

Supplemental Material S2

Detailed description of activities included in tabletop and tablet interventions

Table S2.1 - Therapy activities

Area	Activity name	Tabletop therapy	Tablet therapy
Auditory Bombardment	Phoneme tales	A story is divided in three cards and each is presented to the children. The Speech and Language Pathologist (SLP) tells the story and after that discusses some aspects of it.	A story is presented in three swipeable screens and each is presented to the children. The SLP starts the recording that tells the story and after that the SLP discusses some aspects of it.
	Munching monsters	The child is presented with two open mouth monsters each with an illustration card of a minimal pair. The SLP proceeds to produce one of two possible words (minimal pairs) in a random way. The child has to identify the corresponding picture and throw the ball into the mouth of the correspondent monster. The SLP provides auditory and visual feedback.	The child is presented with two open mouth monsters each with an illustration of a minimal pair. At the bottom of the screen there is a hand with a ball going sideways. The SLP presses “play” and one of two possible words (minimal pairs) is heard. The child has to identify the corresponding image and release the ball with the right timing (into the mouth of the monsters). Digital audio feedback is given, together with auditory and visual feedback provided by the SLP.
Hearing and Discrimination	Complete the tangram (puzzle)	Two different tangrams are presented to the child. Each tangram is associated with an illustration card of a minimal pair. The SLP proceeds to produce one of two possible words (minimal pairs) in a random way. The child has to identify the correspondent picture and fit the tangram piece into the correct place. The SLP provides auditory and visual feedback.	Two different tangrams are presented to the child. Each tangram is associated with an illustration of a minimal pair. The SLP presses “play” and one of two possible words (minimal pairs) is heard. The child has to identify the correspondent image and drag the tangram piece to the correct place. Digital audio feedback is given by indicating success through an engaging auditory sound. The SLP also provides auditory and visual feedback.
	Munching monsters	The child is presented with two open mouth monsters each with an illustration card of a minimal pair. The SLP proceeds to produce one of two possible words (minimal pairs) in a random way. The child has to identify the corresponding picture and throw the ball into the mouth of the correspondent monster. The SLP provides auditory and visual feedback.	The child is presented with two open mouth monsters each with an illustration of a minimal pair. At the bottom of the screen there is a hand with a ball going sideways. The SLP presses “play” and one of two possible words (minimal pairs) is heard. The child has to identify the corresponding image and release the ball with the right timing (into the mouth of the monsters). Digital audio feedback is given, together with auditory and visual feedback provided by the SLP.

Note: For most of the activities (in the tablet method) the children can press a button to listen to the name/sound of the graphemes and the name of the illustrations if he/she needs it. Unless

otherwise stated all activities have two levels: One with the written word below the image and the other without the written word. The child is encouraged to produce the sounds and words throughout the sessions. Both notes apply to the tablet and tabletop method. For the tabletop method, the SLP can say the name of the images if needed.

The SLP provides auditory and visual feedback across both modes of therapy for all activities. For the tablet therapy, digital audio feedback is also provided by an engaging sound when the child achieves the target sound.

