

Play-Based Interventions

No studies of *play-based interventions* that fall within the scope of the Early Childhood Education Interventions for Children with Disabilities review protocol meet What Works Clearinghouse (WWC) evidence standards. The lack of studies meeting WWC evidence standards means that, at this time, the WWC is unable to draw any conclusions based on research about the effectiveness or ineffectiveness of *play-based interventions* on preschool children with disabilities in early education settings. Additional research is needed to determine the effectiveness or ineffectiveness of this intervention.

Program Description¹

Play-based interventions are practices designed to improve socio-emotional, physical, language, and cognitive development through guided interactive play. During play sessions, an interventionist uses strategies including modeling, verbal redirection, reinforcement, and indirect instruction to sustain and encourage child play activities. Through the use of appropriate play materials and the direction of the interventionist, the goal is for young children with disabilities to be better able to explore, experiment, interact, and express themselves.

Play-based interventions can be conducted across a variety of settings, including at school or at home, as one-on-one activities between an interventionist and a child, or in small group settings.

Research²

The WWC identified 62 studies of *play-based interventions* for preschool children with disabilities in early education settings that were published or released between 1989 and 2011.

Three studies are within the scope of the Early Childhood Education Interventions for Children with Disabilities review protocol and were reviewed for this intervention report. However, these studies do not meet WWC evidence standards.

- Two studies did not establish that the comparison group was comparable to the treatment group prior to the start of the intervention. One of these used a quasi-experimental design, and the other was a randomized controlled trial with high attrition.
- One study assigned only one unit to the treatment condition and one unit to the control condition, which makes it impossible to attribute the observed effect solely to the *play-based intervention*.

Twenty-one studies are out of the scope of the Early Childhood Education Interventions for Children with Disabilities review protocol because they have an ineligible study design.

Thirty-eight studies are out of the scope of the Early Childhood Education Interventions for Children with Disabilities review protocol for reasons other than study design.

Four additional studies (not included in the counts above) were reviewed using the pilot Single-Case Design standards. One study meets the pilot Single-Case Design standards, and three do not meet pilot Single-Case Design standards. Studies reviewed using pilot Single-Case Design standards are listed in Appendix A.

References

Studies that do not meet WWC evidence standards

- Calabro, E. (2003). Rational emotive behavior play therapy vs. client-centered therapy. *Dissertation Abstracts International Section B: The Sciences and Engineering*, 64(2-B), 957. The study does not meet WWC evidence standards because it is a randomized controlled trial in which the combination of overall and differential attrition rates exceeds WWC standards for this area, and the subsequent analytic intervention and comparison groups are not shown to be equivalent.
- Danger, S., & Landreth, G. (2005). Child-centered group play therapy with children with speech difficulties. *International Journal of Play Therapy*, 14(1), 81–102. The study does not meet WWC evidence standards because the measures of effectiveness cannot be attributed solely to the intervention—there was only one unit assigned to one or both conditions.
- Modica, A. N. (2010). Using a play intervention to improve the skills of children with a language delay. *Dissertation Abstracts International*, 70(08B), 43-5208. The study does not meet WWC evidence standards because it uses a quasi-experimental design in which the analytic intervention and comparison groups are not shown to be equivalent.

Studies that are ineligible for review using the Early Childhood Education Interventions for Children with Disabilities Evidence Review Protocol

- Athanasiou, M. S. (2004). Play-based approaches to preschool assessment. In B. A. Bracken (Ed.), *The psychoeducational assessment of preschool children* (pp. 412–427). Boston, MA: Allyn and Bacon. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Baggerly, J., Ray, D. C., & Bratton, S. C. (2010). *Child-centered play therapy research: The evidence base for effective practice*. Hoboken, NJ: John Wiley & Sons. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Benham, A. L., & Slotnick, C. F. (2006). Play therapy: Integrating clinical and developmental perspectives. In J. Luby (Ed.), *Handbook of preschool mental health: Development, disorders and treatment* (pp. 331–371). New York: Guilford. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Bennett, M. E. (2004). Experiential, activity-based, and play interventions in child therapy: A delphi study. *Dissertation Abstracts International Section B: The Sciences and Engineering*, 64(10-B), 5206. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Bernard-Opitz, V., Ing, S., & Tan, Y. K. (2004). Comparison of behavioural and natural play interventions for young children with autism. *Autism: The International Journal of Research & Practice*, 8(3), 319–333. The study is ineligible for review because it does not take place in the geographic area specified in the protocol.
- Blanco, P. J. (2009). The impact of school-based child centered play therapy on academic achievement, self-concept, and teacher-child relationship stress. *Dissertation Abstracts International*, 70(11A), 119-4190. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample is not within the specified age or grade range.
- Bowler, D. (2007). Editorial. *Autism: The International Journal of Research & Practice*, 11(3), 203–204. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Brassard, M. R., & Boehm, A. E. (2007). *Preschool assessment: Principles and practices*. New York: Guilford Press. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.

