

WILLIAMS SYNDROME: GUIDELINES FOR EDUCATORS

By Fionnuala Tynan, Hyelin Kye & Jo Van Herwegen



These guidelines were created for the Williams Syndrome Foundation, UK charity numbers: 281014 (England & Wales) and SC049897 (Scotland). For more information about the WSF see: www.williams-syndrome.org.uk or contact: enquiries@williams-syndrome.org.uk.

Williams Syndrome - Guidelines for Educators

Copyright © 2021 University College London

All rights reserved. No part of this publication, with the exception of the Daily Learning Diary and Child Profile, may be reproduced without the prior written permission of the copyright holder – this includes photocopying, scanning and recording. The Daily Learning Diary and Child Profile may only be photocopied for use in the classroom.

We have made every effort to acknowledge sources and contributors throughout these guidelines. If you believe we have made an unintended oversight, please contact us through the Williams Syndrome Foundation (enquiries@williams-syndrome.org.uk) and we can rectify for future editions.

Web addresses were correct at the time of publication, but over time these may have changed or become inactive.



Email: enquiries@williams-syndrome.org.uk

Website: www.williams-syndrome.org.uk

INTRODUCTION

These guidelines are aimed at educators who are looking for a starting point or a quick guide on how to meet the needs of learners with Williams Syndrome (WS), and ensure their full inclusion in the classroom and school. Advice and suggestions provided are based on recent research about WS, as well as multiple focus group discussions with stakeholders (i.e. parents, teachers, teaching assistants/LSAs, and children with WS) and the original guidelines that were created by Orlee Udwin, William Yule and Patricia Howlin in 2007. They also draw from the book “WiSHES - Williams Syndrome: Holistic Educational Strategies”, written by Dr. Fionnuala Tynan, one of the co-authors of these guidelines.

The collaborative aspect of these guidelines, alongside their evidence-and-practice-informed nature, supports the real-life applicability of the information and suggestions contained in them. “Top Tips” are also included for each section, with advice for educators that can be practically applied in a classroom situation. Specific quotations with advice from focus group discussions with stakeholders are included throughout the document as well.

It is important for the reader to consider the variability of the WS profile (Van Herwegen et al., 2011), as well as the need to regard every child individually, when considering the suggestions given. Due to differences in abilities and difficulties found among children with WS, we have not tailored the suggestions according to age or year group. Educators should always work at the child’s developmental stage. These guidelines include a section on different school settings and on transitions and how these may impact the advice provided. Yellow boxes can be found throughout the document, which highlight the variability in the profile and will allow the reader to consider the applicability of advice and tips to the specific child.

At the end of the guidelines, two templates can be found. The first, entitled “Daily Learning Diary”, is designed to be used as a home-school diary for TAs, LSAs, and teachers to update the child’s caregiver on their daily activities, progress, wellbeing and areas for improvement, as well as to promote reflective practice. The second, entitled “Child Profile”, can be used to take note of the child’s learning profile, their strengths and needs, and how they can be supported within their educational setting. This can be used in collaboration with the child or their parent to set goals, or it can be used to provide structured information to future or substitute teachers to give an overview of the child’s learning profile.

We adopt the term ‘child with WS’ and will be referring to “their/’them” in the text.

TABLE OF CONTENTS

Williams Syndrome - Guidelines for Educators.....	1
Introduction.....	3
Terms and Abbreviations.....	6
What is Williams Syndrome?.....	8
General Cognitive Abilities: Impact on learning.....	11
<i>Perception and Attention.....</i>	<i>12</i>
<i>Top Tips for Perceptual and Attention Abilities.....</i>	<i>13</i>
<i>Speech and Language Abilities.....</i>	<i>14</i>
<i>Top Tips for Speech and Language Abilities.....</i>	<i>15</i>
<i>Memory Abilities.....</i>	<i>17</i>
<i>Top Tips for Memory Abilities.....</i>	<i>17</i>
<i>Motor Abilities.....</i>	<i>18</i>
<i>Top Tips for Motor and Coordination Abilities.....</i>	<i>19</i>
<i>Visuo-spatial Abilities.....</i>	<i>20</i>
<i>Top Tips for Visuo-spatial Abilities.....</i>	<i>21</i>
Academic Development.....	22
<i>Learning Strengths.....</i>	<i>22</i>
<i>Top Tips for Using the Child's Learning Strengths.....</i>	<i>22</i>
<i>Effective Teaching of Children with WS.....</i>	<i>23</i>
<i>Top Tips for Effective Teaching.....</i>	<i>25</i>
<i>Maths.....</i>	<i>26</i>
<i>Top Tips for Maths.....</i>	<i>27</i>
<i>Reading.....</i>	<i>28</i>
<i>Top Tips for Reading.....</i>	<i>29</i>
<i>Writing.....</i>	<i>30</i>
<i>Top Tips for Writing.....</i>	<i>31</i>
<i>Activity: Stop and Consider.....</i>	<i>31</i>
Anxiety.....	32
<i>Common Symptoms of Anxiety.....</i>	<i>32</i>
<i>Top Tips for Anxiety.....</i>	<i>33</i>
Sensory Needs.....	34
<i>Sound.....</i>	<i>34</i>
<i>Top Tips for Hyperacusis/Sensitivity to Sounds.....</i>	<i>34</i>
<i>Other Sensory Needs.....</i>	<i>35</i>
<i>Top Tips for Other Sensory Needs.....</i>	<i>35</i>
<i>Activity: Stop and Consider.....</i>	<i>35</i>

CONTENTS CONT.

Social Relationships and Development.....	36
<i>Buddy systems.....</i>	<i>37</i>
<i>Top Tips for Social Relationships and Development.....</i>	<i>38</i>
Emotional and Behavioural Difficulties.....	39
<i>Top Tips for Emotional and Behavioural Difficulties.....</i>	<i>40</i>
Teaching Self-Help and Independence.....	41
<i>Eating.....</i>	<i>41</i>
<i>Top Tips for Eating.....</i>	<i>42</i>
<i>Dressing.....</i>	<i>43</i>
<i>Top Tips for Dressing.....</i>	<i>43</i>
<i>Toilet Training.....</i>	<i>44</i>
<i>Top Tips for Toileting.....</i>	<i>45</i>
Transitions.....	46
<i>Daily Transitions within School.....</i>	<i>46</i>
<i>Top Tips for Daily Transitions within School.....</i>	<i>47</i>
<i>Transitions from Year Groups.....</i>	<i>47</i>
<i>Top Tips for Transitions from Year Groups.....</i>	<i>48</i>
<i>Transitions from One School to Another.....</i>	<i>49</i>
<i>Top Tips for Transitions from One School to Another.....</i>	<i>49</i>
Type of Schooling and Support Required.....	50
<i>Mainstream Settings.....</i>	<i>51</i>
<i>Special Education Settings.....</i>	<i>52</i>
<i>Support Required in School.....</i>	<i>53</i>
Further Resources/ Who to speak to.....	54
<i>Online Resources.....</i>	<i>54</i>
<i>Books.....</i>	<i>54</i>



TERMS AND ABBREVIATIONS

CA	Chronological Age
EHCP	Education, Health and Care Plan
IQ	Intelligence Quotient
LSA	Learning Support Assistnat
MA	Mental age or developmental age
OC	Occupational Therapist
PE	Physical Education
SENCO	Special Educational Needs Coordinator
TA	Teaching Assistant
WS	Williams Syndrome
WSF	Williams Syndrome Foundation

Onomatopoeia: When a word describes a certain sound that mimics the sound of the action or object it refers to (e.g. “meow”, “woof”, “ring”).

Auditory memory: The ability to retain, store and recall information that is presented orally (e.g. being able to recall instructions).

Chronological age: The age of the child in terms of the amount of time passed (in years, months, days) since their birth.

Developmental age: A measure of the child's physical, cognitive and behavioural development in relation to a typical child in the same chronological age range (e.g. a child with Williams Syndrome who is 9 years old might exhibit a developmental age of 5 years old).

Expressive language skills: Refers to the ability to communicate one's needs, desires, and thoughts through verbal or non-verbal communication. This means the ability to form a sentence that makes sense and is grammatically correct. The focus is on the *output* (i.e. the production of words/gestures etc.).

Receptive language skills: Refers to the ability to understand language (whether presented orally or in written form). It includes the ability to understand instructions (e.g. "let's sit in a circle"). The focus is on the input (i.e. the understanding of instructions/directions/sentences read from a book).

Hyperacusis: Refers to sensitivity and reduced tolerance to sounds. People with hyperacusis often find ordinary sounds unbearable, whereas loud noises such as school bells and loud chatter in a classroom can bring them pain or discomfort.

Pragmatics: The study of how context contributes to meaning in language and the use of language in context.

Metacognitive skills: Refers to the set of skills related to a person's self-awareness of their knowledge, abilities, way of doing things and way of recalling and retaining knowledge. They include planning, processing and evaluation. A child who knows they learn better through music, might apply this knowledge by creating a jingle that includes the words or facts they want to learn.

Gross skills: Skills that involve the use of large muscle movements (e.g. running, walking, sitting, jumping)

Fine motor skills: Skills that involve the use of smaller muscles (e.g. drawing, grasping objects, etc.)

Relational language: Refers to language to express a relationship between two or more things (e.g. bigger, more, later, older, etc.)

Visuo-spatial cognition: Refers to the ability to perceive and interact with the visual world. It includes multiple visuo-spatial skills such as spatial attention, spatial awareness and spatial memory.

Spatial attention: Relates to the brain's ability to give attention to a location in space or area in the visual field.

Spatial awareness: Relates to the brain's ability to understand where other objects or people are in space, in relation to the body's position. This entails being aware of whether an object is near or far.

Spatial memory: Relates to the brain's ability to store and retrieve information needed to plan a course to the desired location, or to recall a location where an event occurred.

Working Memory: Relates to processes involved in actively maintaining or holding information in the mind while doing some other process (e.g. the ability to successfully remember a spelling the teacher just dictated while taking out a sheet of paper and finding a pencil).

Subitising: The ability to quickly gauge the quantity of things at a glance.

WHAT IS WILLIAMS SYNDROME?



Williams Syndrome (WS) is a neurodevelopmental genetic condition **that affects around one in 18,000 people in the UK** (Williams Syndrome Foundation). It is marked by an outgoing personality, high empathy, high prevalence of anxiety and learning difficulties. WS is caused by missing genetic material on chromosome number seven. One of the missing genes in this area is the one producing the protein elastin, which is responsible for providing the elasticity in body parts such as the muscles, blood vessels, skin, brain and other internal organs.

