**How much is enough?**

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| **Speech and language communication disorders** | **References**  | **Summary conclusions for research paper**  |
| Language  | Law et al (2004)  | * Greater expressive language gains for treatments lasting more than 8 weeks.
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| Baratt et al. (1992) | * Greater language gains in pre-schoolers following concentrated (24 sessions over 6 weeks) vs. distributed (24 sessions over 24 weeks) practice.
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| An Investigation of treatment Scheduling for Phonemic Awareness with Kindergartners who are at risk for reading difficulties (Ukrainetz et al., 2009) | * RCT compared 20 responses per 30 minutes session 1 or 3 times per week – 4 hours of treatment as effective as 11 hours of treatment.
* Once per week vs. three times per week did not matter.
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| Is more better? Milieu Communication Teaching in Toddlers with Intellectual Disabilities (Fey et al., 2012) | * Once per week vs. five times per week did not matter
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| McGity et al. (2011) | * Frequent sessions (4x per week) and less frequent sessions (2x per week) yielded similar outcomes for print knowledge and phonological awareness as long as session dose was high.
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| Tutor-Assisted Intensive Learning Strategies in Kindergarten: How much is enough? (Al Otaiba et al, 2005) | * Intervention four times per week better than twice per week
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| Does Treatment Time Affect SLP outcomes in Preschoolers? Based on ASHA’s National Outcome Measurement System (NOMS).  | * For pre-schoolers, more treatment is associated with better outcomes
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| A Pilot Study of the Impact of Double-Dose Robust Vocabulary Instruction on Children’s Vocabulary Growth (Language and Reading Research Consortium et al., 2016).  | * Doubling the number of sessions per week of vocabulary instruction did not improve children’s vocabulary.
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| Balthazar et al., 2014 | * Study of adolescents with language disorder found good results treating complex sentences – regardless of if it was provided once vs twice per week.
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| Intensity of language treatment: contribution to children’s language outcomes (Schmitt et al., 2017) | * Found that once-weekly sessions ‘work’ for children with language disorders as long as the sessions are highly productive, with a high dose.
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| Differential treatment intensity research: A missing link to creating optimally effective communication interventions (Warren et al., 2007) | * Children with greater interest in various play objects benefitted more from higher therapy doses.
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| Studying the impact of intensity is important but complicated (Yoder et. Al, 2012) | * Children with certain diagnoses benefitted more from higher-dose therapy than others
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| Using Hierarchical Linear Modeling to Examine How Individual SLPs Differentially Contribute to Children’s Language and Literacy Gains in Public Schools (Farquharson et al., 2015) | * Variance in child language and literacy gains over the course of an academic year is at least partially attributable to between-SLPs differences
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| Optimal Intervention Intensity (Baker, 2012) | * Outcomes are influenced by both the intensity of an intervention and the ingredients that make up an intervention.
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| Characterising optimal intervention intensity: The relationship between dosage and effect size in interventions for children with developmental speech and language difficulties (Zeng et al., 2012) | * The amount of intervention does not relate directly in a linear fashion to outcome, suggesting that it is the quality of the intervention received that is important, not the volume.
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| What works in therapy: Further thoughts on improving clinical practice for children with language disorders (Eisenberg, 2014).  | * Although the research is limited, it offers implications for how clinicians do therapy. Children with LI need many learning episodes clustered together within sessions but spread out over time across sessions. Input must be grammatical and consistent while providing varied exemplars of the target features. Learning episodes should actively engage children in producing utterances with the target form, but only after they have had the chance to hear some utterances with that feature. The author suggests a session plan that starts with a structured activity and then incorporates the target form into an embedded activity such as storytelling.
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| Daily or weekly? The role of treatment frequency in the effectiveness of grammar treatment for children with specific language impairment (Smith-Lock et al., 2013). | * Found out that expressive language treatment works better when spaced out over the course of weeks, instead of when provided daily, with dose held constant.