Table S2.2 - Therapy activities

Area	Activity name	Tabletop therapy	Tablet therapy
Hearing and Discriminating (cont.)	Apple picking	The child is presented with two apple trees each with a set of different coloured apples. Each tree has a picture card of a minimal pair. The SLP produces one of two possible words (minimal pairs) in a random way. The child has to identify the corresponding picture and pick an apple from the corresponding tree and place it in the basket. To add an additional fun element, when turned, the apple may have a worm in it, and if so, does not go into the basket.	The child is presented with two apple trees each with a set of different coloured apples. Each tree has an illustration of a minimal pair. The SLP presses “play” and one of two possible words (minimal pairs) is heard. The child has to identify the corresponding image and pick and drag an apple from the corresponding tree to the basket. To add an additional fun element, the apple turns and reveals whether it has a worm or not, and if it does, cannot go in the basket.
Grapheme-Phoneme Correspondence	Choose well	The child is presented with a set of two grapheme cards (or three for the second level). The SLP produces, in a random way, the name or sound of one of the graphemes. The child has to identify the corresponding grapheme and point to it.	The child is presented with a set of two graphemes (or three for the second level). The SLP activates the tablet to produce the name or sound of one of the graphemes. The child has to identify the corresponding grapheme and select it.
	Let’s fish	The child is presented with a box with various cards in the shape of fish and a fishing rod. Each fish has a picture (with or without the target sound) attached to it. The child has to fish for one of the fish cards. Two baskets with the target and facilitator (a sound that is in the child’s repertoire) grapheme are presented. After they catch the fish, the associated picture is revealed and the child has to identify and name it (using phoneme/grapheme correspondence knowledge), and then the child places the picture in the correct basket.	The child is presented with a fishing scenario with a fishing bear who fishes under water. The child has to click on the bear to get him to cast the fishing line. Each fish carries a hidden image. After a successful throw (i.e., a fish is caught) another scene is presented, this time with the image revealed and with two baskets. One basket is associated with the target sound and the other with a facilitator sound which the child is able to produce. The child has to identify and name the picture using phoneme/grapheme correspondence knowledge and then drag it into the correct basket.

Table S2.3 - Therapy activities

Area	Activity name	Tabletop therapy	Tablet therapy
Grapheme-Phoneme Correspondence (continued)	Colouring time	<p>The child is presented with a plain(uncoloured) caterpillar on a sheet and two frames each with a different colour and a grapheme card (target or facilitator).</p> <p>A picture card is taken from a pile and the child names the picture. The child then has to identify where the letter is located and do phoneme/grapheme correspondence based on the name of the image. After that, he/she has to colour a segment of the caterpillar with the chosen colour.</p>	<p>The child is presented with a plain (uncoloured) caterpillar and two frames each with a different colour and grapheme (target or facilitator).</p> <p>In the middle of the screen there is a picture. The SLP presses play and the child hears the name of the picture and has to identify and do phoneme/grapheme correspondence based on the name of the image. After that he/she has to colour a segment of the caterpillar with the chosen colour.</p>
	Match	<p>The child is presented with the target grapheme card and three picture cards (one with the target sound and two without). The child has to identify the picture with the target sound and link the letter to the matching picture</p>	<p>The child is presented with the target grapheme and three images (one with the target sound and two without). The child has to identify and click the image with the target sound and link the letter to the matching picture.</p>
Phoneme Identity	The hungry monster	<p>The child is presented with a stuffed animal/monster and three picture cards (one with the target sound and two without). The child has to identify the picture with the target sound and give it to the monster to eat. The monster only eats the pictures with the target sound. The SLP provides auditory and visual feedback as is the case with all the activities.</p>	<p>The child is presented with a monster and three images (one with the target sound and two without). The child has to identify the image that has the target sound and give it to the monster to eat. The monster only eats the images with the target sound. Digital audio feedback is given to indicate when the child has made the correct response, and the SLP provides auditory and visual feedback, as is the case with all the tasks.</p>

Table S2.4 - Therapy activities

Area	Activity name	Tabletop therapy	Tablet therapy
Phoneme Identity (cont.)	You have mail	The child is presented with two mailboxes each associated with a different sound card (target or facilitator sound). A picture card is presented and the child has to identify the correct mailbox and insert the picture into the correct box.	The child is presented with two mailboxes each associated with a different sound (target or facilitator sound). An image is presented and the child has to identify the correct mailbox and drag the image into it.
	Find the pairs	The child is presented with four picture cards (two with the target sound and two without) placed randomly on the table. The child has to identify the pairs of images that have the same sound by pointing to them and bringing them together. The SLP provides auditory and visual feedback.	The child is presented with four images (two with the target sound and two without) presented in a random order. The child has to identify the pairs of images that have the same sound by clicking on them. Digital audio feedback is provided and the child can only continue once he has made the correct match.
	The lucky dice	The child is presented with a large dice that has cards stuck on each side, with three different target or facilitator graphemes. A picture card is presented and after rolling the dice the child has to identify if the letter shown on the dice is present in the name of the picture. If this is the case, the child puts the picture card on the “lucky pile”, if not, the picture goes on the “unlucky pile”.	The child is presented with a clickable dice that will randomly present one of two possible graphemes. There is also an image on the screen and after rolling the dice the child has to identify if the letter on the dice is present in the name of the image. If this is the case, the child clicks on a “happy smiley face”, and if not, on a “sad smiley face”.