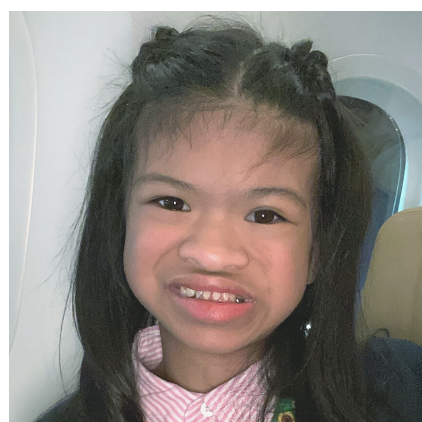
Most cases of WS occur sporadically and the possibility of parents having another child with WS is extremely unlikely and no higher than the original risk. Brothers and sisters of individuals with WS are not at an increased likelihood of having a child with WS. However, there is a 50% chance that a child of an individual with WS would inherit their parent's genetic deletion.

Many children with WS have a distinct facial appearance (small chin, thicker lips, upturned smaller nose and wide mouth) and their stature is smaller (average height: 5ft for females and 5ft 6in for males). They may have a range of medical issues that could impact on their development and wellbeing: renal and cardiac problems, raised blood pressure, high calcium levels, joint and muscle problems (including hernias) and/or dental abnormalities. These problems can range from mild to severe.

It is advised that all children with WS are seen regularly by clinical professionals and paediatricians. More information can be found under 'clinical guidelines and research' on the Williams Syndrome Foundation website: <https://williams-syndrome.org.uk/clinical-guidelines/>

Overall, development in WS tends to be delayed (they may present as a younger typically-developing child) and is atypical. For example, whilst typically-developing children will point to objects before, and as, they learn language, pointing gestures in children with WS develop after the onset of language development (Laing et al., 2002).

Children with WS have a range of strengths associated with their condition, but they show an uneven cognitive and behavioural profile (see overview below). Most children have mild to moderate learning difficulties with general IQ scores between 40-60 (Martens et al., 2008), although there is significant variation in the results of IQ subtests. Whilst their language development is delayed, most children with WS show strengths in verbal abilities compared to their overall abilities and especially compared to poor visuo-spatial abilities. Only a small number of children with WS remain minimally verbal.



***More information can be found under 'clinical guidelines and research' on the Williams Syndrome Foundation website:
<https://williams-syndrome.org.uk/clinical-guidelines/>.***

General Learning Profile of Children with Williams Syndrome

- Relatively good spoken language, but poorer comprehension by school age
- Good short-term memory ability (especially ability to verbally repeat)
- Mild to moderate learning difficulties which can cause slower processing and understanding
- Poor working memory and planning abilities
- Marked gross and fine motor problems
- Marked visuo-spatial difficulties

Behaviour of Children with Williams Syndrome

- Sociable and outgoing
- Caring and emphatic towards others
- Limited concentration span
- Overfriendly to adults
- Excessive anxiety and worry
- Preoccupation with objects/topics
- Hypersensitive to sounds
- Fearful of heights/uneven surfaces

Strengths of Children with Williams Syndrome

- Good auditory memory
- High sociability and friendliness
- Musicality
- Good expressive (spoken) language
- Great memory for faces and for favourite topic
- Strong emotional intelligence/empathy

Advice from a Parent: What worked



“Learn which strategy works for the child; how they learn to [...] count and to write; using their musical ability and their very good auditory memory. To understand that they suffer from anxiety and that they need more time than a child who has no special need **BUT** that they are able”



All children with WS are individuals and have different strengths and challenges. However, their strengths can be used to foster their learning potential and, with the right support, children with WS can learn to overcome their difficulties.

Use the **Child Profile** template at the end of these guidelines to take note of the child's individual strengths and weaknesses.

GENERAL COGNITIVE ABILITIES: IMPACT ON LEARNING

- It is important to consider that most children with WS have mild to moderate learning difficulties, which means that they are likely to learn at a slower rate than their peers in some areas and might be at a developmental stage below their chronological age. They usually need more time to process language and emotion too.
- Always consider the contrast between the child's chronological age and developmental age when developing teaching plans working with the child (see section '**Academic Development**').
- The learning profile of a child with WS is not linear, but rather it is 'sketchy', with various peaks and valleys across different areas. A child with WS might learn something one day but appear to have forgotten it the next day. Therefore, they need a lot of repetition and reinforcement until a skill/ability/fact is really learned and embedded.
- The child's strengths may mask their needs. For instance, strong emotional intelligence, social skills and expressive language skills may mask their comprehension difficulties or learning needs.

Perception and Attention

- Up to 75% of children with WS have vision difficulties (such as strabismus or 'cross-eyes', long-sightedness or problems with visual acuity). Many children with WS also have poor 3D vision. This means that children with WS benefit from sitting in the front of the classroom close to the whiteboard. It should also be noted that crowded pages might cause difficulties so words on worksheets and notes should be spaced out.
- Young individuals with WS find it difficult to move their gaze from one point of focus to another, especially when two objects or things are present, and they will likely stay fixated for longer on one point. They may need to be explicitly told where to look. It is useful to tap the board to bring their attention to something you are explaining.
- Children with WS like looking at faces and will often gaze at other people's faces. During this time, they may not be able to listen or take in information. It might therefore not be beneficial to ask them to look at you when responding to a question. This may also cause a difficulty if they are perceived to be staring at a peer. It may need to be explained to the peer on a one-to-one basis for them to understand.
- It is common for children with WS to 'read' faces for emotions and they may be distracted by this. They may also try to read your face when answering a question and try to give you the response they believe you are looking for.
- Children with WS often fail to inhibit irrelevant information (whether that information is presented orally or visually). When giving oral instructions, short sentences will help them to understand the task at hand. Visual information should be spaced out without irrelevant pictures or information. It is also better to have information presented as bullet points rather than as a narrative if possible.
- Children with WS are at increased risk of hearing loss or hearing difficulties compared to typically developing children.
- They may fail to attend to what is being said but this is most likely to be caused by a distraction, 'sticky attention' or anxiety.
- The most significant aspect of hearing in WS is 'hyperacusis' or a heightened sensitivity to certain sounds. This is dealt with in the section entitled '**Sensory Needs**'.
- Stamina can be an issue for children with WS, meaning that they may tire more easily than their peers and will need time to relax and recharge their energy. They can be supported by having several short breaks during the school day.

- Children with WS may find it difficult to sit still and listen for prolonged periods of time. Some children will repeatedly get out of their seat and move around the classroom. Regular movement breaks are useful. You could arrange to have jobs for them to do as a movement break, such as handing out papers or turning on/off the lights. Oftentimes this overactivity is related to their sensory needs. If their overactivity is serious, you should consult an Occupational Therapist (OT).
- They might also be distractible, with the severity varying between individual children. Encourage them to focus for short periods of time, giving tokens or rewards, if necessary, to build up their ability to focus. Their distractibility, however, can be worked positively, as they can be easily distracted with their special interests or toys if they are feeling upset.
- Below you will find tips on supporting the child who is easily distracted.

Top Tips for Perceptual and Attention Abilities

1. Provide learning in short windows that require, e.g. 5-minute bursts of focus from the child. Praise them and allow them a short break before continuing.
2. Provide regular short breaks. Sometimes the child just needs a break to recharge! Allow them some time to listen to music or go through a book. Even a walk around their chair or singing one song will help them regain their attention.
3. Have regular sensory breaks as classrooms can be loud and demanding. A short break in a quiet room/area can really help.
4. Use books and programmes with reduced images and colour to avoid visual overstimulation.
5. Seat the child at the front of the classroom to help them refocus quickly if they lose attention, or seat them next to a pupil who could help them focus or who works well with them.
6. Allow 'think time' after asking a question, up to ten seconds, before providing further prompts or repeating the question (especially if the child is young).

Advice from a Parent: What worked



“Expect five minutes of focus, that is magic! You can get a lot of learning done in 5 minutes [with children with WS]”



Speech and Language Abilities

- Children with WS tend to have a great interest in conversation, and in language in general. Many like the musicality of language and enjoy its rhythm and rhyme. Their strong sociability helps them to want to engage in verbal communication, particularly with adults.
- The language strengths of children with WS can be deceptive. It can lead to an over-estimation of their other abilities. This is because there is often a contrast between the child's good spoken (expressive) language skills and their poor comprehension (receptive language) skills.
- A small percentage of children with WS remain minimally verbal. It is recommended that in such cases there is regular contact with a Speech and Language Therapist (SLT).
- Language development is delayed and atypical in all children with WS. Some language abilities of individuals with WS are strongly correlated with their overall cognitive abilities (e.g. grammar abilities), whilst vocabulary scores are often higher than overall cognitive abilities.
- Young children may have pronunciation difficulties in addition to comprehension difficulties. This can be helped by encouraging them to slow down when they speak and by engaging with a SLT.
- Although by adolescence most individuals with WS produce many complex grammatical constructions, understanding of complex grammatical structures is often poor (especially embedded sentences and prepositions, as well as relational vocabulary such as temporal, quantitative and spatial concepts). They can improve through targeted language exercises.
- Children with WS are often able to repeat instructions or stories, word for word, but may have difficulty understanding what is being asked of them or to comprehend simple concepts.
- Pragmatic difficulties are very common, including an overreliance on context to understand what was said, repetitive questioning, use of stereotyped phrases and limited understanding of figurative language, sarcasm or irony.
- Although they are very enthusiastic storytellers and use a lot of exaggeration or dramatics, they often have difficulties understanding story sequences, or selecting the information the listener needs to follow the story, particularly when it is not of interest to them or if it is pitched above their comprehension level.
- Due to their reluctance to use "negative language" and their drive to please others, the child might also be reluctant to admit they have not understood a task.

- Many children with WS have favourite topics and may want to talk excessively about these. Try and notice when this is happening as it can be a symptom of anxiety. The child may revert to their topic of special interest if they are bored with the content being taught, if it is pitched too high and they are unable to participate in the discussion about the current topic or if they are self-calming. They may also use talk about their favourite topic to get out of a task they dislike!
- Some children with WS may find it difficult to regulate the volume of their voice and may need to be taught to speak with appropriate volume. Drama activities and the support of a SLT can be useful.