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| Speech sound disorders  | Williams, A. L., McLeod, S. & McCauley, R. J. (Eds.) (2010) Intervention for speech sound disorders in children. Baltimore, MD: Paul H. Brookes. | * Dose: 100 trials
* Session duration: 30-60 minutes
* Dose frequency: 2-3 x week
* Total intervention duration: 7-18 months
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| Several studies have examined treatment intensity for multiple oppositions approach, specifically and found that: Intensity in phonological intervention: Is there a prescribed amount? (Williams, 2012) | * A minimum dose of more than 50 trials and duration of at least 30 sessions is required to be effective (achievable in twice weekly 30 minute sessions per this paper)
* Greater intensity is needed for more severe speech sound disorders.
* Intensity may need to change over time – e.g. heavier in the beginning of a treatment program.
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| Intervention Efficacy and Intensity for Children with Speech Sound Disorder (Allen, 2013) | * Preschoolers make better gains with three-times-per-week therapy for a shorter duration than once-per-week therapy for a longer duration (even with cumulative intensity being equal).
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| Studying the impact of intensity is important but complicated (Yoder et al., 2012) | * Suggesting that ‘generalisation and retention’ are better with distributed compared to massed treatment (massed = trials clumped together; distributed = trials spread out over time)
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| A motor learning perspective for optimising intervention intensity (Manes & Robin, 2012) | * Point out that it is not just about how much you provide the child, but how e.g. random practice is better than blocked practice (except for when the task is very difficult) and providing too much feedback is not good for learning (though you may need more feedback for complex tasks, and less for simple tasks).
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| Speech Sound Disorder and Visual Biofeedback Intervention: A Preliminary Investigation of Treatment Intensity (Hitchcock, E. R., Swartz, M. T., et al., 2019).  | * Results indicated a small, but statistically significant, positive relationship between treatment intensity and the efficacy of visual biofeedback in individuals with speech sound disorders. “This finding suggests that changes in speech behaviors are influenced by treatment intensity or dosage, with higher dose values providing additional opportunities for practice and, thus, improvement” (p. 132).
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| Childhood apraxia of speech (CAS) | Treatment intensity and childhood apraxia of speech (Namasivayam et al., 2015) | * Minimum of twice-per-week treatment required for pre-schoolers with CAS to make gains.
* Neither lower nor higher intensity treatment yielded a significant change for speech intelligibility at the word or sentence level.
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| ReST (Thomas et al., 2014) | * Four times per week for three consecutive weeks, but twice a week for six weeks works almost as well
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| A systematic Review of Treatment Outcomes for children with Childhood Apraxia of Speech (Murray et al., 2014) | * Good treatment outcomes, per the current literature base, are yielded from interventions provided 2 – 3 times per week, up to 60 minutes per session, with at least 60 trials per session.
* Per-session dose is twice as high (or more) in studies of CAS compared to other speech sound disorders.
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| A Systematic Review of Treatment Intensity in Speech Disorders (Kaipa, R., & Peterson, A. M., 2016).  | * The results of the review indicate that a higher dose or higher-dose frequency of a particular intervention resulted in better outcomes than lower dose or dose frequency for children with apraxia of speech or speech sound disorders. The findings also indicated that optimal treatment intensity is specific to the intervention(s) being used and to the speech disorder
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| Childhood Apraxia of Speech (Technical Report) (Ad Hoc committee on Apraxia of Speech in Children, American Speech-Language-Hearing Association, 2007).  | * "Although the specific forms of treatment may change over time, the Committee recommends that children with CAS receive intensive services, especially in the earlier stages of intervention" (Professional Issues).
