (2012). The speech generating device (SGD) mentoring program: Supporting the development of people learning to use an SGD. *Journal of Developmental and Physical Disabilities, 25,* 437–459.

Bellon-Harn, M. L., & Harn, W. E. (2008). Scaffolding strategies during repeated storybook reading an extension using a voice output communication aid. *Focus on Autism and Other Developmental Disabilities, 23,* 112–124.

Biggs, E. E., Carter, E. W., & Gustafson, J. (2017). Efficacy of peer support arrangements to increase peer interaction and AAC use. *American Journal on Intellectual and Developmental Disabilities, 122,* 25–48.

Binger, C., Kent-Walsh, J., Berens, J., Del Campo, S., & Rivera, D. (2008). Teaching Latino parents to support the multi-symbol message productions of their children who require AAC. *Augmentative and Alternative Communication, 24,* 323–338.

Binger, C., Kent-Walsh, J., Ewing, C., & Taylor, S. (2010). Teaching educational assistants to facilitate the multisymbol message productions of young students who require augmentative and alternative communication. *American Journal of Speech-Language Pathology, 19*(2), 108–120.

Binger, C., & Light, J. (2007). The effect of aided AAC modeling on the expression of multi-symbol messages by preschoolers who use AAC. *Augmentative and Alternative Communication, 23,* 30–43.

Bingham, M. A., Spooner, F., & Browder, D. (2007). Training paraeducators to promote the use of augmentative and alternative communication by students with significant disabilities. *Education and Training in Developmental Disabilities, 42,* 339–352.

Chung, Y. C., & Carter, E. W. (2013). Promoting peer interactions in inclusive classrooms for students who use speech-generating devices. *Research and Practice for Persons With Severe Disabilities, 38,* 94–109.

Chung, Y. C., & Douglas, K. H. (2015). A peer interaction package for students with autism spectrum disorders who use speech-generating devices. *Journal of Developmental and Physical Disabilities, 27,* 831–849.

Cosbey, J. E., & Johnston, S. (2006). Using a single-switch voice output communication aid to increase social access for children with severe disabilities in inclusive classrooms. *Research and Practice for Persons with Severe Disabilities, 31,* 144–156.

Dattilo, J., & Camarata, S. (1991). Facilitating conversation through self-initiated augmentative communication treatment. *Journal of Applied Behavior Analysis, 24,* 369–378.

Dicarlo, C. F., & Banajee, M. (2000). Using voice output devices to increase initiations of young children with disabilities. *Journal of Early Intervention, 23,* 191–199.

Douglas, S. N., Light, J. C., & McNaughton, D. B. (2013). Teaching paraeducators to support the communication of young children with complex communication needs. *Topics in Early Childhood Special Education, 33,* 91–101.

Durand, V. (1993). Functional communication training using assistive devices: Effects on challenging behavior and affect. *Augmentative and Alternative Communication, 9,* 168–176.

Durand, V. M. (1999). Functional communication training using assistive devices: Recruiting natural communities of reinforcement. *Journal of Applied Behavior Analysis, 32,* 247–267.

Dyches, T. T. (1998). Effects of switch training on the communication of children with autism and severe disabilities. *Focus on Autism and Other Developmental Disabilities, 13,* 151–162.

Edmister, E., & Wegner, J. (2015). Repeated reading, turn taking, and augmentative and alternative communication (AAC). *International Journal of Disability, Development and Education, 62,* 319–338.

Finke, E. H., Davis, J. M., Benedict, M., Goga, L., Kelly, J., Palumbo, L., . . . Waters, S. (2017). Effects of a least-to-most prompting procedure on multisymbol message production in children with autism spectrum disorder who use augmentative and alternative communication. *American Journal of Speech-Language Pathology, 26,* 81–98.

Ganz, J. B., Hong, E. R., Gilliland, W., Morin, K., & Svenkerud, N. (2015). Comparison between visual scene displays and exchange-based communication in augmentative and alternative communication for children with ASD. *Research in Autism Spectrum Disorders, 11,* 27–41.

Harding, J. W., Wacker, D. P., Berg, W. K., Winborn-Kemmerer, L., Lee, J. F., & Ibrahimovic, M. (2009). Analysis of multiple manding topographies during functional communication training. *Education & Treatment of Children, 32,* 21–36.

Iacono, T. A., & Duncum, J. E. (1995). Comparison of sign alone and in combination with an electronic communication device in early language intervention: Case study. *Augmentative and Alternative Communication, 11,* 249–259.

Johnston, S., McDonnell, A., & Nelson, C. (2003). Teaching functional communication skills using augmentative and alternative communication in inclusive settings. *Journal of Early Intervention, 25,* 263–280.

Kent-Walsh, J., Binger, C., & Hasham, Z. (2010). Effects of parent instruction on the symbolic communication of children using augmentative and alternative communication during storybook reading. *American Journal of Speech-Language Pathology, 19,* 97–107.

Light, J., Binger, C., Agate, T., & Ramsay, K. (1999). Teaching partner-focused questions to individuals who use augmentative and alternative communication to enhance their communicative competence. *Journal of Speech, Language, and Hearing Research, 42,* 241–255.

McGregor, G., Young, J., Gerak, J., & Thomas, B. (1992). Increasing functional use of an assistive communication device by a student with severe disabilities. *Augmentative and Alternative Communication, 8,* 243–250.

McMillan, J. M., & Renzaglia, A. (2014a). Supporting speech generating device use in the classroom. Part 1: Teacher professional development. *Journal of Special Education Technology, 29,* 31–47.

McMillan, J. M., & Renzaglia, A. (2014b). Supporting speech generating device use in the classroom. Part Two: Student communication outcomes. *Journal of Special Education Technology, 29,* 49–61.

Olive, M. L., De La Cruz, B., Davis, T. N., Chan, J. M., Lang, R. B., O'Reilly, M. F., & Dickson, S. M. (2007). The effects of enhanced milieu teaching and a voice output communication aid on the requesting of three children with autism. *Journal of Autism and Developmental Disorders, 37,* 1505–1513.

Olive, M. L., Lang, R. B., & Davis, T. N. (2008). An analysis of the effects of functional communication and a voice output communication aid for a child with autism spectrum disorder. *Research in Autism Spectrum Disorders, 2,* 223–236.

Schepis, M., Reid, D., & Behrmann, M. (1998). Increasing communicative interactions of young children with autism using a voice output communication aid and naturalistic teaching. *Journal of Applied Behavior Analysis, 31,* 561–578.

Taylor, R., & Iacono, T. (2003). AAC and scripting activities to facilitate communication and play. *Advances in Speech Language Pathology, 5,* 79–93.

Trembath, D., Balandin, S., Togher, L., & Stancliffe, R. J. (2009). Peer-mediated teaching and augmentative and alternative communication for preschool-aged children with autism. *Journal of Intellectual and Developmental Disability, 34,* 173–186.

Trottier, N., Kamp, L., & Mirenda, P. (2011). Effects of peer-mediated instruction to teach use of speech-generating devices to students with autism in social game routines. *Augmentative and Alternative Communication, 27,* 26–39.