Top Tips for Speech and Language Abilities

1. Make sure that the child has fully understood your instructions. The child's good expressive language skills and eagerness to please may lead her to agree to instructions or pretend to have understood concepts, despite not having fully understood them (due to poor receptive language skills).
2. Consider speech and language therapy. Children with WS benefit from this from infancy through adolescence. During the early years, therapy should focus on communicative gestures such as pointing and beginning conversational skills such as turn-taking as well as language production and comprehension. For older children and adolescents with WS, speech and language therapy should focus on grammatical comprehension and production, relational language comprehension and production, and language pragmatics.
3. Use simple language when presenting information. This will play into the child's strengths (strong auditory memory, willingness to listen to others) and ensure they have fully understood.
4. Use literal language and avoid figurative language and irony (e.g. sarcasm). Avoid sarcasm as this is unlikely to be understood by the child or if understood is likely to cause hurt feelings.
5. Provide the outline of a story sequence. At the beginning of a story, tell the child what to listen for. Recap on the main points of the story through explicit teaching of, e.g. who, where, when, what, why, how and/or first, then, finally. Explicitly teach them how to start, recount what happened next and how to conclude.
6. Provide pictorial support wherever possible. With the availability of internet resources, showing real-life images supports the child's comprehension across all subject areas.

Top Tips for Speech and Language Abilities Cont...

7. Limit conversation about the child's favourite topic and pet questions. Make it clear they can only be answered once or discussed during special reward time. At other times the adult could ignore these or change the subject. Consistency is key. Also, try to understand when the child reverts to their favourite topic and consider its possible function (it could be that they are trying to avoid a task that is too difficult for them).
8. Use drama activities to practice language. This appeals to their emotional intelligence and can make language exercises more enjoyable.



Some teachers may prefer to promote intrinsic motivation (e.g. through a sense of achievement after solving a task, or through relaxation time) as opposed to extrinsic motivation (e.g. through external rewards such as stickers, toys, awards). What works will also depend on the child. Keep in mind that children may become dependent on extrinsic motivation and rewards, and over time this practice may be difficult to sustain. Reflective practice is an important aspect when evaluating which practices are truly beneficial to the child and which are band-aid practices that appease the child momentarily but become unhelpful in the long-run.

Use the **Child Profile** to note down what kind of motivation works with the child.

Memory Abilities

- Children with WS have very good verbal short term memory which means they are very skilled at verbally repeating what you have said (sometimes without understanding what you have said).
- They have a good memory for faces and for certain facts that relate to their favourite topics.
- They also have a good memory for musicality which includes music, rhythm and unusual words. They will often remember multisyllabic words, phrases with alliteration and rhyme and those with onomatopoeia.
- However, they often have poor working memory which means they find it difficult to manipulate information whilst holding that information in mind. Visual or concrete aids might help them.

Top Tips for Memory Abilities

1. Teach in chunks of information. Teach the child how to chunk information themselves too.
2. Provide memory aids in teaching (e.g. visual pictures, story lines).
3. Link learning to the child's musicality; teach to a song the child likes or teach to a rhythm (e.g. times tables).
4. Teach through the personal stories of others. This will appeal to the strong emotional intelligence and sociability of the child.
5. Relate content to the child's life and/or environment. Even better if you can relate it to the child's special interest.
6. Ensure the child experiences success so that they have a positive feeling about the content/skills being taught.
7. Revisit the information being taught several times so that it is stored in long-term memory.
8. Praise the child when they use a metacognitive skill to remember material.

Motor Abilities

- Children with WS will tend to have poor muscle tone but they get stronger with age. This has implications for gross motor skills initially and manifests as difficulties with such skills as walking, running, jumping, hopping and throwing/catching objects. This is likely to impact on sports and games in the school context.
- Poor muscle tone also has implications for fine motor skills such as writing and life-skills (fastening buttons or shoelaces).
- Children with WS have a high likelihood of having hypermobility of joints, which means they may experience joint pain on an ongoing basis. This can impact their sleep quality, their learning (due to discomfort) and their emotional regulation which is likely to lead to poor tolerance.
- Many children have joint contractures (when a joint cannot be fully straightened) and this may impact their ability to do certain actions such as putting hands out straight when walking on a line/beam or straightening knees fully.
- Hand-eye coordination is often poor and they may have difficulties with such skills as putting money in a money box, putting a letter in a letter box, threading objects or fastening buttons.
- However, all children will improve on these tasks with time, provided that they are given reassurance, support and plenty of practice.

Advice from Parents and Children with Williams Syndrome: What worked



“

“Our daughter really struggled with finger spaces between words and used a wooden lolly stick to help her. She didn’t always use it to physically measure the space, once she had got going, having it in front of her was often enough”
(Father of a 17-year-old child with WS).

”

“

“[I’ve gotten strong fingers by doing] a lot of physio and lots of OT and get exercises and do lots of that [but] sometimes I need a hand break”
(8-year-old child with WS).

”



Top Tips for Motor and Coordination Abilities

- 1.** Strengthen muscles. Muscles become stronger through use. Use resources such as playdough or LEGO© to build their hand strength and grip.
- 2.** Present tasks such as sorting and matching objects and shapes. These are important skills to master before the child can progress to the basics of reading and writing. Make sure the task is interesting to the child.
- 3.** Ensure participation in sports and games. Just because they may have motor difficulties doesn't mean the child will not want to participate in these activities. Children with WS frequently report these as being their favourite school activities. Make sure to include them in PE and sports days.
- 4.** Use music whenever possible. Children with WS are more likely to enjoy movement or exercises with music than without music. Playing music during physical activities can promote better engagement. Try to incorporate music into appropriate gross/fine motor exercises such as balancing, ball play, threading beads etc. Clapping to music and banging musical instruments can also be used to encourage early perceptual-motor development.
- 5.** Engage the child in dance to build up coordination and stamina.
- 6.** Encourage the child to talk through each step of a task. Children with WS have relative strengths in spoken language and auditory memory.

Many children with WS benefit from working with OTs. Speak to an OT for best resources and interventions to support their motor and coordination difficulties.

Visuo-spatial Abilities

- Visuo-spatial cognition is a difficulty for children with WS. This includes spatial awareness (spatial attention and spatial memory), navigation and hand-eye coordination.
- Difficulties with visuo-spatial skills make it challenging to judge spaces and distances. This impacts on the ability to cross a road. This is obvious in a school environment where the child's belongings and desk appear disorganised, where they line up too close or too far away from peers and where they bump into furniture or fail to avoid obstacles in their path.
- Spatial awareness difficulties affect how the child sees materials on a page. This is obvious when the child does a written task. They may have difficulty knowing where to start, remembering to go from left to right, spacing letters, spacing words and leaving an appropriate margin.
- Copying material from the board is also likely to be a challenge. Each time, the child will have to locate where they are on the board for key information. When they look down at their copy they have to locate where to start writing and also remember what they just saw on the board.
- Many children have difficulty with depth perception. This can make the child nervous of moving objects and of heights. They may also be reluctant to engage in such activities as going up/down steps, using playground equipment, walking on uneven surfaces and crossing the road.
- OTs can assess and provide exercises for the child in the areas of coordination, balance, gross/fine motor activities, and they can advise school staff on exercises to carry out with the child at school. These can be used as movement breaks for all pupils and/or as warm-up activities in PE class.
- Children with WS may also have weak visuo-spatial manipulation and construction skills, which affect their ability to carry out tasks such as assembling jigsaw puzzles or devices with parts, as well as drawing. Despite this, many children with WS report their liking for Lego© and other construction toys.

Top Tips for Visuo-spatial Abilities

1. Mark step edges clearly.
2. Explicitly teach an awareness of the body. This should incorporate an awareness of their own body parts and the position of their body in relation to others for lining up appropriately in the classroom or school yard.
3. Provide visual aids (e.g. footprints, red dots, arrows) along the track to be followed so the child is aware that they are on the right path.
4. Create emotional links for the child along the track to be navigated which can be linked to the child's special interest or object. This could be made into a Social Story to help the child remember the route.
5. Provide starting points for writing tasks and make it clear on paper where child has to start or stop writing.



ACADEMIC DEVELOPMENT

Learning Strengths

There are several strengths that have been consistently associated with WS. The most common are:

- Auditory memory
- Sociability and friendliness
- Musicality
- Expressive (spoken) language
- Memory for faces

It is important to capitalise on the strengths of learners with WS. However, keep in mind that there are considerable individual differences between individuals with WS. They will have variations in strengths and to different degrees.

Top Tips for Using the Child's Learning Strengths

1. Utilise the child's superior verbal abilities in teaching, e.g. by getting them to talk through a given task or exercise.
2. Capitalise on the child's likely aptitude for music. Teach through music, songs, rhymes and dance to speed up the learning process.
3. Harness the child's memory skills (for faces, specific facts, past events) to remember new content/skills.
4. Use the child's special interests to teach new content/skills. Incorporating these into teaching materials for reading, writing and perceptual exercises will enhance the child's interest and motivation to work.
5. Introduce buddy systems or regular group work to ensure that the child enjoys work. Thanks to their sociability and friendliness, children with WS will be interested and highly adept at working in groups or pairs.

Effective Teaching of Children with WS

- The ultimate goal for teaching should be to teach children skills that will be useful in the long-term and will help them achieve a good quality of life with a degree of independence.
- It is important to have expectations for the child that are high, but at the same time appropriate to their developmental stage and learning profile.
- Children with WS tend to have particular (sometimes obsessive) interests. This can be about cars, stickers, musicals, etc. It is important to capitalise on the interests of the individual child. This will increase their engagement and attention as individuals with WS tend to have difficulty with this.
- Children with WS often have difficulties in planning and executing actions. This is thought to be due to problems in brain connectivity, particularly the processes involved in translating sensory inputs into actions (sensory-motor translation). As such, they may not know where to start a particular task or how to break it down into smaller steps.
- They also take longer to process information and thus take longer to respond to questions.
- In terms of attention, children with WS find it difficult to inhibit certain responses and may just blurt out a response or they may find it difficult to wait their turn.
- The child is likely to be delayed developmentally. Therefore, always ensure that you are tailoring the teaching according to their developmental stage (they might be at a younger stage), not simply making a task easier. It must be developmentally appropriate for the child. This relates both to the content and skills. The pace of teaching may also need to be adapted to ensure the child has adequate time to process new information.
- The key in teaching a child with WS is in evaluating whether they have really understood the material or concept taught. This is because their true level of understanding can be masked by their excellent verbal abilities and memory for events.
- Children with WS also tend to have difficulties in transferring knowledge into different contexts. Hence, it is important to ensure that the child can apply new learning across different scenarios. This can be done through repetition and using multiple examples (e.g. teaching addition using cubes, apples, cars and sweets as examples rather than just one item).
- Avoid asking leading questions when teaching, as the child may give a correct answer without understanding why it is correct.
- Praise and positive reinforcement are particularly effective in motivating learners with WS. Praise also increases the child's confidence and makes them more aware of their own strengths.