* "There is emerging research support for the need to provide three to five individual sessions per week for children with apraxia as compared to the traditional, less intensive, one to two sessions per week ... this should be done in as naturalistic an environment as possible to facilitate carry-over
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| Down Syndrome  | How much is enough? Speech and Language Therapy Provision for School Aged Children who have Down’s Syndrome (Leela Baksi, 2006) | * Greatest gains are usually made when intervention is started early, but people who have Down’s syndrome can benefit from speech and language therapy throughout life. Tracking the development of skills has indicated that people who have Down’s syndrome make progress in all areas well into adulthood, and indicates that communication skills can be further developed no matter what age intervention is initiated. Robin Chapman, Professor Emeritas - Communicative Disorders, and Linda Hesketh of the Waisman Centre at the University of Wisconsin-Madison report “language production skills do not stop with the onset of adolescence, or plateau with simple sentence structure.” [7] Sue Buckley and Patricia Le Prevost recommend: “Speech and language therapy should continue for all teenagers with the same list of key objectives and targets as for the primary age group, but should be adapted to focus on age appropriate language needs and activities.” [6]
* With regard to how frequently the speech and language therapist should provide support, Sue Buckley and Patricia Le Prevost recommend: “children with Down’s syndrome should be seen at least monthly in school, targets reviewed and activities set for parents, teachers and assistants to include in their daily routines…Some children with Down’s syndrome of school age may need weekly individual or groups sessions of speech and language therapy with a therapist who has the specialist knowledge and the skills to address their profile of difficulties, particularly for speech and intelligibility work” [6]. Because each pupil’s “package” of speech and language therapy should take into account individual needs and circumstances, it’s not possible to specify a format or amount of speech and language therapy that will be right for everyone who has Down’s syndrome at a particular age or in a certain situation.
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| ASD  | A Systematic Review of Group Social Skills Interventions, and Meta-analysis of Outcomes, for Children with High Functioning ASD (Wolstencroft, J., Robinson, L., et al. 2018). | * "More intensive and longer-lasting interventions had slightly larger effect sizes" than less intensive social skills interventions (p. 14). Intensive interventions (e.g. summer camp format) that involved 40 hours of contact or more demonstrated large effects. Interventions scheduled for once per week or lasting less than 40 hours demonstrated moderate effects.
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| Effectiveness of Cognitive, Developmental, and Behavioural Interventions for Autism Spectrum Disorder in Preschool-Aged Children: A Systematic Review and Meta-Analysis (Maw, S. S., & Haga, C. 2018).  | * Higher intensity interventions did not consistently produce more effective results. Studies incorporating interventions delivered by trained and specialist therapists yielded larger effect sizes.
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| Meta-Analysis of Parent-Mediated Interventions for Young Children with Autism Spectrum Disorder (Nevill, R. E., Lecavalier, L., et al. 2018).  | * Results indicated no significant differences between parent training intensity. Results demonstrated small treatment effects (g) in socialization and communication-language outcomes (g = 0.25) for parent training less than 20 hours. Small effects for parent training of more than 20 hours were reported for socialization (g = 0.22) and cognition (g = 0.24) outcomes. Insignificant effects for parent training of more than 20 hours were reported for ASD severity symptoms and communication outcomes (g = 0.14).
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| New York State Department of Health Clinical Practice Guideline on Assessment and Intervention Services for Young Children (Age 0-3) with Autism Spectrum Disorders (ASD): 2017 Update. Report of the Recommendations (NYS Department of Health, 2017).  | * "In deciding upon the intensity and duration of intervention for young children with ASD, it is important to recognize that based on available scientific evidence, it is not possible to accurately predict the optimal intensity that will be effective for any given child and family. However, it is recommended that behavioral programs include a minimum of approximately 20 hours per week of individualized intervention" (E Rating; p. 62)
* Based on recent studies, effective ABA-based interventions ranged in intensity from 14-28 hours per week and extended over a period of 8 months to 2 years. "It is recommended that the precise number of hours and duration of behavioral intervention bedetermined based on a range of child and family characteristics, including severity of autistic symptoms, rate of progress, health considerations, the child’s tolerance for the intervention, and family participation" (E Rating; pp. 62-63).
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| Autism Spectrum Disorder: Evidence-Based / Evidence-Informed Good Practice for Supports Provided to Preschool Children, Their Families and Carers (Roberts, J. M. A., Williams, K., et al. 2016).  | * recommend that children who have received a diagnosis of autism receive 20 hours per week of early intervention that involves interaction with them (focus on social communication), with review of this level of support after the first 12 months, or sooner if they fail to progress or make rapid progress
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| Intervention Effects on Spoken-Language Outcomes for Children with Autism: A Systematic Review and Meta-Analysis (Hampton, L. H., & Kaiser, A. P., 2016).  | * Dosage did not predict better spoken-language outcomes.... however, these results should be considered within the context of variability of other intervention components (parent training and fidelity of treatment) across studies that may have mitigated the effect of any one component" (pp. 458-459).
