SARRC Southwest Autism Research & Resource Center

Research Briefs

Research Briefs offer easy-to-read summaries of our original publications.

Original Article

Building Capacity for Inclusive Informal STEM Learning Opportunities for Autistic Learners

Published in the Peer-reviewed Journal

International Journal of STEM Education

The full article can be found here:

https://doi.org/10.1186/s40594-024-00514-2

Key Study Terms

- **Inclusion:** Ensuring all feel welcome and have equal opportunities to participate
- **Engagement:** Meaningful involvement in an activity or process, like learning
- **Impact:** Evidence of deeper learning and application of knowledge
- **STEM Capital:** Traits and resources that increase an individual's likelihood to engage with STEM and pursue related careers

Why was this study conducted?

Research on informal learning spaces, like museums or science centers, shows that they can strengthen individuals' interest in STEM topics and related careers. However, sensory sensitivities, challenges with transitions, and social communication differences may make it more difficult for autistic individuals to have successful and engaging visits to science museums. If they cannot take advantage of these learning opportunities, they may be less likely to pursue STEM academic or employment pathways. This study aimed to better understand inclusion and engagement of autistic youth during visits to STEM museums, with a larger goal of increasing the impact of informal STEM learning spaces for autistic youth.

We proposed that increasing *INCLUSION* will improve *ENGAGEMENT* during museum visits among autistic learners, which will increase *IMPACT* of museum visits and ultimately increase *STEM CAPITAL among autistic learners.*

Inclusion

Engagement

Impact

STEM Capital

What did this study involve?

Parent Attitudes Survey
We asked parents of autistic AND neurotypical children about their family's museum experiences.

Museum Staff Training
SARRC clinical staff led trainings on autism and inclusion at 4 local partner museums.

Qualitative Interviews
We interviewed families about their visits to partner and control museums to learn about features that did and did not support inclusion and engagement.

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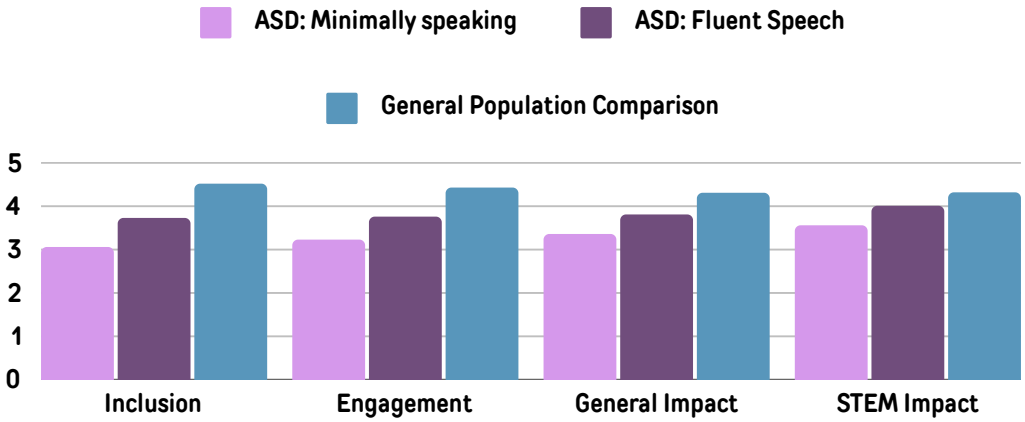
Parent Attitudes Survey Findings



Parents of autistic adolescents (both minimally speaking or with fluent speech), reported significantly lower inclusion, engagement, and general impact of STEM-related museum visits compared to the general population comparison group.

Post-Museum Visit Interview Findings

THEME 1: Spectrum of Museum Impact
Families reported a range of learning outcomes, from limited to successful learning and application. Highly impactful visits sparked participants' desire to learn more and helped some adolescents make connections to STEM careers.

THEME 2: Adolescent-Environment Fit
Families reported varying fit between adolescent (e.g., interest in museum topics) and museum characteristics. Strong fit led to high engagement and impact, and poor fit was a barrier to both.

THEME 3: Barriers to Engagement
Families reported barriers to fully benefiting from the visit, including inadequate guidance (e.g., inattentive staff), low inclusion (e.g., limited sensory friendly exhibits), poor quality materials, lack of variety of museum content, and other museum guests (e.g., crowds).

THEME 4: Barrier Breakers
Factors that helped families overcome barriers or engage with museum content included interactive staff and exhibits, freedom to engage (e.g., exhibits that supported independent exploration), inclusion and accommodations (e.g., noise canceling headphones).

How can museums better welcome and support their autistic guests?

- **More interactive staff and exhibits**
- **Features that allow freedom to engage (e.g., audio tours; well-designed spaces)**
- **Sensory accommodations and visual supports (e.g., noise cancelling headphones)**
- **Support for those sensitive to crowds (e.g., share low traffic times)**
- **More concrete ties to STEM careers (e.g., career events, pre-visit materials)**

Original Article Citation

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