- It can be beneficial to set aside 1:1 teaching with the child if the class is going too fast and the child has not yet grasped the concept taught. However, keep in mind that sometimes the child may be reluctant to go at a different pace to their peers for fear of missing out or feeling different. In such cases it is important to strike a balance between tailored instruction and whole-class teaching. It is vital that the child understands why some tasks are made different.

Advice from Parents and Teachers: Managing expectations



“

“Treat them as an individual and get to know them as a child as much as you can. Get to know what they like and don’t like, the things they find tricky, the things they find easy. It’s just about getting to know that child inside out and doing what’s best for them” (Teacher).

”

“

“Have high expectations! they’re little monkeys, and they can actually achieve quite a lot if you have high expectations” (Parent).

”



“

“Be realistic of expectations of what your child can achieve or not – if you push them too hard you are setting them up for failure” (Teacher).

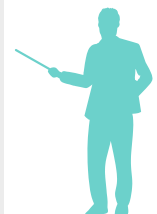
”

Advice from Teachers: What worked

“

“I’ve found that over-learning and pre-learning were two of the most useful things in teaching. If I go over and over something, eventually some of it sticks, while pre-learning allows him to be included in class discussions. Allowing him to showcase also really helped in getting him involved and interested. He once gave a presentation all about dinosaurs (his favourite topic) and it was absolutely outstanding because he knew so much about them, and all the other children listened so well!”

(LSA of 8-year-old boy in Year 4).



”

Top Tips for Effective Teaching

1. Always work with the child's developmental age. Keep in mind the contrast between the child's developmental age and their chronological age.
2. Give them tasks that are achievable for their cognitive ability, concentration level and interest. Children with WS may be reluctant to engage in activities in which they fear they will fail.
3. Set aside time for 1:1 tailored teaching in a quiet area away from distractions. This could be in a corner of the classroom where the child has a table facing the wall for these short individual instruction times.
4. Be clear with expectations and stick to them. Children with WS may become upset if you don't stick to your words and consistency is key.
5. Be realistic with expectations of what the child can achieve. If you push them too much, you are setting them up for failure. It is important to have expectations for the child in order to push them to succeed and achieve. Yet, it is also important to strike a balance and keep these expectations in line with limitations such as their stamina, developmental age, attention span etc.
6. Break down the concepts significantly. Divide the learning into chunks and work towards each chunk.
7. Keep in mind that learning in WS is not always a linear progression, rather the progress line is 'sketchy' (goes up and down with wins and drawbacks).
8. Repetition is key when teaching a child with WS, and sometimes you will have to go back to teach the same concept/basics again.
9. Under the individual profile, take note of the child's "contradictions" (e.g. they are good at X, but struggle with Y). Use these notes to guide your lesson planning for the child.
10. You may need to explicitly teach the concept in different contexts. You will sometimes get the impression that the child understands a concept in one area, but this understanding might not transfer onto other areas.

Most children with WS benefit from specialist support in the classroom (e.g. 1:1 teaching from a Learning Support Assistant etc.) and/or outside (e.g. working with an Occupational Therapist and a Speech and Language therapist). To further ensure that specialist support is given to the child, the parent and teacher should work together to include the appropriate resources within the EHCP guidelines. You can find more information about advice for EHCP's for children with WS at the WSF: <https://williams-syndrome.org.uk/wp-content/uploads/2018/10/WSF-EHCP-Guidelines-FINAL-2018.pdf>

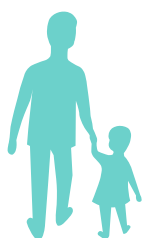
Maths

- For most individuals with WS, mathematical abilities develop in line with their overall cognitive abilities. Although individuals with WS tend to have good counting and subitising skills (ability to quickly gauge the quantity of things at a glance), their understanding of numbers and how these relate to each other is often poor, which impacts on their mathematical development and ability to deal with money.
- The underlying cause of mathematical difficulties is unclear but poor working memory, visuo-spatial and estimation abilities are likely to impact on mathematical outcomes.
- Individuals with WS benefit from activities that allow them to get an understanding of how numbers relate to each other and what numbers mean (working on number lines, snake and ladder-type games, Numicon, etc.).
- Many children with WS struggle with writing the numbers and have problems aligning the numbers when adding or subtracting. Allowing the child to dictate the process/answers to a TA will save valuable time and will maintain a focus on mathematical process rather than on handwriting and spatial awareness.
- Many children with WS fail to understand the operators (+, -, x, etc.) and may confuse addition for multiplication etc. Frequent repetition is key.
- Maths is a life skill. Hence, even if the child is behind their peers, they should still have access to the full Maths curriculum. As such, differentiation based on the child's developmental stage is required and materials from a lower year group might be useful.
- Learning to tell the time is another area of difficulty. A digital watch might help. In addition, it is important to link time on the watch/ clock to routine activities that take place at set times (lunch/play/home time). Some children also struggle with the feel of a watch on their wrist due to sensory difficulties. Having a clock on the wall provides easy access to the time.

Top Tips for Maths

1. Use concrete materials (rods, blocks, visual number lines) and engage with a lot of repetition.
2. Many resources recommended for developmental dyscalculia are also useful for learners with WS.
3. Consider the child's interests when teaching Maths (e.g. when teaching sorting to a child who loves dinosaurs you could make them sort dinosaur toys in order of size).
4. Work on understanding of how numbers relate to each other. Numicon has been lauded by parents as being an effective way to teach Maths to children with WS.
5. Teach the value of money. This is important for independence and thus, using real money (rather than tokens or pictures) is recommended.
- 6.. Use squared paper to ensure sums are lined up correctly.

Advice from a Parent: What worked



“

“[My 9-year old son] is really good at being used to routines. He likes getting his vitamin sweeties every day, and in order to get his vitamin sweeties, [I get him to] do the ‘sum of the day’. When he comes down for breakfast, the sum of the day is in magnetic numbers on the fridge. The sum of the day can be a 5 times table, a full common subtraction ... but he does the sum of the day every day! That’s quite a lot of sums, and he’s getting quite good at maths from one sum on the fridge every morning” (Parent of 9 year old boy with WS).

”

Reading

- As with many skills, the reading ability in individuals with WS is variable. By the time they are young adults or adults, around 30% of individuals with WS reach a functional reading level (the level necessary to participate and function independently within the community).
- The learning profile of learners with WS and the associated strengths are very beneficial when learning to read. Their strong musical intelligence makes them adept at hearing specific sounds and repeating them (related to phonics/phonological awareness). They are likely to be interested in the sounds of words and thus eager to learn new words.
- Learners with WS tend to struggle in moving from learning initial letter sounds to blending multiple letter sounds together. It is unclear whether this is caused by problems in phonological (sound) processing, or by the lack of enough repetition and practice. Try not to move too quickly when transitioning from teaching one concept to the next, and consider differentiating lessons for the child. A multi-sensory approach in promoting phonological awareness (e.g. using songs and hands-on activities) may be particularly beneficial for learners with WS. While a phonological approach is recommended for typically-developing children, it may be necessary to supplement this with a whole-word approach for a child with WS who is failing to make progress with reading. A combination of a whole-word approach and a phonological approach is recommended.
- It is still important to persevere and have patience with the child when teaching them how to read, especially if they have an intellectual disability. This means working at their developmental age and not their chronological age. The teaching of reading needs to be an incremental process, regardless of the child's age.
- Where the reading material is too sophisticated for the child's developmental stage, they might get overwhelmed and frustrated, which will interfere with their motivation and self-confidence. Instead, consider using reading material from lower year groups when needed.
- When the child finishes a particular reading book, it is best to move to a parallel book at the same reading level rather than moving to a more difficult level. This may seem a little discouraging for parents, but it ensures that the child can generalise reading skills and build confidence.
- There tends to be a gap between the child's reading age and their comprehension age, with the comprehension age being lower. Teachers should use the child's comprehension age to gauge the reading material suitable for the learner.
- Even when children with WS become fluent readers, they often fail to understand what they have read. Therefore, focus on reading comprehension at all stages of learning to read.

Top Tips for Reading

- 1.** Use reading materials related to the child's favourite topics or interests as this will be motivating.
- 2.** Choose reading material or books with a few simple pictures or outline drawings that are not too detailed or have too many colours (as often is the case in beginning reading books). This will help to reduce the distractibility associated with WS.
- 3.** Use a multi-sensory approach to teach phonics and phonological awareness.
- 4.** Ensure that the child is looking at each of the letters of a word for enough time. Due to their “sticky fixation”, learners with WS have problems in disengaging from a target or shifting their gaze from one target to the next (e.g. from one letter to the next, or from the blackboard to the worksheet in front of them). They also often prefer to look at faces above all (that’s what makes them so attuned to other people’s emotions!), so ensure that they are looking at the word rather than your face only. It will help to regularly prompt them and their gaze towards the desired target (e.g. the worksheet in front of them) and away from your face.
- 5.** Emphasise a mixed approach: a phonetic approach allows children to build upon their strong auditory skills and whole word approach allows them to read faster as well as read phonetically irregular words.
- 6.** To improve reading comprehension, ask children with WS questions when they are reading the text. Ask them to justify their answers so you know they are not

Writing

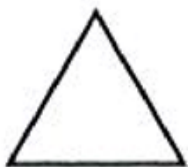
- The process of writing and learning how to write involves all of the perceptual and motor difficulties previously mentioned. Children with WS may find writing difficult due to the weak muscles in their fingers, hands, and wrists as well as eye-hand coordination problems. However, these can be strengthened with exercise and practice. Parents can be a great starting point. The advice and support from an OT is also invaluable.
- Due to visuo-spatial difficulties children with WS have difficulties with letter formation and spacing. They might not put letters in the right order or know how to link them. Providing lots of tracing practice, dots on where to start each letter/word as well as the use of lined paper will help. Leaving a blank line between each line of writing can make correction of their work easier.
- Like most children, children with WS love working on computers. As writing with a pen is very laborious and slow, children with WS benefit from the use of computer for free-writing. Voice recognition software might help them with free-writing as they can see how their stories can be transformed on paper, especially as they are great storytellers. However, they need to learn how to use voice recognition software and will need a lot of practice to use it independently.
- Children with WS should be taught writing at their developmental stage. This means when their peers transition to cursive writing, they may not be ready. Many children with WS struggle with letter formation due to visuo-spatial difficulties and should only move to cursive writing when there is evidence that they are ready.