* Intervention type (targeted vs. comprehensive) also did not explain variation in the results; however, it was not possible to determine the exact dose of language-related intervention provided within comprehensive interventions" (p. 459)
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| Effectiveness of Interventions to Improve Social Participation, Play, Leisure, and Restricted and Repetitive Behaviours in People with Autism Spectrum Disorder: A Systematic Review (Tanner, K., Hand, B. N., et al., 2015).  | * "Strong evidence supported the use of group-based social skills training programs in both clinic-based and contextual settings to improve social skills in people with [autism spectrum disorder] ASD.... Although time and frequency varied significantly among studies, the most effective groups appeared to meet regularly for ≥ 60 min at a time for a total of ≥ 8 hr. Less evidence was found to support the use of computer-based interventions.... Studies relating to peer-mediated interventions and Social Stories reported mixed results" (p. 7).
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| Feasibility and Effectiveness of Very Early Intervention for Infants At-Risk for Autism Spectrum Disorder: A Systematic Review (Bradshaw, J., Steiner, A. M., et al, 2015) | * "Despite the limited number of studies in this review, the research presented here could suggest that a more intensive intervention evaluated over a longer period of time ... may result in greater gains than 1 [hour] per week of parent-mediated intervention"
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| Reading in Autism Spectrum Disorders: A Literature Review (Fernandes, F. D. M., de La Higuera Amato, C. A., et al., 2015) | * "There is not enough data about the duration of the intervention processes, specific characteristics of the participants before the intervention, training of the therapists in the area, specific material or resources used to allow hypotheses about better or more successful intervention methods [for promoting reading skills in children and adults with autism spectrum disorder]"
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| Nonmedical Interventions for Children with ASD: Recommended Guidelines and Further Research Needs (Maglione, M. A., Gans, D., et al., (2012) | * Older individuals with [autism spectrum disorder] ASD should also be actively engaged in comprehensive interventions, although more research is needed to better define the appropriate models of service delivery and number of hours per week
* "Individuals with [autism spectrum disorders] ASDs should be offered interventions specifically targeting deficits in social communication with a focus on social skills. The programs may be group or individually focused and should be based on empirically supported methods described in a protocol or manual. The recommended duration of the program is as needed. Progress should be assessed at least monthly, and ongoing interventions should be recommended according to developmental needs
* Children with [autism spectrum disorder] ASD should be actively engaged in comprehensive intervention for a minimum of 25 hours per week throughout the year"
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| The New Hampshire Task Force on Autism: Part I Assessment and Interventions (New Hampshire Task Force on Autism, 2011). | Components for effective interventions include but are not limited to:* beginning services as early as possible;
* engaging children in active goal-directed activities for at least 25 hours/week year-round;
* specialized instruction in settings where interactions with typical peers are possible;
* repeated assessment and program adjustments at least every 3 months;
* ensuring intervention is developmentally appropriate and purposeful; and
* involving the family.