- Brooke, S. L. (2009). *The use of the creative therapies with autism spectrum disorders*. Springfield, IL: Charles C. Thomas. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Bruder, M. B., & Chen, L. (2007). Measuring social competence in toddlers: Play tools for learning. *Early Childhood Services: An Interdisciplinary Journal of Effectiveness*, 1(1), 49–70. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Buchanan, M. (2009). The home play of toddlers with disabilities: Contexts and maternal perspectives. *International Journal of Disability, Development and Education*, 56(3), 263–283. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample is not within the specified age or grade range.
- Cavett, A. M. (2010). *Structured play-based interventions for engaging children and adolescents in therapy*. Concord, MA: Infinity Publishing. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Cordier, R., Bundy, A., Hocking, C., & Einfeld, S. (2009). A model for play-based intervention for children with ADHD. *Australian Occupational Therapy Journal*, 56(5), 332–340. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample is not within the specified age or grade range.
- Craig-Unkefer, L. A. (1999). Increasing the social-communicative skills of at-risk preschool age children in a play context. *Dissertation Abstracts International*, 60(05A), 124-1445. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Curley, S. L. (1997). Training caregivers to intervene in the exploratory play of young children with development delays. *Dissertation Abstracts International*, 59(04B), 103-1881. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample is not within the specified age or grade range.
- Diaz, M. A., & Lieberman, A. F. (2010). Use of play in child-parent psychotherapy with preschoolers traumatized by domestic violence. In C. E. Shaefer (Ed.), *Play therapy for preschool children* (pp. 131–156). Washington, DC: American Psychological Association. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- DiCarlo, C. F., Schepis, M. M., & Flynn, L. (2009). Embedding sensory preference into toys to enhance toy play in toddlers with disabilities. *Infants and Young Children*, 22(3), 188–200. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample is not within the specified age or grade range.
- Draper, K., Siegel, C., White, J., Solis, C. M., & Mishna, F. (2009). Preschoolers, parents, and teachers (PPT): A preventive intervention with an at-risk population. *International Journal of Group Psychotherapy*, 59(2), 221–242. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Drewes, A. A. (2006). Play-based interventions. *Journal of Early Childhood and Infant Psychology*, 2, 139–156. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Francke, J., & Geist, E. A. (2004). The effects of teaching play strategies on social interaction for a child with autism: A case study. *Journal of Research in Childhood Education*, 18(2), 125–140. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Grineski, S. C. (1989). Effects of cooperative games on prosocial behavior in interactions of young children with and without impairments (games). *Dissertation Abstracts International*, 51(08A), 171-2629. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.