Below are some examples of how children with WS copy specific writing tasks:

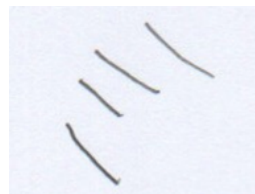
Example

— — — — —

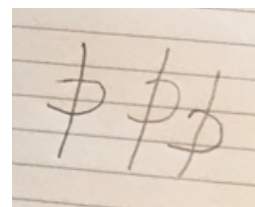
p b p



Copy by Child with WS



(Sam, aged 11)



(Charlie, aged 15)



(Salome, aged 12)

Top Tips for Writing

- 1.** Encourage the child to use a weighted pen. This may help the child to write better, as they won't need to put as much force to press the pen down. However, advice from an OT is recommended before you use such resources.
- 2.** Consider some aspects of work that can be done orally with the child as the physical task of writing may be very tiring for children with WS.
- 3.** Use lined worksheets with a dot to indicate where to start a letter or word. Do not have dots for the full word as the child is unlikely to be able to see the pattern of the letter/word. If the child is not able to write independently write the letter/word/ sentence in the child's copy and have them trace over it with a highlighter.
- 4.** Ensure there is enough contrast between the colour of the worksheet and the colour of the ink (e.g. white worksheet and black ink), as individuals with WS may find lack of contrast difficult.
- 5.** Allow the use of computers for free-writing tasks and even voice recognition software to transfer words to paper as children with WS are often great storytellers.

Activity: Stop and Consider

- 1.** Stop and think about all the processes that are actually involved in writing; you need to be able to sit straight on the chair, which requires balance. You also need to be able to correctly grip a writing utensil with enough force to write the letters. When copying down words from a whiteboard you need good working memory. You also need good visuo-spatial abilities to know where to put the letters on the paper and how to form them. Then, you also need good fine motor control and eye-hand coordination to form the letters. Now, when you realise that many learners with WS will have difficulties with the skills mentioned, you might see how writing may be frustrating for them, and you might see the need to be a little bit more patient and encouraging than usual.
- 2.** Put on a pair of ski gloves or mittens and try to write a sentence with paper and pen. You will find that writing is much harder! This exercise mimics the motor difficulties children with WS experience when writing (especially pencil grip).

ANXIETY

- Many children and adults with WS struggle with anxiety. They may be over-anxious and easily upset by criticism and frustration.
- Their anxiety can be understood as worry and anticipation about certain events or unfamiliar situations, whether these are bound to happen or are imagined or perceived (e.g. a class test, a fellow classmate or themselves getting reprimanded for bad behaviour, school bells, hand dryers).
- This over-anxiousness may also mean that they frequently demand attention and seek reassurance from teachers and other adults (asking frequent questions, starting conversations to distract themselves, or giving compliments). They may visit the toilet more frequently, or start rocking as a way to self-soothe.
- For more information about anxiety in children with WS see: <https://williams-syndrome.org.uk/wp-content/uploads/2021/05/WSF-RIBY-ANXIETY-PRIMARY.pdf>

Common Symptoms of Anxiety

- Complaints of stomach pain or discomfort;
- Panic attacks at night;
- Frequent requests for the toilet;
- Asking repeated questions or talking about a situation over and over again;
- Rocking, humming, rubbing of thighs, skin picking or hand wringing;
- Delayed processing;
- Going into fight, flight or freeze mode.

Individual responses to anxiety may vary. Take note of the way the individual child expresses anxiety, and report this in the Child Profile template at the end of the guidelines. This should be shared with anyone who is working with the child. You can also use the Daily Learning Diary to note down daily changes in emotions as well as instances of anxiety throughout the week and how these were overcome.

Advice from Parents and Teachers: What worked



“

“The night before the return to school I sat down with [my son]. He already started exhibiting anxiety symptoms 7-10 days before (severe reflux, questioning, flapping, etc.). I got him to tell me everything he was worried about, and we wrote out 2 sides of an A4 page, and we addressed it for his new LSA. That morning I handed it over and she took the whole day to address each of his worries. [She] walked him through the new classroom, where the alarms were etc. She took him through the new routines in a calm, quiet place & ensured he fully understood & could ask a million questions about them. He came out that day like a transformed child, completely calm and ok about school again. That initial investment of time was so worth it.” (Parent of 9-year-old boy)

”

Top Tips for Anxiety

1. Do not mistake their constant cheerfulness for lack of any anxiety. The child's anxiety can sometimes go undetected due to their friendly disposition.
2. Ensure the child knows what to expect. Because anxiety is often anticipatory, knowing what to expect might lower their anxiety. Hence, it is beneficial to clearly communicate expectations to the child (e.g. at what time will the lesson start and finish; you can use visual timetables for this).
3. Offer understanding and reassurance.
4. Avoid raising your voice or getting angry at the child or the rest of the class, this will likely heighten their anxiety.
5. Offer the child opportunities to take frequent movement and sensory breaks throughout the day. This will help diminish restlessness and anxiety.
6. Have a conversation with the child regarding triggers (e.g. what bothers them the most? what scares them?) and come up with ways to reduce exposure to such triggers. (e.g. if it's the sound of people passing by the corridor, adjust the seating plan so that they are sat away from the corridor).
7. Avoid forced exposure to triggers as this is not efficient for children with WS, e.g. a song that makes them feel sad/anxious in childhood may continue to make them feel sad/anxious into adulthood. Don't try to force them to listen to it until they 'get over' the sadness or anxiety.
8. Consider switching off hand dryers and using towels/paper towels instead.
9. Use charts to help children identify their emotional states and sources of anxiety throughout the day. These charts should ideally have indicators of emotions, such as smiley (sad, neutral, happy, angry) faces that children can then point to, to express their current feelings (remember children with WS often have problems expressing their emotions).

SENSORY NEEDS

Sound

- Many individuals with WS (about 84% of children with WS) have 'hyperacusis'. This is a hypersensitivity to sounds, which can include sudden loud noises like thunder, balloons bursting, hand clapping, and in some cases even people's voices or laughter. The noises can be distressing to the child, and they may become particularly upset in crowded, noisy classrooms. This can lead to avoidance of certain situations.
- The reason for hyperacusis is not known. However, it is likely to be related to the lower threshold for sounds in individuals with WS compared to the typical population. The noises may be startling or even painful to the ears.
- When children are distressed or anxious about a sound, they are not able to learn or concentrate or even listen to instructions.

Top Tips for Hyperacusis/Sensitivity to Sounds

1. Give reassurance with a clear and simple explanation about the source of the noise.
2. Provide a warning, whenever possible, just before predictable noises (e.g. school bell, fire drills or clapping).
3. Allow the child some control over the sounds that cause discomfort (e.g. ask them to turn on the alarm or ring the bell). Their reactions will often diminish if the child is able to exercise some control over that sound.
4. Inform the child that they can leave the room for a few minutes at any point, if they are exposed to a distressing noise. This is likely to reassure the child.
5. Engage with repeated gentle exposure to the sound as this may help the child to get used to it. This should be done very slowly and gradually, e.g. record one sound which is distressing to the child and encourage them to play it back, quietly at first, then gradually increasing the volume.
6. Consider the use of ear defenders if this enables the child to participate and engage in school activities that might otherwise be distressing for the child.

Other Sensory Needs

Hearing is not the only sense that can cause difficulties for a child with WS. Other senses may also be affected in some way: sight, smell, touch, taste, balance, movement and body regulation. You can find a comprehensive guide for inclusive practice that considers all of these senses and related difficulties for children with WS in the book **“WiSHES” by Fionnuala Tynan**. Below, you will find a short list of top tips for these sensory needs.

In addition, recent research (Powell & Van Herwegen, submitted) has shown that sensory needs change over development, so children should be annually assessed by an OT.

Top Tips for Other Sensory Needs

1. Speak to an OT first for a thorough sensory assessment of the child (they will be able to tell you which of the interventions or tools below are most and least beneficial for the child).
2. Use a sensory room when necessary. Having a sensory room can be beneficial for learners with sensory integration difficulties as they provide learners with a place to release their frustrations and tension that arise from a noisy, bright and busy classroom.
3. Introduce “sensory breaks”, where the child can take a break to destress using a variety of sensory toys or resources recommended by an OT.
4. Use a variety of sensory tools, e.g. gym ball, step board, peddle bike, weighted pencils, writing slope, or wobble footboard. However, a thorough sensory assessment from an OT is needed first before trying these.

Activity: Stop and Consider

Now that you’ve read about the sensory difficulties that children with WS experience, you can try the following exercises to put yourself in their shoes.

1. Record a lesson in your classroom or lunchtime in the hall on your phone or recording device and listen to it during your break. Pay attention to the volume levels or distracting sounds you hear. How do you think this might affect a child with WS who is more sensitive to sounds?
2. Walk to your classroom and try to imagine how this would feel for a child with WS with balance difficulties.

SOCIAL RELATIONSHIPS AND DEVELOPMENT

- High sociability is one of the characteristic features of WS, meaning they enjoy engaging in conversations and meeting new people.
- Although children with WS are likely to be popular with their peers, they find it difficult to make friends of their own age and often seek out the company of older children or adults.
- Children with WS are eager to please and affectionate and may approach adult strangers in an overly friendly and over-familiar manner, often tagging along with them.
- Due to their trusting behaviour, children with WS can be taken advantage of and are therefore socially vulnerable.
- They often have poor understanding of boundaries or different types of friendship.
- In some cases, the child's lack of social inhibitions or social naiveté might lead them to tell tales or to say things which embarrass and upset other people. People should be made aware of the fact that such behaviour is rarely intentional or malicious, and that the child with WS is not always aware of the social implications of their utterances.
- Children with WS often tend to get babied or overindulged by other children and adults which does not support their overall development.
- Children with WS are very sensitive to criticism. They also tend to report higher rates of being bullied than their peers.
- Some children with WS may get fixated on a peer, which can be a positive or negative fixation. The child may need 1:1 support to understand the impact of their behaviour on their peer and be given strategies to reduce the fixation.
- Yet, the fact that they are eager to please and like adult company often make them a delight to teach.

