

Fast ForWord[®] *to Literacy*



Exercise Descriptions

Space Racer

In Space Racer, the participant identifies and remembers the order of a series of frequency-modulated sound sweeps, and then indicates the pattern just heard. In this way, the participant improves listening accuracy and auditory sequencing.

Skills Strengthened by Space Racer

Space Racer helps participants build language skills in the following ways:

- **Listening accuracy:** Space Racer presents sound sweeps at different frequencies, durations, and with different lengths of time between sound sweeps. The frequencies and durations of the sound sweeps correspond to the rapid transitions in sounds of the English language. Space Racer first presents sound sweeps with durations longer than those typically found in natural speech. As the participant progresses, Space Racer decreases the duration of the sound sweeps and eventually presents the sound sweeps at durations shorter than typically found in natural speech. In this way, Space Racer helps improve the participant's rate of processing natural speech sounds.
- **Auditory sequencing:** Space Racer challenges the participant to recognize and remember the order in which a series of sounds is presented, and then indicate the pattern just heard. In this way, Space Racer helps improve auditory sequencing abilities.

In addition, Space Racer builds cognitive skills as follows:

- **Memory**—hold a sound sequence in working memory while recalling visual symbol-sound associations from long-term memory
- **Attention**—focused attention
- **Processing**—auditory processing of tonal sweeps
- **sequencing**—identify and reproduce the sequence of rapidly presented sound pairs

How Participants Work on Space Racer

In Space Racer, the participant clicks the yellow sound button to hear a sequence of sound sweeps. A sound sweep is classified as up (a lower to higher frequency) or as down (a higher to lower frequency). The participant must click the up arrow or down arrow to repeat the sequence of sounds heard. For example, if the exercise presents an up sweep and then a down sweep, the participant must click the up arrow once, and then click the down arrow once. If the exercise presents two down sweeps, the participant must click the down arrow twice. Points are awarded when the sequence is correctly reproduced.

As the participant consistently reproduces sequences correctly, the speedometer shows an increase in speed and the racer moves more quickly, causing wear and tear on the racer's vehicle. When the speedometer needle reaches the pink zone, cumulative correct responses earn new parts which are added to the vehicle being created in the design window. When all the parts have been earned, the racer's current vehicle transforms into the new vehicle.

Participants that need help identifying the up and down sound sweeps can click the Help button to see a screen that allows them to practice listening to the sound sweeps at the current frequency, duration, and inter-stimulus interval (ISI). The participant can also see the response arrow associated with each sound.

How Participants Progress through Space Racer

In Space Racer, participants progress through multiple sound stimulus sets. Each stimulus set presents up and down sound sweeps with base frequencies at 1000Hz, 2000Hz, and 500Hz, the frequency range most commonly found in speech. Initial sets present sound sweeps with a

relatively long duration (80ms). As participants progress through the exercise, they will enter sets with shorter duration sound sweeps (down to 25ms). As the participant progresses through a set, the time between the sound sweeps (inter-stimulus intervals or ISIs) are reduced in 45 stages, starting at 500ms and ending at 0ms.*

The 10 bars at the top of the speedometer indicate the percentage of the content completed in the exercise. Each bar represents 10% of the exercise. When all of the bars are filled in, the exercise is complete. The participant will continue to repeat the content at the highest stages in the last 2 stimulus sets of each frequency, beginning with stage 40, until the exercise is closed.

*Each frequency begins in an introductory mode, with sounds at longer durations and longer ISIs. Visual help is initially provided which shows the participant the correct arrow to click for each sound sweep. The racer will not move until visual help is no longer presented, and will not begin to design and earn a new vehicle until introductory mode is completed. In this way, the participant becomes familiar with the task and learns to listen closely to the differences in the sounds.

How Participants Advance in Space Racer

To complete Space Racer, the participant must pass all stimulus sets at the highest stage (ISI 0ms).

To advance to the next ISI stage within a stimulus set, the participant must answer 3 consecutive trials correctly. If the participant answers a trial incorrectly, the participant moves back one ISI stage.

Plateau Based Transitions

Space Racer adapts to the participant's performance within each stimulus set, and will transition the participant to a new set if the participant is continuously moving between the same few stages in a set, or is answering numerous consecutive trials incorrectly in a set. The set will be revisited at a later time.