- 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: The International Journal of Research and Practice*, 11(6), 535. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Herman, H. S., & Mistry, J. (1989, April). *Effect of task goal and item organization on immediate and delayed recall*. Paper presented at the meetings of the Society for Research in Child Development, Kansas City, MO. The study is ineligible for review because it does not examine an intervention implemented in a way that falls within the scope of the review.
- Holman, K. C. (2004). Sociocommunicative and play skills in young children with autism spectrum disorders. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, 64(11A), 4009. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Horgan, E. (1997). *Preschool play based intervention: The outcomes*. New Zealand: Auckland College of Education. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Jelveh, M. (2002). A play-based treatment model for improving the social play development of children with autism spectrum disorder. *Dissertation Abstracts International*, 64(02A), 118-397. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Kale, A. L., & Landreth, G. L. (1999). Filial therapy with parents of children experiencing learning difficulties. *International Journal of Play Therapy*, 8(2), 35–56. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample is not within the specified age or grade range.
- 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. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Kennedy, M. D. (1994). Does total communication facilitate language comprehension in young children with developmental delays? *Dissertation Abstracts International*, 55(04A), 79-931. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Khoshali, A. K. (2008). Play activities in children with mental retardation. *Indian Journal of Community Psychology*, 4(2), 115–130. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample is not within the specified age or grade range.
- Lifter, K. (2000). Linking assessment to intervention for children with developmental disabilities or at-risk for developmental delay: The developmental play assessment (DPA) instrument. In K. Gitlin-Weiner, A. Sandgrund, & C. E. Shaefer (Eds.), *Play diagnosis and assessment* (2nd ed., pp. 228–261). New York: John Wiley & Sons, Inc. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Linder, T., & Bixby, B. (2010). Transdisciplinary play-based assessment and intervention in the primary years. In A. A. Drewes & C. E. Shaefer (Eds.), *School-based play therapy* (2nd ed., pp. 123–141). New York: John Wiley & Sons, Inc. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Linder, T., & Linas, K. (2009). A functional, holistic approach to developmental assessment through play: The transdisciplinary play-based assessment, second edition. *Zero to Three*, 30(1), 28. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.

- Linder, T. W., Linas, K., & Stokka, K. (2008). Transdisciplinary play-based intervention with young children with disabilities. In C. Schaefer, S. Kelly-Zion, J. McCormick, & A. Ohnogi (Eds.), *Play therapy for very young children* (pp. 307–337). Lanham, MD: Rowman and Littlefield. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample is not within the specified age or grade range.
- Mahon, J. M. (1994). A comparison of parent-child attachment to a play therapy program. *Dissertation Abstracts International*, 55(03A), 233-464. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Mallory, J. M., KellyVance, L., & Ryalls, B. (2010). Incorporating divergent thinking training into play interventions for preschool children with developmental risk factors. *The International Journal of Creativity & Problem Solving*, 20(2), 57–71. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Malone, D. M. (2006). Contextually influenced patterns of play-developmental age associations for preschoolers with and without mental retardation. *Early Childhood Education Journal*, 34(3), 215–225. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Malone, D. M., & Landers, M. A. (2001). Mothers' perception of the toy play of preschoolers with intellectual disabilities. *International Journal of Disability, Development and Education*, 48(1), 91–102. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Martin, C. A. (2009). Training early childhood special education teachers to embed instruction during recess for students with severe disabilities. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, 70(4-A), 1243. The study is ineligible for review because it does not include a student outcome.
- Morrison, R., Sainato, D., Benchaaban, D., & Endo, S. (2002). Increasing play skills of children with autism using activity schedules and correspondence training. *Journal of Early Intervention*, 25(1), 58–72. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Morrison, R. S. (1999). The effects of correspondence training and activity schedules on the play behavior of preschoolers with autism in an inclusive classroom. *Dissertation Abstracts International*, 60(08A), 219-2870. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Nevile, M., & Bachor, D. G. (2002). A script-based symbolic play intervention for children with developmental delay. *Developmental Disabilities Bulletin*, 30(2), 140–172. The study is ineligible for review because it does not take place in the geographic area specified in the protocol.
- Nuzzolo-Gomez, R., Leonard, M. A., Ortiz, E., Rivera, C. M., & Greer, R. D. (2002). Teaching children with autism to prefer books or toys over stereotypy or passivity. *Journal of Positive Behavior Interventions*, 4(2), 80–87. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Ohnogi, A. J. (2010). Using play to support children traumatized by natural disasters: Chuetsu earthquake series in Japan. In A. Kalayjian & D. Eugene (Eds.), *Mass trauma and emotional healing around the world: Rituals and practices for resilience and meaning-making* (Vol. 1, pp. 37–54). Santa Barbara, CA: Praeger. The study is ineligible for review because it does not take place in the geographic area specified in the protocol.
- Peters, K. S. (2009). Peer play intervention and its effect on the social, communication, and play skills of students with autism ages 3–5. *Dissertation Abstracts International*, 70(05A), 190-1550. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Pierce, D. E. (1996). Infant space, infant time: Development of infant interactions with the physical environment, from 1 to 18 months. *Dissertation Abstracts International*, 57(09B), 387-5949. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample is not within the specified age or grade range.

