

Executive Function Strength Survey

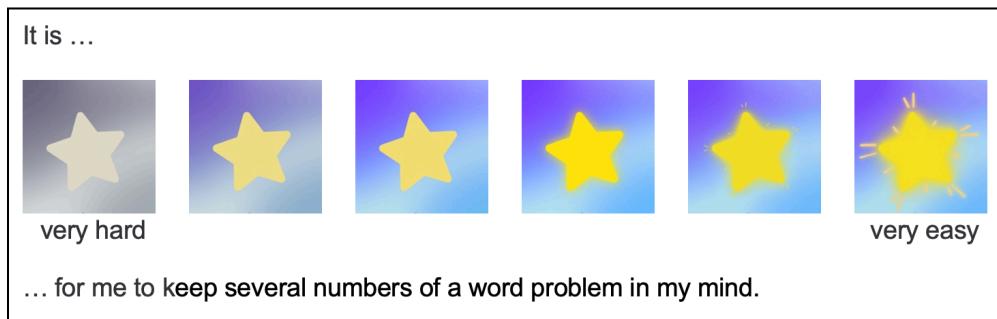
This measure assesses students' self-reported perceptions of their use of executive function skills during math learning.

Purpose

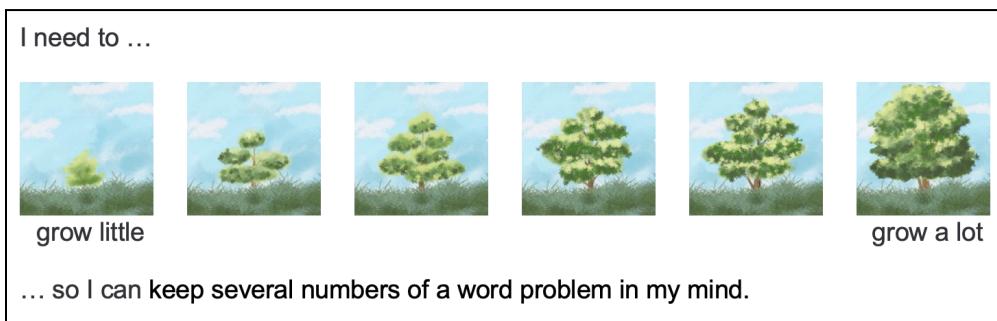
- The Executive Function (EF) Strength Survey is intended to gather information regarding how students think about their use of three different executive function skills - cognitive flexibility, inhibitory control, and working memory - when they are doing mathematics.
- The EF Strength Survey emphasizes two types of perceptions:
 - Confidence: how easy students believe it is to use a math-related executive function skill; and
 - Potential Growth: how much students believe they need to and can improve a given math-related executive function skill

Measure Details

- The EF Strength Survey consists of 24 items across two subscales:
 - Confidence: 12 items
 - Potential Growth: 12 items
- Each subscale is evenly distributed across the three focal math-related executive function skills.



Sample item of the Confidence subscale.



Sample item of the Growth subscale.

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MathicSTEAM R&D Team

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- All items are measured on a 6-point Likert scale.
- The items use pictures to demonstrate each Likert option. Stars are used for confidence questions and trees are used for potential growth items; the images are designed to show increased shine and growth, respectively, as options become more positive on the Likert scale.

Contribution to the Field

- Research on executive function skills has historically leveraged clinical assessments to gather data on cognitive performance. In more recent years, research has expanded into educational contexts and aimed to understand how students may be using their EFs within learning. This measure offers a novel contribution by focusing on students' perceptions of their EFs in use, inviting both awareness and reflection of their cognitive processing.
- The EF Strength Survey takes an asset-based approach to investigating students' self-perceptions by framing responses as "confidence" levels and reflecting on their possible future improvement; this asset-based language offers an alternative to the deficit-oriented framing and labels that can arise from more traditional EF metrics or student diagnostics.

Development History and Previous Uses

- This EF Strength Survey has been used in several small scale efficacy studies, as well as a large-scale evaluation study of MathFluency+, a math product focused on building fact fluency and executive function skills, with elementary students.
- Initial analyses to validate the measure have been conducted using data from one of the efficacy studies, and have shown construct validity for the three-factor models of both subscales.

Accessing the Measure

- To access the measure, please contact:
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