Points Awarded in Space Racer

Space Racer awards points to the participant based on the following conditions:

- **Correct answers:** The participant earns 1 point for each correct trial.
- **Bonus points:**
 - The participant earns 20 bonus points when the vehicle design is completed.
 - The participant earns 5 bonus points after 18 correct trials.

Galaxy Goal

In Galaxy Goal, a syllable is repeated (such as shu) and then a target syllable (such as chu) is presented. The participant identifies the target syllable when the syllable changes. In this way, the exercise helps participants improve phonological fluency, phonological memory, and sustained attention.

Skills Strengthened by Galaxy Goal

Galaxy Goal helps participants build language and reading skills in the following ways:

- **Phonological fluency:** Galaxy Goal challenges the participant to distinguish between syllables that differ by an individual phoneme, such as the /sh/ in shu and the /ch/ in chu. The synthetic syllables in the exercise have been designed to emphasize the rapidly changing phonetic elements within natural speech.
 - Some contrasts (e.g., /ke/ vs. /ge/, /sti/ vs. /si/) help participants build skills in gap detection. Galaxy Goal presents repeated syllables that have been modified by extending the silent gap that comes between a voiceless stop consonant and a vowel; for example, /ki/ is initially presented as /k-/i/. As the participant progresses through the exercise, Galaxy Goal decreases the duration of the silent gap until the repeated syllables are presented at the rate of natural speech.
 - Other contrasts (e.g., /di/ vs. /bi/) help participants build skills in perceiving rapid acoustic transitions.
 - The length of time between the repeated syllables and the length of time allowed for the participant's response is also decreased as the participant progresses through the exercise.

In this way, Galaxy Goal helps participants improve the ability to identify speech sounds in a quick and efficient manner.

- Galaxy Goal challenges the participant to continuously attend to a repeated syllable and recognize the target syllable. In each trial, as many as 8 syllables may be presented before the target syllable is presented. In this way, the participant improves the following skills:
 - **Sustained attention:** the ability to remain focused on a given task while ignoring distractions and refraining from impulsive behavior
 - **Phonological memory:** the capacity for holding speech sounds in memory

In addition, Galaxy Goal builds cognitive skills as follows:

- **Memory**—hold the prior syllable in working memory while comparing it to the current syllable
- **Attention**—sustain attentional focus while monitoring a stream of syllables for a change from a repeated sound to a novel sound
- **Processing**—auditory processing of syllables at the level of individual phonemes

How Participants Work on Galaxy Goal

In Galaxy Goal, the participant clicks the yellow soccer ball to hear a syllable repeated in rapid succession. When the exercise interrupts the repeated syllable with a new syllable, which differs by a single phoneme, the participant must click the soccer ball again. If the soccer ball is clicked too early or too late, the trial is counted as incorrect. When the participant answers the trial correctly, the player kicks the soccer ball towards a goal. Points are awarded for each correct answer.

How Participants Progress through Galaxy Goal

In Galaxy Goal, the participant progresses through 8 stimulus sets. Each stimulus set presents phonologically similar syllables (1 target syllable following 3 - 8 repetitions of the alternate syllable).

- Target: /gi/, Alternate: /ki/
- Target: /chu/, Alternate: /shu/
- Target: /si/, Alternate: /sti/
- Target: /ke/, Alternate: /ge/
- Target: /to/, Alternate: /do/
- Target: /ba/, Alternate: /da/
- Target: /de/, Alternate: /be/
- Target: /bi/, Alternate: /di/

Within each stimulus set, the participant progresses through 18 stages. Across these stages, the following changes occur:

- The difference between the target syllable and the alternate syllable is exaggerated, and then becomes progressively smaller.
- The possible number of syllables presented in a trial increases from 7 to 9 after stage 9.
- The time between the syllables (inter-stimulus interval--ISI) is reduced from 500ms to 300ms.*
- The time allowed for a response is progressively reduced.

The 10 bars in the upper left corner indicate the percentage of the content completed in the exercise. Each bar represents 10% of the exercise. When all of the bars are filled in, the exercise is complete. The participant will continue to repeat the content at the highest stages in each stimulus set, beginning with stage 15, until the exercise is closed.