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| New Directions in Behavioural Treatment of Autism Spectrum Disorders (Kasari, C., & Lawton, K., 2010). | * Results reported comprehensive interventions to make improvements in children with autism spectrum disorder. These interventions typically consisted of short play sessions, discrete trial training, and/or functional communication. “Nearly all comprehensive treatment studies reported a minimum dose of 20 h[ours] per week; however, it is not clear whether the 20 h were that similar in approach and content because only a few studies used a treatment manual”
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| Social Stories Interventions for Students with Autism Spectrum Disorders: A Meta-Analysis (Kokina, A., & Kern, L, 2010).  | * Two intervention characteristics, intervention length and the number of Social Stories per child, were included to examine the effects of treatment intensity. Brief interventions (i.e., 1–10 sessions) were associated with higher treatment effectiveness than medium (i.e., 11–20 sessions) or long (over 20 sessions) interventions.... At the same time, while most studies used just one Social Story per participant, the few studies that used several Social Stories per child ...  seemed to produce higher effects on the students’ behavior. It is therefore possible that higher treatment intensity is associated with improved participant outcomes"
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| Behavioural and Skill-Based Early Interventions in Children with Autism Spectrum Disorders (Weinmann, S., Schwarzbach, C., et al., 2009).  | * "Studies suggest that preschool children with autism in behavioural intervention programmes with a frequency of at least 20 hours per week can achieve improvements in cognitive and functional domains ... [However,] a minimal necessary intensity of interventions to achieve positive outcomes cannot be derived from literature"
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| Evidence-Based Reading Instruction for Individuals with Autism Spectrum Disorders (Whalon, K. J., Otaiba, S. A., et al., 2009) | * Results from studies utilizing components of both code-focused and meaning-focused intervention, "suggest that children with ASD can benefit from peer-mediated interventions to increase their oral reading fluency as well as ability to respond to comprehension questions in a relatively short amount of time (i.e., duration of interventions 5-17 hours)
* "Consistent across all included studies were gains made by children with ASD in code-focused skills" (p. 5). The code-focused computer-assisted instruction studies reported gains in code reading and spelling measures including phonological awareness, word recognition, spelling, sentence reading, and sentence imitation. The intensity and duration of intervention needed for children with ASD to master these skills was unclear.
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| Feeding difficulties in children with ASD | Efficacy of Intervention to Improve Feeding Difficulties in Children with Autism Spectrum Disorders : A Systematic Review and Meta-Analysis (Marshall, J., Ware, R., et al., 2015) | * "There was a trend towards lower effect size in studies where more sessions were provided, both in increasing desirable and in decreasing undesirable behaviours. Other analyses revealed trends towards more successful intervention outcomes where the therapy providers were the parents undertaking intervention in their home environments. Intensity of intervention provided (e.g. multiple times per day) appeared to have no impact on effect size in these studies" (p. 282).
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| AAC & Complex needs  | Effects of Interventions That Include Aided Augmentative and Alternative Communication Input on the Communication Input on the Communication of Individuals with Complex Communication Needs: A Meta-Analysis (O’Neill, T., Light, J., et al., 2018).  | * For the communication outcomes of individuals with developmental disabilities using augmentative and alternative communication, "the amount of time spent in intervention was associated with very large effects for the following durations: 1 hr or less, and 1–2 and 2–5 hr (range = .84–.91). A moderate effect (.54) resulted from cases in which more than 5 hr was spent in intervention" (p. 15).
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| Aided AAC for People With Severe to Profound and Multiple Disabilities: A Systematic Review of Interventions and Treatment Intensity (Simacek, J., Pennington, B., et al., 2017).  | Current evidence is lacking on dosage parameters for augmentative and alternative (AAC) interventions and outcomes for individuals with severe to profound and multiple disabilities.However, of the dosage parameters reported: * "(a) the majority of interventions lasted between 1 and 10 min;
* (b) sessions contained six or more teaching episodes/opportunities;
* (c) sessions occurred four or more times per week; and
* (d) sessions lasted for 13 weeks or longer" (p. 112).
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| Technology to Support Sign Language for Students with Disabilities (Donne, V., 2013).  | Evidence from this review suggests that incorporation of various forms of technology using sign language has improved student vocabulary, language, reading comprehension, and writing skills. These positive results extended across age groups from young children to adults. Positive results were obtained from technology sessions of as little as 10 minutes per day. Specific technology interventions included:* technology to supplement text as an independent activity;
* technology paired with shared readings, repeated readings, and guided reading;
* pre-teaching vocabulary and facilitating the viewing of videos by way of teacher mediation; and
* sign language multimedia for narrative and expository texts at an instructional reading level.
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| Stammering  | Non-Pharmacological Treatments for Stuttering in Children and Adults: A Systematic Review and Evaluation of Clinical Effectiveness, and Exploration of Barriers to Successful Outcomes (Baxter, S., Johnson., et al., 2016).  | * "In relation to interventions for children who stutter, the natural recovery rate remains an issue, with research unable to conclusively differentiate those who will spontaneously recover from those who will have long-term stuttering requiring intervention" (p. 69)
* "We were unable to demonstrate any clear dose–response relationship, meaning that, currently, interventions with many hours of contact did not seem to offer substantially different outcomes to those with fewer" (p. 70).