Buddy systems

Due to the reasons detailed above, children with WS may benefit greatly from the use of “buddy systems” where the child is paired with a peer. This can be carried out as a specific task (e.g. a child is chosen to complete a classroom task together with the child with WS), or as a weekly event (e.g. one child, preferably of the same age or of a few year groups above, is designated to help the child with WS integrate within the school and classroom. This can mean they are to include the child during playtime and ‘look out’ for them during the school day).

Advice from Teachers: What worked



“

**“My student struggled with taking turns and starting conversations, where social stories weren’t helping as much. Introducing Lego Therapy with other children worked really well as he had to learn to take turns and communicate his actions to others. That was a win! I recommend that”
(Teacher of 9-year-old child with WS).**

”



Top Tips for Social Relationships and Development

- 1.** Model any new skill or behaviour you want to teach the child, praise the child for using it, and remind them about the times when they used the skill successfully. This is likely to produce the most positive results.
- 2.** Praise the child for waiting patiently for their turn. Encourage them to sing/hum a song while waiting. Waiting is extremely difficult for any child.
- 3.** Don't overindulge or 'baby' the child. Treat them at an age-appropriate manner, whilst also being tolerant and patient towards unpredictable behaviour.
- 4.** Draw the child with WS into games with their peers at break times, and also encourage other children to include the child in their play.
- 5.** Introduce buddy systems so that different pupils can support the child with WS in the classroom and at playtime. Sometimes games can move too fast or be too loud for a child with WS and this can prevent their inclusion.
- 6.** Consider the needs, interests and abilities of the child when planning break time activities and games (e.g. football may not always be appropriate for children with WS due to sensory-motor difficulties, while others love football!).
- 7.** Try to get the child to engage with their same-age peers if they show a habit of wanting to interact with adults only. Children with WS will likely want to follow the teacher or LSA during break time as children with WS like to interact with adults. Ideally, the adults could check in with the child and praise them for playing with peers to give them a social reward for this behaviour.
- 8.** Teach the child to be assertive so that they learn to approach their peers to join in a game rather than stand to the side. You can also teach them to say 'no' to requests, as children with WS are likely to want to please others.
- 9.** Give the child some time to socialise with their friends as a break can help them focus more on a task. This may also encourage stronger peer relationships.
- 10.** Model appropriate greetings and behaviour, practice social situations using video and role play in the classroom. Social behaviour can be learned very effectively this way.
- 11.** Allow the child some time to play alone at break times, if that is desired. The child may be using this as a strategy to de-stress and emotionally regulate. They should not be forced into playing with friends for a full break time if they really don't want to.

EMOTIONAL AND BEHAVIOURAL DIFFICULTIES

- Anxiety is part of the emotional/behavioural profile of WS. This has already been discussed earlier in these guidelines (see 'Anxiety'). Children with WS are also likely to have difficulties in understanding and regulating their own emotions.
- It is important not to label emotions as 'positive' or 'negative', and instead stress that all emotions are natural and normal. This will remove their fear or pressure around expressing some emotions. What matters is how a person acts in response to an emotion.
- Although children with WS are very verbal, they have a limited understanding of complex emotions and find it difficult to express such emotions.
- Due to the afore-mentioned difficulties in emotional regulation, children with WS may show undesirable behaviours and temper tantrums.
- When working with a child with WS, it is important to understand the reason for their behaviour, as well as its function. This is because, while sometimes the reason and function of a behaviour is clear, other times it may not be so clear (e.g. due to their difficulties in expressing a certain emotion). Try to document incidents on a regular basis to pinpoint the cause of behaviour and spot possible patterns. For instance, you may see that maladaptive behaviours that do not involve other people may be sensory-related (e.g. temper tantrums at the end of the day due to tiredness rather than conflict with others).

Top Tips for Emotional and Behavioural Difficulties

- 1.** Teach the child the vocabulary related to emotion, using naturally occurring situations. This will help them label emotions and use these labels to describe their feelings.
- 2.** Use visual aids (e.g. smiley face, angry face, neutral face) to further help the child identify their emotions. A good source is the programme “Zones of Regulation”, which is in use in many schools.
- 3.** Encourage the child to express their emotions at different times during the day. This will help them understand their own emotions, as well as help you gauge their level of engagement/energy (e.g. are they tired or are they content working on the task?).
- 4.** Give the child movement breaks. Provide time for the child to de-stress and move around (e.g. using a gym ball or fidget toy, although sometimes these are not enough, and actual movement is better. Consult an OT for the best practice for the child). This helps with the child’s concentration and anxiety, especially when they feel overwhelmed with the workload.
- 5.** When the child acts out or displays incorrect behaviour, try not to be angry with the child as this could increase their anxiety and maladaptive behaviours. Instead, model the correct behaviour and tell the child what is right and wrong. This will also give the child the tools to know what to do next time.
- 6.** Reflect on the child’s behaviour, looking at not just the behaviour itself but possible reasons behind them. These could be organic events such as lack of sleep the night prior, tummy aches, boredom etc. In collaboration with the parent (where needed) try and set healthier behaviours to avoid these maladaptive ones from happening (e.g. make sure that the child does not have sugary drinks before bed-time).
- 7.** Teach the child the appropriate vocabulary to express their emotions. This may prevent certain behaviours from occurring.

TEACHING SELF-HELP AND INDEPENDENCE

Teaching Self-Help and Independence

Many children with WS are slow to learn the many skills that allow them to be independent. This is largely due to difficulties with their fine motor and visuo-spatial skills. However, it is also important that they do not develop learned helplessness. At home, they should be encouraged to be as independent as possible and to undertake a range of household tasks appropriate for their age and level of development. In school, the TA or LSA should only step in to provide support when time is of the essence and when the child is at risk of frustration. The main areas of self-help which impact on the child's educational inclusion are dealt with below. It may be necessary to obtain the support and advice from an OT for any/all of these skills. Please remember that each of these skills is highly complex with a number of steps that will challenge the child's fine motor skills, hand-eye coordination, visuo-spatial skills, concentration, perseverance, stamina and patience. A lot of practice and praise is likely to be needed over a prolonged period to achieve success.

Eating

- Most children with WS will achieve independence in eating before starting school but will need support to organise their food, open containers and eat/drink neatly. In school, other skills such as carrying a tray and finding a seat through a busy lunchroom is likely to be very challenging.
- Some children with WS may be selective eaters and stick to a limited food range. This means that food may be an issue of anxiety and attempts to get them to eat a balanced meal in the school environment may be particularly difficult. This should be discussed and foods agreed by the child's parents, teacher and TA, in consultation with the child.
- The child will need to be taught the different components of eating in a school environment, such as opening containers, selecting which foods to eat first, sourcing appropriate cutlery and/or condiments, using cutlery to eat (rather than fingers!), wiping the mouth with a napkin, returning a tray and cleaning hands. Again, parents, teachers and TA should decide which aspects should be developed first to promote independence and which should be undertaken by the TA.
- The child could have a visual reminder of the key information for lunchtime such as eating small amounts at a time, not talking when eating, not over-filling the spoon or fork and wiping the mouth after eating. Some of these behaviours are found to be off-putting to peers and can reduce the level to which the child is included at lunchtimes.

Eating Cont.

- Many children with WS have difficulty eating with their mouth closed. It may be useful to get the support of an OT with this or any other feeding issue.
- Due to the dental abnormalities associated with WS, it is recommended that brushing teeth would be part of the eating routine.
- Children with WS can have high calcium levels in the blood, which may lead them to have feeding difficulties in their early years. This typically lessens over time with support from a paediatrician.

Top Tips for Eating

1. Arrange for the child to sit in the same seat each day for lunch. This will support them to find their way to an available seat allowing them to focus on carrying their food and avoiding obstacles in their path.
2. Allow the child to use a straw if they find it difficult to lift a drinking container without spilling the contents.
3. Teach the child the different components of eating in the broadest sense of the skill. Each step should be taught separately and should be reinforced at home and at school.
4. Provide a small portable mirror that the child can bring to the lunchroom to check their face after eating. This helps to maintain positive peer relationships.
5. Ensure the child has a chance to sit with peers and not at a table alone with a TA. There should be appropriate socialisation and peer modelling at lunchtime.
6. Praise the child for each step of the eating routine that is achieved.
7. Encourage an interest in appearance. As children with WS love compliments, praise them highly when they clean their mouth/hands after eating.
8. Develop a task analysis for the child's lunch routine. A task analysis for a child eating a packed lunch at school is available in the book "WiSHES".

Dressing

- The skill of dressing is necessary for independence and is part of the school day when sports and games are timetabled. Learning this skill should start as early as possible.
- The child should wear clothes that are easy to use, i.e. they should not be tight and should have velcro/elastic in place of buttons or hooks.
- The child will need to learn all the component parts of the dressing routine. This will take time. Most children with WS learn to dress independently, but tend to lack finesse and need reminding to tuck in a shirt or pull a trouser leg out of their socks! Parents, teachers and TAs should decide which part of the routine to prioritise and this should be reinforced both at home and at school.
- Children might need additional help with putting on their trousers properly after using the toilet.
- Children may also have sensory issues with certain clothes, e.g. they find labels scratch or seams are abrasive. Some accommodations around the school uniform may be necessary.

Top Tips for Dressing

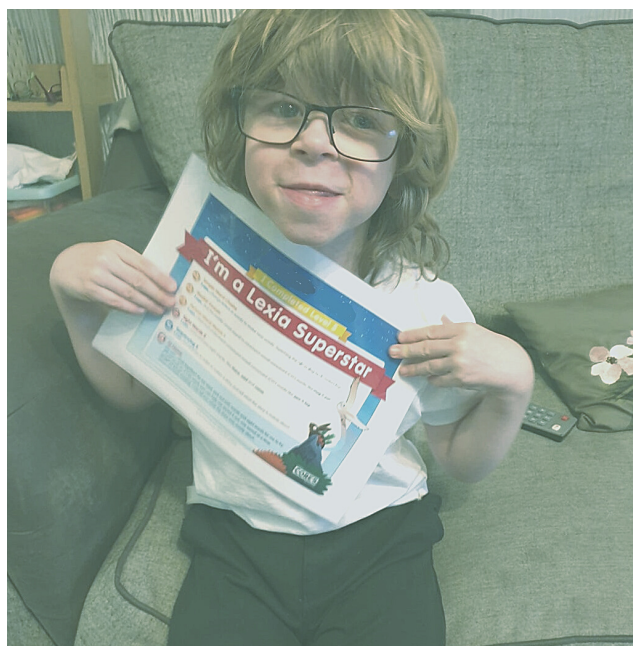
1. Use visual supports to remind the child what parts of dressing should be done and in what sequence.
2. Teach the child to look for labels. If necessary, sew on a small tag so the child can distinguish between the front and back of clothes items. This can be helpful for socks which many children with WS find particularly difficult to put on successfully.
3. Ensure the child's name is on each item of clothing worn or brought into school. This will help to identify them if the child takes them off and forgets about them.
4. Provide a full length, shatter-proof mirror in the toilets/dressing rooms so the child can check their appearance.
5. Teach the child to tie laces using a pair of laces attached to a box or another object first, before wearing shoes with laces. Foster the child's motivation when teaching them this skill (e.g. if they like wrapping gifts, teach them how to tie a ribbon on a box).