*The first set in the exercise begins with an introductory mode, with longer inter-stimulus intervals and longer time allowed for the participant to respond. In this way, the participant becomes familiar with the task.

How Participants Advance in Galaxy Goal

To complete Galaxy Goal, the participant must pass all stimulus sets at the highest stage.

To advance to the next stage within a stimulus set, the participant must answer 3 consecutive trials correctly. If the participant answers a trial incorrectly, the participant moves back one stage.

Plateau Based Transition

Galaxy Goal adapts to the participant's performance within each stimulus set, and will transition the participant to a new set if the participant is continuously moving between the same few stages. The set will be revisited at a later time.

Points Awarded in Galaxy Goal

Galaxy Goal awards points to the participant based on the following conditions:

- **Correct answers:** The participant earns 2 points for each correct trial.
- **Bonus points:** The participant earns 10 bonus points each time the participant achieves 3 consecutive correct responses 3 times.

Spin Master

In Spin Master, the participant listens to a target syllable, and then identifies this syllable when presented in a sequence of two pronounced syllables. In this way, the participant improves phonological accuracy, phonological fluency, and phonological memory.

Spin Master helps participants build language and reading skills in the following ways:

- **Phonological accuracy:** Spin Master presents synthetic syllables that have been designed to emphasize the rapidly changing phonetic elements within natural speech. These syllables differ by an individual phoneme, such as the /b/ in /ba/ and the /d/ in /da/. The position of the consonant (/aba/-/ada/ vs. /ba/-/da/), type of consonant (/ba/-/da/ vs. /va/-/fa/), and vowel context (/ba/-/da/ vs. /be/-/de/ vs. /bi/-/di/) are varied. At first, Spin Master presents syllables where the duration of each phoneme has been increased (for example, /ba/ is initially presented as /bbbaaahh/) and where the intensity of each rapidly changing sound has been enhanced relative to the vowel sound. As the participant progresses, Spin Master adaptively decreases the phoneme stretch and emphasis. In this way, Spin Master helps the participant improve the ability to make correct distinctions based on individual phonemes.
- **Phonological fluency:** Spin Master decreases the length of time between syllables as the participant progresses. In this way, Spin Master helps participants improve the ability to identify speech sounds in a quick and efficient manner.
- **Phonological memory:** Spin Master challenges the participant to keep the target syllable in mind while remembering which turntable presented the matching syllable. In this way, Spin Master improves the participant's capacity for holding speech sounds in memory.

In addition, Spin Master builds cognitive skills as follows:

- **Memory**—hold a target phoneme in working memory while comparing it to two alternate phonemes to find the matching one
- **Attention**—focused attention
- **Processing**—auditory processing of phonemes for identification

How Participants Work on Spin Master

In Spin Master, the central character is an alien DJ, the Spin Master of this exercise. The participant clicks the yellow planet and the target syllable is presented. Then a trial sequence is heard made up of the target syllable, such as /ba/, and the contrast syllable, such as /da/. As each syllable is presented one of the Spin Master's two turntables is highlighted. The participant must identify and click the turntable that was highlighted when the target syllable was presented.

How Participants Progress through Spin Master

In Spin Master, the participant progresses through 5 stimulus sets. Each stimulus set presents 2 synthetic syllables that differ by a single phoneme.

- Target: aba, Alternate: ada
- Target: ba, Alternate: da
- Target: be, Alternate: de
- Target: bi, Alternate: di
- Target: va, Alternate: fa

Within each stimulus set, the participant progresses through 26 stages. Across these stages the following changes occur:

- The emphasis on critical phonetic features is gradually reduced. Stage 26 corresponds to natural speech.
- The time between the syllables (inter-stimulus interval or ISI) is reduced from 500ms to 10ms.

The 10 bars in the laser generator (bottom right) indicate the percentage of the content completed in the exercise. Each bar represents 10% percent of the exercise. When all of the bars are filled in, the exercise is complete. The participant will continue to repeat the content at the highest stages in each stimulus set, beginning with stage 21, until the exercise is closed.