- Post, P., McAllister, M., Sheely, A., Hess, B., & Flowers, C. (2004). Child-centered kinder training for teachers of pre-school children deemed at-risk. *International Journal of Play Therapy, 13*(2), 53–74. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Reddy, L. A., Files-Hall, T. M., & Schaefer, C. E. (2005). *Empirically based play interventions for children*. Washington, DC: American Psychological Association. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Reid, D. (2002). Benefits of a virtual play rehabilitation environment for children with cerebral palsy on perceptions of self-efficacy: A pilot study. *Developmental Neurorehabilitation, 5*(3), 141–148. The study is ineligible for review because it does not use a comparison group design or a single-case design.
- Reid, D. T. (2002). The use of virtual reality to improve upper-extremity efficiency skills in children with cerebral palsy: A pilot study. *Technology and Disability, 14*(2), 53–61. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample is not within the specified age or grade range.
- Schaefer, C. E. (2008). *Play therapy for very young children*. Lanham, MD: Jason Aronson. The study is ineligible for review because it is a secondary analysis of the effectiveness of an intervention, such as a meta-analysis or research literature review.
- Scott, E. L. (2002). Toward a play program to benefit children's attention in the classroom. *Dissertation Abstracts International Section B: The Sciences and Engineering, 63*(1-B), 549. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Siu, A. F. Y. (2010). Play therapy in Hong Kong: Opportunities and challenges. *International Journal of Play Therapy, 19*(4), 235–243. The study is ineligible for review because it does not take place in the geographic area specified in the protocol.
- Solomon, R. (2008). Play-based intervention for very young children with autism: The PLAY project. In C. E. Schaefer, S. Kelly-Zion, J. McCormick, & A. Ohnogi (Eds.), *Play therapy for very young children* (pp. 379–401). Lanham, MD: Jason Aronson. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Thomas, N., & Smith, C. (2004). Developing play skills in children with autistic spectrum disorders. *Educational Psychology in Practice, 20*(3), 195. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Tol, W. A., Komprou, I. H., Jordans, M. J. D., Gross, A. L., Susanty, D., Macy, R. D., & de Jong, J. T. V. M. (2010). Mediators and moderators of a psychosocial intervention for children affected by political violence. *Journal of Consulting and Clinical Psychology, 78*(6), 818–828. The study is ineligible for review because it does not take place in the geographic area specified in the protocol.
- Treloar, R., & Cairns, S. (2002). What matters most? A reflection on a quarter century of early childhood intervention. In M. Cuskelly, A. Jobling, & S. Buckley (Eds.), *Down syndrome across the life span* (pp. 41–53). London, England: Whurr Publishers. The study is ineligible for review because it does not take place in the geographic area specified in the protocol.
- Wong, C. S., Kasari, C., Freeman, S., & Paparella, T. (2007). The acquisition and generalization of joint attention and symbolic play skills in young children with autism. *Research & Practice for Persons with Severe Disabilities, 32*(2), 101–109. The study is ineligible for review because it does not use a sample aligned with the protocol—the sample either includes less than 50% students with identified disabilities or more than 50% students with autism.
- Woods, J. J., & Kashinath, S. (2007). Expanding opportunities for social communication into daily routines. *Early Childhood Services: An Interdisciplinary Journal of Effectiveness, 1*(2), 137–154. The study is ineligible for review because it does not use a comparison group design or a single-case design.

Appendix A: Single-case design studies reviewed for this intervention (but not included in this intervention report)

Study citation	Study disposition
Craig-Unkefer, L. A., & Kaiser, A. P. (2002). Improving the social communication skills of at-risk social preschool children in a play context. <i>Topics in Early Childhood Special Education, 22</i> (1), 3–13.	Meets WWC pilot Single-Case Design standards.
Peters, K. S. (2009). Peer play intervention and its effect on the social, communication, and play skills of students with autism ages 3–5. <i>Dissertation Abstracts International, 70</i> (05A), 190-1550.	The study does not meet WWC pilot Single-Case Design standards because it does not have at least three attempts to demonstrate an intervention effect at three different points in time.
Robb, S. L. (2003). Music interventions and group participation skills of preschoolers with visual impairments: Raising questions about music, arousal, and attention. <i>Journal of Music Therapy, 40</i> (4), 266–282.	The study does not meet WWC pilot Single-Case Design standards because it does not have at least three attempts to demonstrate an intervention effect at three different points in time.
Spiegel-McGill, P., Zippiroli, S., & Mistrett, S. (1989). Microcomputers as social facilitators in integrated preschools. <i>Journal of Early Intervention, 13</i> (3), 249–260.	The study does not meet WWC pilot Single-Case Design standards because it only includes outcomes that are overaligned with the intervention or measured in a way that is inconsistent with the protocol.