Toilet Training

- This is a vital skill because children need to be as independent as possible to reduce their vulnerability. The vast majority of children with WS master toileting skills but tend to lack finesse and need support to complete a full toileting routine to a high quality.
- Training pants should be used if the child is inclined to have accidents. The child may appear toilet trained at home and have frequent accidents at school due to anxiety or due to being distracted by a busy classroom with multiple demands.
- A change of clothes should be left at school to deal with such situations while maintaining the dignity of the child. The child should be shielded from peers to prevent embarrassment.
- Parents and teachers should agree the parts of the toileting routine that the child should complete independently and those parts with which they need support. It is usual for children with WS to be able to urinate independently but need support with cleaning themselves after bowel movements.
- Children with WS tend to start pulling at their clothes before they reach the toilet. This can lead to peer disapproval and should be discouraged. Similarly, they frequently rush back to class without ensuring they are appropriately presented, e.g. with underwear showing.
- A large proportion of girls with WS start their periods at a young age (e.g. around 9 and 10 years old), and they may need reminders to “refresh” throughout the day. Parents could consider different options such as period pants that might make period management easier on school days.
- Overall, it is recommended to complete an “intimate care plan” with the young person with WS (boys and girls), their parents and relevant professionals (e.g. educational psychologist, OT).

Top Tips for Toileting

1. Agree a routine or task analysis between parents, teachers, TAs and the child. See “WiSHES” for a sample toileting task analysis.
2. Watch for signs that the child needs to use the toilet such as crossing legs repeatedly, putting hand to the genital area or bottom, bouncing the legs or passing wind. Ask the child if they need to use the toilet.
3. The toileting routine should be calm. The child should not be requested to hurry as this is a complex set of tasks requiring concentration and skill.
4. The child should be able to have their feet on the ground when seated on the toilet. If the toilet is too big, the school should have a step. This means the child can balance and focus on other aspects of the toileting routine.
5. The child should be taught separately how to lock and unlock the toilet door, how to pull up/down pants, how to fasten a button on trousers or pull up a zip, how to wash/dry hands and how to fix clothes after toileting.
6. Provide a full-length, shatter-proof mirror to allow the child to consider their appearance before returning to class.
7. Consider any issues that may prevent the child using the toilet at school, such as the presence of hand dryers, loud flushing toilets or unpleasant smells.



TRANSITIONS

Transitions are particularly difficult for individuals with WS (e.g. due to their anxiety, cognitive inflexibility, and their strong social attachments). This can include changes within a school day (e.g. from whole-class work to group work, from class time to lunchtime), to changing year groups and forms and from Primary to Post-primary School. This section will focus on all of these transitions, and on different ways to promote adaptability.

Daily Transitions within School

- Children with WS like structure and often become anxious when there is a change in their environment. In addition, they have difficulties understanding the concept of time and thus find it harder to anticipate when something will happen. As such, they often find transitions difficult.
- Visual strategies such as a visual timetable can help (what happens when) as well as having regular classroom routines.
- Children with WS might get lost without clear instructions about what is going to happen next, so check their understanding of where they need to go or what they need to do next. Write key words on the board to allow the child to check when needed.
- Clear warnings, such as a 5-minute warning, before a transition can inform or remind the child about what is going to happen next.
- If going from whole-class teaching to group work or individual work, inform the pupils of what they have to do and how long they have to do it. If the child with WS cannot read the time, it can be helpful to say 'when the big hand gets to six', etc. Write the page number and/or key instructions on the board and give regular updates: 'you have five minutes left', 'you have one minute left', 'you should finish off your sentence now', etc.

Top Tips for Daily Transitions within School

- 1.** Give the child a breakdown of what is going to happen during the school day or week. A balance needs to be struck, as signalling certain events could cause anxiety, but having a general outline can help the child feel mentally prepared (and thus reduce anxiety).
- 2.** Visual timetables can help break down future events, and also promote independence (as they can check the visual timetable themselves at any time). It is important to promote independence in learning to cope with anxiety around change.
- 3.** Use a “change card” to signal any unexpected changes in the timetable (e.g. a red circle to put over the timetable slot).
- 4.** Where a child is particularly distressed by a sudden change in the schedule, give them the opportunity and choice to stay in the classroom and complete a task, under supervision, instead of going to the new activity.
- 5.** Reassure the child when unexpected changes happen (again, sometimes they may just need a pep talk or a hug!)

Transitions from Year Groups

- At the end of the school year, the child should meet their teacher for the following year, if possible, and know which TA will work with them.
- The child could be given a photograph of the teacher, TA and the new classroom. Putting the child’s name on a coat hook or indicating where they might sit can also be useful to alleviate anxiety and leave the child with the feeling that they will belong in the next classroom.
- The child should have the opportunity to ask their new teacher/TA questions to alleviate any fears. If the child has a positive interaction with the teacher/TA before the summer holidays, they are likely to feel reassured.
- Having the child’s favourite activities or resources in the new classroom is also likely to create a sense of excitement about the new school year.

Top Tips for Transitions from Year Groups

1. As children with WS show overall developmental delay, it may be useful for the child to repeat a year (in line with the parents' approval). This is best done during the early years/reception class. It can ensure that they get a solid understanding of basic skills and competencies that are expected at that developmental stage.
2. Teachers may use resources and teaching materials from earlier years to ensure knowledge is thoroughly embedded.
3. Talk to previous teachers to find out what worked or didn't work for the child with WS (you can use the Child Profile template at the end of the guidelines). Teachers may even want to observe former teachers and LSAs to find out the specific needs, strengths and interests of the child, as well as how to best teach the particular child.
4. New teachers, LSAs and other school staff should be briefed about the child with WS (as the child come into contact with other staff too). A whole-school inset or assembly might be helpful.
5. For their annual review or when transitioning to a new class, allow the child to give a presentation themselves on their strengths, weaknesses, interests and needs.
6. Children with WS worry about transitions and would like to have information (name and photo) of who their new teachers/ LSAs will be, who the other children in their classroom are.

Repeating a year can be useful for a child to learn the foundations. However, it is best to limit this practice to early years/ reception year only and to avoid children repeating more than 1 year. Any further repetitions may limit the child's acquisition of independent skills and will widen the age gap between the child and their peers too much. Considering that sexual behaviours develop in the early teen years, it would be inappropriate for a 14 year-old child to be in a class with 11 year-old children.

Transitions from One School to Another

- It is important for parents and teachers to communicate openly and regularly when it is anticipated that the child will change schools. This may be from infant to junior school, from junior school to middle school, from primary to post-primary or it may be going from a mainstream school to a special school during primary education.
- Although transition to junior, middle or post-primary school can provide new opportunities in terms of more independence and new topics to study, it also introduces a lot of fear of the unknown in terms of friends, new teachers and new environments.
- Children with WS have shown to have particular worries about who will be in their classroom as well as what their new school environment will look like. They could be taken on a tour of the school, meet new teachers/TAs and have a buddy from an older class to look out for them. Provide a map of the new school in terms of photographs of different rooms and personnel.
- Although children with WS show high anxiety before moving to a new school, or at the start of the transition, these fears often settle within the first few weeks in the new setting.

Top Tips for Transitions from One School to Another

1. Parents should visit a range of schools, meet with principals and/or SENCOs where possible and discuss the supports they have for children with additional needs.
2. Talk to previous teachers to find out what worked or didn't work for the child with WS (you can use the Child Profile template at the end of the guidelines). Teachers may even want to observe former teachers and LSAs to find out the specific needs, strengths and interests of the child, as well as how to best teach the particular child.
3. To brief new teachers/ LSAs but also other staff, a whole-school inset or assembly might be helpful (as children with WS might come into contact with other staff too).
4. Allow the child to give a presentation themselves on their strengths, weaknesses, interests and needs.
5. Children with WS worry about transitions and would like to have information (name and photo) of who their new teachers/ LSAs will be, who the other children in their classroom are.
6. A buddy system with a peer would be ideal to help the child organise their belongings when going from class to class at post-primary school.
7. Children with WS told us they would like a map of the new school, showing them where the toilets are, where to eat and what to do when you feel sick. The map should have photographs to show actual rooms and people so the child can make an emotional connection to their new school.

TYPE OF SCHOOLING AND SUPPORT REQUIRED

- There is no known benefit of one type of school (e.g. mainstream, special needs) over another for children with WS as each child and school environment is different.
- Both mainstream settings and special needs schools have their own pros and cons. Below you will find a list of general strengths and weaknesses of the two types of schooling. Keep in mind that the extent to which one type is better than the other will depend on a combination of the child's needs and preferences.
- The choice of school should be carried out based on the school itself (size and location), their facilities, staff (attitude to children with additional needs, interest in the child and their needs, commitment to support the child), as well as environment (siblings, transport to school etc). What matters is not what type of school but where can the child's needs be best met.
- Research shows that most children with WS cope within a mainstream primary school, with additional support and that most children change to a special needs school during the final years of primary school or when transitioning to post-primary school. That said, some children cope in mainstream secondary school throughout their academic career with tailored supports.
- The strengths and limitations of different types of schooling are outlined below, based on a small-scale study by Tynan (2014).

Mainstream Settings

Strengths

1. The child is educated with their siblings and local children.
2. They are very likely to make progress in all aspects of their development.
3. They are likely to make friends.
4. They tend to have a positive impact on the class in terms of developing social skills of peers.
5. Peer modelling is an advantage for appropriate behaviours.
6. In some cases, peers can be used to support behavioural interventions, e.g. to encourage or praise the child.
7. Some teachers are aware of emotional triggers and implement supports for the child's emotional needs.