How Participants Advance in Spin Master

To complete Spin Master, the participant must pass all stimulus sets at the highest stage.

To advance to the next stage within a stimulus set, the participant must answer 3 consecutive trials correctly. If the participant answers a trial incorrectly, the participant moves back one stage.

Plateau Based Transitions

Spin Master adapts to the participant's performance within each stimulus set, and will transition the participant to a new set if the participant is continuously moving between the same few stages. The set will be revisited at a later time.

Points Awarded in Spin Master

Spin Master awards points to the participant based on the following conditions:

- **Correct answers:** The participant earns 2 points for each correct trial.
- **Bonus points:** The participant earns 15 bonus points after 10 correct trials.

Lunar Tunes

In Lunar Tunes, the participant identifies pairs of matching words or syllables within grids of speakers that aurally present phonologically similar words. The participant clicks a speaker to hear the word or syllable and must rely on memory to find the matching speaker. In this way, Lunar Tunes helps participants improve auditory word recognition, phonological memory, phonological accuracy, and phonological fluency.

Skills Strengthened by Lunar Tunes

Lunar Tunes helps participants build language and reading skills in the following ways:

- **Auditory word recognition:** Lunar Tunes presents words aurally and the participant must find the matching word based only upon that aural presentation. In this way, Lunar Tunes helps the participant improve the ability to accurately identify spoken words by relying on sound cues alone, without the aid of visual or context cues.
- **Phonological memory:** Lunar Tunes challenges the participant to hold the syllable or word in memory while searching for the speaker with the matching syllable or word. Initially, the participant searches for matches within a grid of 4 speakers. As Lunar Tunes progresses, the participant searches within grids of up to 24 speakers, requiring more sounds to be held in memory for longer periods of time.
- **Phonological accuracy:** Lunar Tunes presents syllables and words that differ in initial consonant, final consonant, or both. At first, Lunar Tunes presents sounds where the duration of each phoneme has been increased (for example, la is initially presented as llahhh) and where the intensity of each rapidly changing sound has been enhanced relative to the vowel sound. As the participant progresses, Lunar Tunes adaptively decreases the phoneme stretch and emphasis. In this way, the participant improves the ability to make correct distinctions based on individual phonemes.
- **Phonological fluency:** In Lunar Tunes, the participant earns more points by finding all the matches and clearing a grid in the fewest clicks. In this way, the participant improves the ability to identify speech sounds in a quick and efficient manner.

In addition, Lunar Tunes builds cognitive skills as follows:

- **Memory**—use auditory and visual-spatial working memory to locate matching syllable or word pairs in a grid
- **Attention**—focused and sustained attention
- **Processing**—auditory processing of syllables and visual-spatial processing of locations associated with sounds

How Participants Work on Lunar Tunes

Lunar Tunes displays an amplifier with a grid of speakers. Each speaker has a syllable or word associated with it. The participant clicks a yellow speaker to hear a syllable or word pronounced. The participant must click the other yellow speakers on the amplifier to find the speaker with the matching syllable or word. If the participant clicks a speaker that matches one already clicked, the participant must click the first speaker of the pair to confirm the match. The two speakers turn off. Points are awarded for each correct match.

Next to the amplifier is a stage. Suspended from the ceiling is an instrument case. The click counter beneath the stage displays the number of attempts (clicks) available to successfully match all of the speakers on the screen. Each time a speaker is clicked, this number is reduced by one and the musician in the instrument case lowers a bit closer to the stage. If all of the speakers on the screen are matched within the maximum number of clicks, a reward animation plays and any remaining clicks are awarded as bonus points.

How Participants Progress through Lunar Tunes

In Lunar Tunes, the participant progresses through 5 levels. In the early levels, Lunar Tunes presents syllables and words in which the speech sounds have been digitally altered using patented methods (including selective intensity increases and duration extensions) to provide enhanced learning opportunities. As the participant progresses through the levels, Lunar Tunes decreases this processing, and eventually, in level 5, presents the syllables and words using natural speech. All sets and stages are repeated at each processing level, as described below.

Within each level, the participant progresses through 4 sets. Each set contains words or syllables that differ by initial and/or final consonants.