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| Partnerships between Clinicians, Researchers, and People who Stutter in the Evaluation of Stuttering Treatment Outcomes (Yaruss et al., 2002) | * The answer to this question probably should be “forever,” though this has not been the experience for many people who stutter. In our opinion, it is reasonable to expect a treatment to provide some long-lasting benefit in order to be considered “successful.” As such, treatments that result in fluency that lasts only a few weeks or months should probably not be considered to be successful. Conversely, a treatment that does not result in noticeable change in fluency, but that results in a long-term change in the speaker's life (e.g., career change for the better, increased opportunities at school, reduced avoidance, etc.) could be considered successful, at least by our definitions offered above (e.g., Yaruss et al., 2002). Once again we find ourselves debating the issue of “what is important” to a particular speaker (rather than what is important to those in the speaker’s environment). Obviously, if the person who stutters believes that fluency is the only acceptable outcome of treatment, then long-term fluency is the only “successful” outcome in his or her mind. If, however, the client believes that treatment can be beneficial even if substantial gains in fluency do not result but other changes occur under the surface, then a long-term change in quality of life (e.g., satisfaction with communication, sense of fulfillment in life, etc.) would be counted as a success – at least in the mind of the speaker. And, again, we are arguing that it is the speaker’s judgment that should be given the greatest consideration. Several other problems present themselves. First, relapse in therapy has been well-documented (Craig, 1998; Kuhr & Rustin, 1985), both in terms of changes in fluency and change in attitude. Thus, the level of “success” that one reaches immediately on termination of treatment may be a somewhat inflated measure. In our opinion, it is a good idea to inform clients that relapse is a possibility and to prepare them for that eventuality. In fact, a treatment that prepared a client to deal with relapse would seem to be more likely to lead to long-term success. Still, it is difficult to determine how this preparation for relapse should be accounted for in treatment outcomes research. Even more importantly, we know that some of the “below the surface” changes evolve over a long period of time (Manning, 1999). This can make it even more difficult to determine whether a client has been successful based on measures that are made immediately following the conclusion of treatment. Note that this dilemma, too, applies both to broad-based treatments that are focused, in part, on changes in a speaker’s communication attitudes and to fluency-based treatments that anticipate improvements in communication attitudes at some point after fluency gains are experienced. As a result of these and other difficulties, it seems that standard pre-post research protocols, single subject design with limited withdrawal phases, and even standard clinical trials without long-term follow-up will all fall short in determining whether a speaker has achieved the desired changes over a sufficiently long6 period of time. For these reasons, we believe that it is up to the individual clinician to follow their clients over a period of time (through periodic “check-in” meetings or long-term participation in a support group) and to foster an environment where clients feel comfortable coming back to treatment when necessary (e.g., for a “tune-up” or refresher, in either the domains of speech fluency or attitudes, depending upon what is needed). Many treatment programs already incorporate such ongoing maintenance into their treatment protocols (in addition to detailed maintenance programs. See Andrews, Guitar, & Howie, 1980); the question is how to account for this in treatment outcomes research.
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| Clinical Guideline Stuttering in Children, Adolescents and Adults (Pertijis, M. A. J., Oonk, L. C., et al, 2014).  | * "If a child who stutters up to aged 6 years has not made progress with 11 to 12 therapy sessions or within 3 months, a Fluency Specialist should be consulted" (p. 138).
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| Stuttering Treatment Research 1970-2005: I. Systematic Review Incorporating Trial Quality Assessment of Behavioural, Cognitive, and Related Approaches (Bothe, A. K., Davidow, J. H., et al., 2006).  | * For older children who stutter, "the literature reviewed here did not show that very common, specific, prolonged speech techniques, such as gentle onsets or light articulatory contacts, are effective on their own…. Rather it showed that such techniques are effective in the context of structured programs that also provide intensive or daily practice opportunities, contingencies for stutterers, work at home, and/or programmed structures with contingencies for success" (p. 335).