Limitations

1. In many cases, the child is taught in the same way as their peers and does not have their individual learning profile accommodated to any large degree.
2. Differentiation of curriculum is usually focused on literacy and Maths and is less likely to occur across all subject areas. In some cases, differentiation involves making a class task easier (e.g. write less) rather than being based on the child's developmental level. It is very dependent on individual teachers.
3. Many mainstream teachers refer to a lack of engagement and participation by the child. High levels of TA assistance, usually 1:1, is required for the child to perform and participate in line with their peers. This can lead to over-reliance on adult support and a reduction in independence.
4. Poorer gross motor skills reduce the participation of some pupils in PE and in some games during break times.
5. Some teachers notice, and are concerned about, the child being under pressure, but reported not being sure of how much to push them.
6. Many teachers note a widening gap between the child and their peers.
7. Most schools do not develop discrete life skills. These are frequently managed (rather than taught) by the TA (toileting, dressing).

Special Education Settings

(This includes special classes attached to a mainstream school or a special school)

Strengths

1. The child's learning profile is typically considered, with high levels of teacher-directed differentiation of academic tasks.
2. There tends to be a flexible curriculum. The child is very likely to make progress in all aspects of their development, with high levels of engagement and participation.
3. The child is not treated as 'special' or 'different' as all pupils have needs. TAs are not usually assigned to an individual child, which creates higher levels of independence.
4. They are educated with peers who have better or worse gross motor skills, so their participation in activities or games is not reduced.
5. They are likely to make friends.
6. The child tends to have a positive impact on the class in terms of modelling good social skills.
7. Life skills are developed as part of the curriculum. They tend to be managed by the class teacher and supported by the TA.
8. Teachers are very likely to be aware of emotional triggers and implement supports for the child's emotional/behavioural needs.

Limitations

1. There tends to be a large catchment area with fewer opportunities to meet class peers outside of school (except for special class).
2. There can be a lack of modelling available, some peers will display inappropriate behaviours.
3. There is a lack of peer support for some behavioural interventions. The behaviours of one child in the class can conflict with those of other children. The child with WS tends to be distressed by peers who shout or who are aggressive.
4. Not all teachers in special settings have additional special education qualifications.

Support Required in School

- All children with WS require some daily 1:1 learning in a quiet area or separate room. Younger children with WS in primary mainstream school require full-time 1:1 support including during play and mealtimes due to health and safety risks (wandering off, tripping over, unaware of dangers, choking, unable to open packaging and unable to cope with toilet needs independently). However, the child should always work under the instruction of the teacher. The TA should not be responsible for teaching the child or managing their behaviour. This should be done in consultation with the parents, class teacher, the special education teacher and the SENCO.
- Occupational Therapist (OT): Speak to an OT for the best intervention or approach that can help the child's participation in school and classroom activities relating to gross/fine motor skills and sensory needs. The OT will know best what resources to use (e.g., will a gym ball benefit the child more than a fidget toy?). Depending on the Local Authority, referrals to OTs can either be achieved by approaching the GP or paediatrician or need to be requested by the school. Some parents will already have a relationship with an OT and may have a report or programme already in place.
- Speech and Language Therapist (SLT): Individuals with WS may find it difficult to pronounce words properly, regulate voice volume, use words appropriately or structure sentences. The SLT is useful for this and more. If the child dribbles or has slack lips/jaw muscles, the SLT can also help with this. It is beneficial to consult a Speech and Language Therapist or "SLT" to come up with the best plan for the individual.
- Physiotherapist: Individuals with WS have low muscle tone due to the deletion of the gene ELN. As such, they benefit from physiotherapy to help with muscle strength, balance and coordination.
- Educational Psychologist: As children with WS have complex needs (educational needs as well as social and health ones) input from an educational psychologist is required, especially to get an EHCP in place.
- Clinical psychologist/CAMHS support/mental wellbeing team: Many children with WS show high levels of anxiety and often there is an increase in anxiety and decrease in wellbeing from puberty onwards. Although most young children with WS are happy, high levels of anxiety over time can lead to depression. There is some evidence that cognitive behavioural therapy can benefit young adults with WS. As such, input from a clinical psychologist/CAMHS or mental wellbeing team might be required.

FURTHER RESOURCES / WHO TO SPEAK TO

Online Resources

Williams Syndrome Foundation provides various guidelines and webinars. Please visit:
<https://williams-syndrome.org.uk/clinical-guidelines/>

Child Development and Learning Difficulties lab carries out internationally recognised research on Williams syndrome and regularly posts blogs related to how individuals with WS can be supported: <https://blogs.ucl.ac.uk/cldld/>

WS-iReach is a group of international researchers who all research WS and promote best evidence-based practice related to educational and psychosocial outcomes and interventions for individuals with Williams syndrome across the globe: <https://sites.google.com/view/ws-ireach/home>

The centre for Developmental Disorders at the University of Durham also has a range of information and support related to individuals with Williams syndrome:
<https://www.durham.ac.uk/research/institutes-and-centres/developmental-disorders/services/>

Books

Tynan, F. (2018). *Wishes: Williams Syndrome holistic educational strategies*. Curriculum Development Unit, Mary Immaculate College.

Neurodevelopmental Disorders across the Lifespan: A Neuroconstructivist Approach (2012). Edited by Emily K. Farran and Annette Karmiloff-Smith, Oxford University Press, 394 pages: This book includes 18 chapters that describe research findings related to the WS profile.

Support groups

There are a number of Facebook support groups that focus on Williams syndrome.
<https://www.facebook.com/groups/WilliamsSyndromeProfessionals>: this Facebook page is specifically for teachers and professionals who work with children with WS.

References

- Brawn G, Kohnen S, Tassabehji M, & Porter M. (2018). Functional basic reading skills in Williams syndrome. *Dev Neuropsychol.*;43(5):454-477. doi: 10.1080/87565641.2018.1455838.
- Hudson, K.D. & Farran, E.K. (2013). Facilitating complex shape drawing in Williams syndrome and typical development. *Research in Developmental Disabilities* , 34 (7), 2133-2142. 10.1016/j.ridd.2013.04.004.
- Kozel, B. , Barak, B., Ae Kim, C., Mervis, C. B., Osborne, L. R., Porter, M., & Pober, B. (under review). Williams syndrome. *Nature Reviews Disease Primes*.
- Laing, E., Butterworth, G., Ansari, D., Gsödl, M., Longhi, E., Panagiotaki, G., Paterson, S. and Karmiloff-Smith, A. (2002), Atypical development of language and social communication in toddlers with Williams syndrome. *Developmental Science*, 5: 233-246.
<https://doi.org/10.1111/1467-7687.00225>

References Cont.

Laing, E., Butterworth, G., Ansari, D., Gsödl, M., Longhi, E., Panagiotaki, G., Paterson, S. and Karmiloff-Smith, A. (2002), Atypical development of language and social communication in toddlers with Williams syndrome. *Developmental Science*, 5: 233-246.

<https://doi.org/10.1111/1467-7687.00225>

Marler, J. A., Sitcovsky, J. L., Mervis, C. B., Kistler, D. J., & Wightman, F. L. (2010). Auditory function and hearing loss in children and adults with Williams syndrome: cochlear impairment in individuals with otherwise normal hearing. *American journal of medical genetics. Part C, Seminars in medical genetics*, 154C(2), 249–265. <https://doi.org/10.1002/ajmg.c.30262>

Martens, M. A., Wilson, S. J., & Reutens, D. C. (2008). Research Review: Williams syndrome: a critical review of the cognitive, behavioral, and neuroanatomical phenotype. *Journal of child psychology and psychiatry, and allied disciplines*, 49(6), 576–608. <https://doi.org/10.1111/j.1469-7610.2008.01887.x>

Mervis, C. B., Robinson, B. F., Bertrand, J., Morris, C. A., Klein-Tasman, B. P., & Armstrong, S. C. (2000). The Williams Syndrome Cognitive Profile. *Brain and Cognition*, 44(3), 604–628. <https://doi.org/10.1006/brcg.2000.1232>

Mervis, C. B. (2009). Language and literacy development of children with Williams syndrome. *Topics in Language Disorders*, 29, 149-169. doi:10.1097/TLD.0b013e3181a72044

Palikara, O., Ashworth, M., & Van Herwegen, J. (2018). Addressing the educational needs of children with Williams syndrome: a rather neglected area of research? *Journal of autism and developmental disorders*, 48(9), 3256-3259.

Thakur, D., Martens, M. A., Smith, D. S., & Roth, E. (2018) Williams syndrome and music: A systematic integrative review. *Frontiers in Psychology*, 14, <https://doi.org/10.3389/fpsyg.2018.02203>

Tynan, F. (2014). Experiencing educational inclusion : children with Williams syndrome in Ireland. PhD thesis.

Van Herwegen, J., Ashworth, A., & Palikara, O. (2018). Parental views on special educational needs provision: cross-syndrome comparisons in Williams Syndrome, Down Syndrome, and Autism Spectrum Disorders. *Research in Developmental Disability*, 80, 102-111.

Van Herwegen, J., Burchnell, E., & Palikara, O. (in prep). Transition from primary to secondary school: a cross-syndrome comparison.

Van Herwegen, J., Ranzato, E., Karmiloff-Smith, A., & Simms, V. (2020). Foundations of mathematical development in Williams syndrome and Down syndrome. *Journal of Applied Research in Intellectual Disabilities* 33(5), 1080-1089.


Van Herwegen, J. & Simms, V. (2020). Mathematical development in Williams syndrome: A systematic review. *Research in Developmental Disabilities*, 100:103609. doi: 10.1016/j.ridd.2020.103609

Daily Learning Diary

We recommend you use this template on a daily basis to record your reflections and lessons learned regarding what worked with the child that particular day. This can be shared with parents to provide an update on the child's progress.

Date:

Completed by:

Topic	What did child do?	How well did it go?	What to work on next time
Maths	(e.g. Simple sums (3+4))		(e.g. Use abacus to continue doing simple sums)
Reading			
Writing			
Emotion and Behaviour			
Other			

Any other comments about _____ today:

Child Profile

We recommend to use this to communicate child's strengths and difficulties of child with DS with other professionals, especially in times of transitions

Name of child:

Date reviewed:

Area	Strengths	Difficulties	What has worked	What hasn't worked
Maths				
Reading				
Writing				
Attention				
Participation				
Communication: speaking, listening, understanding				
Thinking and learning skills (including memory)				

Area	Strengths	Difficulties	What has worked	What hasn't worked
Physical abilities and P.E.				
Peer relationships				
Sensory processing				
Anxiety and wellbeing				
Independence				