Within each set, the participant progresses through a series of stages. Each stage includes a specific grid size:

- Stages 1 – 3: 4-cell grids (2 matches presented only at the start of the exercise)
- Stages 4 – 6: 8-cell grids (4 matches)
- Stages 7 – 10: 16-cell grids (8 matches)

When the participant has completed stages 1 – 3, the participant begins working on the next set at stage 5 (stage 4 is only presented when stage 5 is not successfully completed).

The bars below the amplifier indicate the percentage of the content completed in the exercise. Each bar represents 10% of the exercise. When all of the bars are filled in, the exercise is complete. If the exercise remains open, the participant will continue to repeat the content at the highest level, level 5, and begin each set at stage 10. The grids in this stage will include 24 speakers.

How Participants Advance in Lunar Tunes

To advance to the next level in Lunar Tunes, the participant must pass all sets within the level at the highest stage.

To advance to the next stage within a set, the participant must clear all the matched pairs within a grid within the maximum number of allowed clicks. When stage 10 is completed within the maximum allowed clicks, the participant will advance to stage 5 of a new set.

If the participant uses more than the maximum number of clicks to clear the grid, the participant will be demoted one stage. For example, if stage 5 is not completed within the maximum number of clicks, the participant is presented with stage 4.

Plateau Based Transitions

Lunar Tunes adapts to the participant's performance within each set, and will transition the participant to the next set if the participant is at stage 4 in a set and does not clear the grid within the maximum number of clicks. The set will be revisited at the end of the level. The participant will not advance to the next level until all sets at the current level have been passed at the highest stage.

Points Awarded in Lunar Tunes

Lunar Tunes awards points to the participant based on the following conditions:

- **Correct answers:** The participant earns 3 points for each correct match.
- **Bonus points:** The participant earns the number of clicks remaining on the stage when a grid is completed.

Star Pics

In Star Pics the participant listens to a target word and then clicks the picture that represents the target word. In this way, the participant improves vocabulary, auditory word recognition, phonological accuracy, and phonological fluency.

Skills Strengthened by Star Pics

Star Pics helps participants build language and reading skills in the following ways:

- **Vocabulary:** In the vocabulary component, Star Pics presents general vocabulary from the Stellar Stories exercise, in addition to curricular vocabulary from elementary to middle school level math and science. Star Pics includes a help mode that allows participants who are less familiar with the vocabulary to study the terms in a supported context. In this way, Star Pics builds knowledge of the phonological structure and meaning of words.
- **Auditory word recognition:** Star Pics presents words aurally and the participant must find the matching picture based only upon that aural presentation. In this way, Star Pics improves the participant's ability to accurately identify spoken words by relying on sound cues alone, without the aid of visual or context cues.
- **Phonological accuracy:** In the phonemic component, Star Pics presents words that differ in initial or final consonant. Initially, only 2 of the 4 choices are phonologically similar, but as the participant progresses through the exercise, the participant must discriminate between 4 phonologically similar choices. Star Pics at first presents highly stretched and emphasized words, where the duration of each phoneme has been increased (for example, lake is initially presented as lllaaakkke) and where the intensity of each rapidly changing sound (such as the /b/ in ba) has been enhanced relative to the vowel sound. As the participant progresses through the exercise, Star Pics decreases the amount of stretch and emphasis, and eventually presents the words in natural speech. In this way, the participant improves the ability to make correct distinctions based on individual phonemes.
- **Phonological fluency:** Star Pics helps improve the ability to identify speech sounds in a quick and efficient manner.

In addition, Star Pics builds cognitive skills as follows:

- **Memory**—hold a word in working memory while retrieving picture-word associations from long-term memory
- **Attention**— focused attention
- **Processing**—auditory processing of words at the level of phonemes and linguistic processing of words at the level of semantics

How Participants Work on Star Pics

Star Pics consists of two tasks, phonemic and semantic. In the phonemic task, the participant listens to a target word and then selects the correct picture from a group of 4 pictures that contains one or more pictures that are phonetically similar (for example; tack, tag, tap, tan). In the semantic task, the participant listens to a target word and selects the correct picture from a group of 4 pictures that have a semantic relationship (for example; dog, cat, walrus, seal). In each activity, the participant must identify and click the picture that matches the target word.