Table S2.5 - Therapy activities

Area	Activity name	Tabletop therapy	Tablet therapy
Blending	Blend and discover	The child is presented with three picture cards (all with the target sound). The SLP segments each one (onset-rime or phonemic accordingly to the level). The child has to blend the sounds to make up the word and identify the corresponding picture.	The child is presented with three images (all with the target sound). When the SLP presses “play”, the child hears the segmentation of one of the images (onset-rime or phonemic accordingly to the chosen level). The child has to blend the sounds to make up the word and identify the corresponding image.
	The sounds caterpillar – let’s blend	The child is presented with a card and a coloured caterpillar. A picture card, which the child cannot see, is selected from a pile. The SLP proceeds to write the word which represents the picture by placing the letters on the caterpillar’s body. The picture card is placed face down just above the caterpillar. The SLP produces the segmented word (onset-rime or phonemic). The child has to blend the word to determine the hidden picture.	The child is presented with a coloured caterpillar with a written word and a hidden image. When the SLP presses “play”, the segmented word (onset-rime for level one and phonemic for level two) is heard. The child has to blend the word to determine the hidden image.
Segmentation	The sound of the Caterpillar	The child is presented with a picture of a coloured caterpillar. The SLP takes a picture from the pile and shows it to the child. The SLP puts the grapheme cards face down on the caterpillar segments. The SLP helps the child to segment the picture name as they turn up the grapheme cards. The segmentation can be onset-rime or phonemic.	The child is presented with an image of a coloured caterpillar separated into different units corresponding to the number of graphemes of the image selected. The SLP helps the child to segment the label for the image as they click on the empty units/segments and the corresponding graphemes are shown. The segmentation can be onset-rime or phonemic.

Table S2.6 - Therapy activities

Area	Activity name	Tabletop therapy	Tablet therapy
Segmentation	Sweet tooth bear	<p>The child is presented with a stuffed bear and five pictures of honey pots.</p> <p>A picture (with the target sound) is taken from the pile. The SLP helps the child to segment the name of the picture and decide on the number of sounds that the word has. After this, the child selects the same number of honey pots and feeds them to the bear.</p>	<p>The child is presented with a bear, an image (with the target sound) and five clickable honey pots. The SLP helps the child to segment the name of the image and decide on the number of sounds that the words have. After this, the child has to select the same number of honey pots and feed them to the bear.</p>
Rhyme	Find the rhymes	<p>The child is presented with three or four pairs of pictures (in cardboard puzzle pieces). The child has to identify the rhyming pair and connect them.</p>	<p>The child is presented with three or four pairs of images (in puzzle pieces). The child has to identify the rhyming pair and connect them.</p>
Phoneme Manipulation	The sounds caterpillar – let’s mix	<p>The child is presented with a picture of a coloured caterpillar. The SLP chooses one minimal pair and spells it out using the grapheme cards. The SLP reads the word and asks the child to identify where the target grapheme is. After this, the child is asked to replace it with another grapheme card given by the SLP. The target grapheme is changed to create a minimal pair. The SLP reinforces the idea that by switching only one grapheme/phoneme, a completely different word will be formed.</p>	<p>The child is presented with an image of a coloured caterpillar with a written word. When the SLP presses “play”, the child hears the name of the image and has to identify where the target grapheme is in the word, and then click on the “switch” button. The target grapheme is then changed to create a minimal pair. The SLP reinforces the idea that by switching only one grapheme/phoneme, a completely different word will be formed.</p>