Endnotes

¹ *Play-based interventions* do not have a single developer or official description. The descriptive information for this program was obtained from publicly available sources, including the research articles reviewed in this report (Calabro, 2003; Danger & Landreth, 2005; Modica, 2010). Further verification of the accuracy of the descriptive information for this program is beyond the scope of this review. The literature search reflects documents publicly available by May 2011.

² The studies in this report were reviewed using WWC Evidence Standards, Version 2.1, as described in the Early Childhood Education Interventions for Children with Disabilities protocol, Version 2.0. The evidence presented in this report is based on available research. Findings and conclusions may change as new research becomes available.

Recommended Citation

U.S. Department of Education, Institute of Education Sciences, What Works Clearinghouse (2012, April). *Early Childhood Education Interventions for Children with Disabilities intervention report: Play-based interventions*. Retrieved from <http://whatworks.ed.gov>.

Glossary of Terms

Attrition	Attrition occurs when an outcome variable is not available for all participants initially assigned to the intervention and comparison groups. The WWC considers the total attrition rate and the difference in attrition rates across groups within a study.
Clustering adjustment	If treatment assignment is made at a cluster level and the analysis is conducted at the student level, the WWC will adjust the statistical significance to account for this mismatch, if necessary.
Confounding factor	A confounding factor is a component of a study that is completely aligned with one of the study conditions, making it impossible to separate how much of the observed effect was due to the intervention and how much was due to the factor.
Design	The design of a study is the method by which intervention and comparison groups were assigned.
Domain	A domain is a group of closely related outcomes.
Effect size	The effect size is a measure of the magnitude of an effect. The WWC uses a standardized measure to facilitate comparisons across studies and outcomes.
Eligibility	A study is eligible for review and inclusion in this report if it falls within the scope of the review protocol and uses either an experimental or matched comparison group design.
Equivalence	A demonstration that the analysis sample groups are similar on observed characteristics defined in the review area protocol.
Extent of evidence	An indication of how much evidence supports the findings. The criteria for the extent of evidence levels are given in the WWC Procedures and Standards Handbook (version 2.1).
Improvement index	Along a percentile distribution of students, the improvement index represents the gain or loss of the average student due to the intervention. As the average student starts at the 50th percentile, the measure ranges from -50 to +50.
Multiple comparison adjustment	When a study includes multiple outcomes or comparison groups, the WWC will adjust the statistical significance to account for the multiple comparisons, if necessary.
Quasi-experimental design (QED)	A quasi-experimental design (QED) is a research design in which subjects are assigned to treatment and comparison groups through a process that is not random.
Randomized controlled trial (RCT)	A randomized controlled trial (RCT) is an experiment in which investigators randomly assign eligible participants into treatment and comparison groups.
Rating of effectiveness	The WWC rates the effects of an intervention in each domain based on the quality of the research design and the magnitude, statistical significance, and consistency in findings. The criteria for the ratings of effectiveness are given in the WWC Procedures and Standards Handbook (version 2.1).
Single-case design	A research approach in which an outcome variable is measured repeatedly within and across different conditions that are defined by the presence or absence of an intervention.
Standard deviation	The standard deviation of a measure shows how much variation exists across observations in the sample. A low standard deviation indicates that the observations in the sample tend to be very close to the mean; a high standard deviation indicates that the observations in the sample tend to be spread out over a large range of values.
Statistical significance	Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups. The WWC labels a finding statistically significant if the likelihood that the difference is due to chance is less than 5% ($p < 0.05$).
Substantively important	A substantively important finding is one that has an effect size of 0.25 or greater, regardless of statistical significance.

Please see the [WWC Procedures and Standards Handbook \(version 2.1\)](#) for additional details.