In Star Pics, the participant can click the Help button to activate help mode. In this mode, the word for each picture is pronounced before the participant selects the picture that matches the target word. Help remains active until the participant turns it off by clicking the Help button again, or until the participant completes all of the trials in the current group.

How Participants Progress through Star Pics

In Star Pics, participants progress through 2 tasks, the phonemic task and the semantic task, as follows:

- Within the phonemic task, the participant progresses through 5 levels. In the early levels, Star Pics presents words in which the speech sounds have been digitally altered using patented methods (including selective intensity increases and duration extensions) to provide enhanced learning opportunities. As the participant progresses through the levels, Star Pics decreases this processing, and eventually, in level 5, presents the words using natural speech. The participant progresses through all stimuli at each speech processing level.

Within each level, the participant progresses through 6 groups of words. The words are grouped to become progressively more difficult based on the following 3 factors:

- Difficulty of alternate responses (1 vs. 3 minimal pairs)
 - Target phoneme difficulty
 - Target phoneme position (initial vs. final)
- Within the semantic task, all stimuli are presented at the natural speech level. The participant progresses through 8 groups of words. The words are grouped based on vocabulary type:
 - Stellar Stories vocabulary: Nouns
 - Stellar Stories vocabulary: Verbs
 - Science vocabulary: Anatomy, animals, and plants
 - Science vocabulary: Geology, ecology, and astronomy
 - Science vocabulary: General concepts, scientists, tools, and processes
 - Math vocabulary: Arithmetic operations and fractions
 - Math vocabulary: Numbers, comparisons, and graphs
 - Math vocabulary: Geometry

The 10 bars in the upper left corner indicate the percentage of the content completed in the exercise. Each bar represents 10 percent of the exercise. When all of the bars are filled in, the exercise is complete. The participant will continue to repeat the content at the highest level, beginning with the science vocabulary in the semantic task.

How Participants Advance in Star Pics

In Star Pics, the participant must pass all levels in the phonemic task before advancing to the semantic task. Within the phonemic task, the participant must pass all word groups within a level before advancing to the next level.

To complete a word group and advance to the next word group, a participant must correctly answer at least 90% of the items in the group.* If the participant fails to meet this advancement criteria for any word groups in a level, the word group is immediately repeated.

*Note that correct responses that occur when help mode is active are not counted toward advancement in the exercise.

Plateau Based Transitions

If after 3 attempts, the participant fails to meet the advancement criterion for a group, Star Pics transitions the participant to the next word group. That word group will be revisited at the end of the level. The participant will not advance to the next level until the criterion has been met for all word groups in the current level.

Points Awarded in Star Pics

Star Pics awards points to the participant based on the following conditions:

- **Correct answers:**
 - If help mode is off, the participant earns 2 points for each correct trial.
 - If help mode is on, the participant earns 1 point for each correct trial.
- **Bonus points:** After every 3 consecutive correct responses, one segment fills in around the scoreboard. When all the segments are filled:
 - If help mode is off, the participant earns 10 bonus points.
 - If help mode is on, the participant earns 5 bonus points.

Stellar Stories

In Stellar Stories, the participant listens to a story and answers comprehension questions about the story. The participant then listens to sentences and selects the pictures that best represent the sentences. Finally, the participant listens to instructions and manipulates one or more objects as instructed. Through these activities, the participant improves listening comprehension, following directions, English language conventions, and vocabulary.

Skills Strengthened by Stellar Stories

Stellar Stories helps participants build language and reading skills in the following ways:

- Listening comprehension: Stellar Stories aurally presents 3 different fiction passages, along with a total of 80 listening comprehension questions about the passages. These questions are designed to build comprehension and memory for details, main ideas, and relationships within the story. Stellar Stories uses audio that has been digitally enhanced to emphasize the rapidly changing phonetic elements within natural speech.
- Stellar Stories aurally presents 785 sentences. These sentences include a wide range of language structures, and are designed to improve the participant's understanding of the relationship between words, grammar, and meaning.
 - English language conventions: Each set of language comprehension items includes both easier and harder grammatical structures. These items are designed to build understanding of the elements of the English language, including proper word order, syntax, prefixes and suffixes, plurals, and subject-verb agreement.
 - Vocabulary: These items help build knowledge of the phonological structure and meaning of words.
- Following directions: Stellar Stories presents a total of 400 aural commands across the exercise. These commands are designed to improve the participant's skill in attending to, understanding, and following increasingly complex directions.