* For adolescents and young adults, "the evidence is mixed for regulated breathing studies and is probably stronger for prolonged speech conducted with specific infrastructural variables [e.g., daily practice, response contingencies]" (p. 335).
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| Intellectual Disabilities  | Teaching Reading for Students with Intellectual Disabilities: A Systematic Review (Alnahdi, G. H., 2015).  | * The included studies demonstrated that comprehensive approaches (e.g., phonics instruction combined with direct instruction) and single-skill approaches (e.g., sight word recognition only) were effective in teaching reading to students with intellectual disabilities. Results also demonstrated that students with intellectual disabilities typically require a lot of time and intensive practice to acquire various reading skills.
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| Hearing Impairment  | Clinical Guidelines for Paediatric Cochlear Implantation (Department of Health, Western Australia, 2011).  | * "It is critical that intensive cochlear implant habilitation is provided post implant to develop the client's speech, language and listening skills through the use of the implant. Intensive habilitation is offered to clients for a period of approximately 3 to 6 months post cochlear implant surgery (often weekly or fortnightly depending on parental preference and client progress) with habilitation services offered up to 12-months post-implant" (p. 9).
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| Voice | Temporal Variables in Voice Therapy (De Bodt, M., Patteeuw, T., et al., 2015).  | * On average, clients received 10.87 sessions of voice therapy and were treated for 9.25 weeks. Frequency of therapy was most often reported to be one or two sessions per week, though in some cases a higher percentage of four sessions per week was reported, correlating to provision of the more intensive Lee Silverman Voice Therapy. Session duration was most frequently reported to be 30 or 60 minutes. On average, voice therapists spent 8.17 hours treating patients with various voice pathologies, with a moderating influence of continent (North American publications averaged 12.15 treatment hours; European publications averaged 7.68 treatment hours).
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| Methods of Speech Therapy Treatment for Stable Dysarthria: A Review (Palmer, R., & Enderby, P., 2007).  | * "Success of the Lee Silverman technique has been reported [for individuals with stable dysarthria]. This may be due to combinations of goals, verbal encouragement and intensive treatment delivery (four 1 hour treatment sessions per week for 4 weeks)" (p. 151).
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| Reading  | Intensive Reading Interventions for Inadequate Responders in Grades K-3: A Synthesis (Austin, C. R., Vaughn, S., et al., 2017).  | * "Overall, the effects of Tier 3 interventions included in this synthesis offer promising results for students who have previously responded inadequately to Tier 2 intervention" (p. 207). These results indicate that students can make statistically significant gains in reading. Findings also indicate that group size and intervention duration have no significant impact on outcomes.
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| Meta-Analyses of the Effects of Tier 2 Type Reading Interventions in Grades K-3 (Wanzek, J., Vaughn, S., et al., 2016).  | * Findings illustrated moderate, positive effect sizes (ES) of less extensive interventions on standardized (ES = 0.54) and non-standardized (ES = 0.62) measures of foundational reading skills (e.g., phonemic awareness, reading fluency). Less extensive interventions demonstrated smaller effects on standardized language/comprehension measures (ES = 0.36). The less extensive interventions demonstrated the highest effects on non-standardized language/comprehension measures (ES = 1.02). These results indicated that less extensive interventions focused on foundational reading skills and multi-component interventions that include comprehension were effective in early elementary students with or at-risk for reading difficulties.
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| The Effectiveness of Reading Interventions for English Learners: A Research Synthesis (Richards-Tutor, C., Baker, D. L., et al., 2016).  | * When the authors analyzed group size as a moderating variable, they found no significant difference between individualized and small-group interventions. Similarly, results indicated that the length of intervention was not associated with the magnitude of effect.
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| A Synthesis and Meta-Analysis of Reading Interventions Using Social Studies Content for Students with Learning Disabilities (Swanson, E., Hairrell, A., et al., 2014).  | * The meta-analysis of a subset of studies revealed that reading interventions using social studies content provided in larger groups (11 or more students) were associated with a larger effect size (ES=1.16) compared to interventions provided in smaller groups (ES=0.87). The authors indicated, however, that the findings could not confirm the most effective group size for students with learning disabilities.
* A subanalysis examining treatment dosage and duration found that reading "interventions lasting less than 60 minutes total were associated with a mean effect size of 1.20 and interventions that lasted more than 500 minutes total were associated with a mean effect size of 1.07.... Results showed that interventions lasting longer than 5 weeks yielded similar results as interventions of shorter duration. This finding that different amounts of treatment time resulted in similar outcomes is again consistent with other meta-analyses" (p. 192).
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| Effectiveness of Treatment Approaches for Children and Adolescents with Reading Disabilities: A Meta-Analysis of Randomized Controlled Trials (Galuschka, K., Ise, E., et al., 2014).  | * A sub-analysis was performed to determine the impact of various service delivery variables on the reading and spelling outcomes of children with reading difficulties. While no clear conclusions could be drawn for specific reading interventions, the findings suggest that "interventions with higher amounts of treatment or longer durations of treatment seem to be more effective in improving the literacy skills than therapies with small amounts of treatment or short-time interventions" (p. 10).
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| Extensive Reading Interventions for Students with Reading Difficulties after Grade 3 (Wanzek, J., Vaughn, S., et al., 2013).  | * Of the 19 studies identified, 10 were included in a meta-analysis examining the effects of extensive reading interventions on the literacy skills of children (grades 4-12) with learning disabilities. Overall, the findings revealed a small effect on reading comprehension, fluency, spelling and word reading/fluency outcomes (mean effect sizes ranged from .10 to .16). The authors reported no significant differences in service delivery models of reading intervention (e.g., group size, treatment hours, grade levels).
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| Science Instruction for Students with Learning Disabilities: A Meta-Analysis (Therrien, W. J., Taylor, J. C., et al., 2011).  | * The authors examined the effectiveness of science instruction in students with learning disabilities based on length of intervention with and without the inclusion of the mnemonic studies. Including mnemonic instruction studies, studies with four sessions or fewer obtained an average effect size (ES) of 1.128 and studies with 12 or more sessions obtained an average ES of 0.59. After Excluding mnemonic instruction studies, analysis indicated no difference between shorter duration studies of four sessions or fewer (ES = 0.565) and longer duration studies of 12 sessions or more (ES = 0.525).
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| A Meta-Analysis of Morphological Interventions: Effects on Literacy Achievement of Children with Literacy Difficulties (Goodwin, A. P., & Ahn, S., 2010).  | * "Morphological interventions with an average 10-20 [hours of] instruction showed the largest statistically significant mean effect of 0.31 ..., followed by the almost identical statistically significant effect of 0.32 ... by the morphological intervention with more than 20 [hours of] instruction. Insignificant mean-change differences were found when average hours of morphological intervention were either 0-5 ... or 5-10 [hours]" (p. 203).
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| Assisting Students Struggling with Reading: Response to Intervention and Multi-Tier Intervention in the Primary Grades (Gersten, R., Compton, D., et al., 2009).  | * At the tier 2 intervention level, "provide intensive, systematic instruction on up to three foundational reading skills in small groups to students who score below the benchmark score on universal screening. Typically, these groups meet between three and five times a week, for 20 to 40 minutes" (Strong Evidence; p. 6).
* "Monitor the progress of tier 2 students at least once a month. Use these data to determine whether students still require intervention. For those students still making insufficient progress, school-wide teams should design a tier 3 intervention plan" (Low Evidence; p. 6).
* At the tier 3 intervention level, "provide intensive instruction on a daily basis that promotes the development of the various components of reading proficiency to students who show minimal progress after reasonable time in tier 2 small group instruction" (Low Evidence; p. 6).
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| How Often and How Much? Intensity of Print Referencing Intervention (Breit-Smith, A., Justice, L. M., et al., 2009).  | * Effect sizes suggested the effectiveness of print referencing intervention; however, due to considerable variability of the studies, firm conclusions about treatment intensity were not drawn. "It is likely that specific aspects of intensity optimally enhance child outcomes and that optimal intervention intensity differs according to individual characteristics" (p. 368).
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