In addition, Stellar Stories builds cognitive skills as follows:

- **Memory**—hold a statement or question in working memory while retrieving picture-concept associations from long-term memory and identifying the best match or answer.
- **Attention**—focused and sustained attention
- **Processing**—auditory and linguistic processing of orally presented sentences and stories for meaning and comprehension
- **sequencing**—using word order to comprehend simple and complex statements and instructions and organizing a response that follows the specified sequence of actions

How Participants Work on Stellar Stories

In Stellar Stories, the participant listens to a short chapter from a story. The participant is then presented with 3 activities:

- In the listening comprehension activity, the participant must answer questions pertaining to the story just heard.
- In the language comprehension activity, the participant listens to a sentence and sees pictures that are possible representations of the sentence. The participant must identify the picture that best represents the sentence.
- In the following directions activity, the exercise presents a board containing rows of colored objects. The participant clicks the yellow button to hear instructions, such as "Touch the green dolphin and the white dolphin." The participant must follow those instructions.

How Participants Progress through Stellar Stories

In Stellar Stories, participants progress through the 5 levels of the exercise. In the early levels, the exercise presents stories in which the speech sounds have been digitally altered using patented methods (including selective intensity increases and duration extensions) to provide enhanced learning opportunities. As the participant progresses through the levels, Stellar Stories decreases this processing, and eventually, in level 5, presents the story using natural speech:

- Level 1: It Happened One Night--speech processing level 1
- Level 2: The Tank of Dr. Wong--speech processing level 2
- Level 3: Something About Sally--speech processing level 3
- Level 4: The Tank of Dr. Wong--speech processing level 4
- Level 5: Something About Sally--natural speech

Each story is divided into 4 chapters. After listening to a chapter, the participant progresses through the following 3 activities:

- Listening comprehension: For each chapter, the exercise presents 4 listening comprehension questions.
- Language comprehension: Across the 4 chapters in a level, the exercise presents 157 listening comprehension trials. Within each level, all 31 grammar structures are covered, ranging in difficulty from early developing structures (e.g., comparative with -er: The dolphin is faster) to later developing structures (e.g., object relatives with relativized objects: The kelp is entangling the diver that the dolphin is kissing).
- Following directions: For each chapter, the exercise presents 20 commands. Within each set of commands, the difficulty level increases from less complex (e.g., Touch the purple purse and the red magazine) to more complex (e.g., Put the red antlers between the large green piano and the orange crown).

The 10 bars in the upper left corner indicate the percentage of the content completed in the exercise. Each bar represents 10% of the exercise. When all of the bars are filled in, the content is complete. The participant will continue to repeat the content at the highest level, level 5, until the exercise is closed.

How Participants Advance in Stellar Stories

To advance to the next level in Stellar Stories, the participant must meet the criteria for each of the 3 activities. After all trials in a level are presented, the exercise makes this determination based upon the following advancement criteria:

- Listening comprehension: 100%--The participant must answer 4 out of 4 trials correctly in each chapter.*
- Language comprehension: 90%--The participant must answer 142 out of 157 trials correctly.
- Following directions: 90%--The participant must answer 72 out of 80 trials correctly.

If the participant fails to meet the advancement criteria for any activities in the level, those activities are repeated. The participant will not advance to the next level until criteria has been met for all activities in the current level.

*Each chapter is evaluated independently for listening comprehension. Once the listening comprehension criterion is met for a given chapter, Stellar Stories will not present the narration or the listening comprehension trials for that chapter again.

Points Awarded in Stellar Stories

Stellar Stories awards points to the participant based on the following conditions:

- **Correct answers:** The participant earns 5 points for each correct trial.
- **Bonus points:** After every 3 consecutive correct responses, one segment fills in around the scoreboard. When all the segments are filled in, the participant earns 25 bonus points.