Exploring Tactile Skill Development Through Play: A Cross-Cultural Comparison Of Toys And Games In Asia, North America, And Europe

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BACKGROUND AND GOALS

- **Science, technology, engineering, and math (STEM) knowledge is a high priority** for all students - including students with visual impairments and blindness.
- **Barriers to STEM Access:** lack of accessible materials, limited early support, challenges with adapting highly visual and complex materials…

Key Considerations for Access to STEM for students with visual impairments

- Hands-on instruction, unifying experiences, and **tactile objects** (Koehler & Picard 2024),
- **Accessible materials** and instruction (Koehler & Picard 2024),
- Developing **proficient tactile and graphicacy skills** is crucial,
- **Early intervention** by teachers of the visually impaired (TVIs) and parents is essential for developing these skills.

- Key considerations are only partially met.
- The play is being researched in the project.
- Ultimately, many fundamentals are developed through playing, such as tactile skills (Lai et al. 2018).

Objective:
To investigate the childhood play experiences of adults with visual impairments in Japan, India, Germany, and the U.S. who were passionate and proficient in STEM fields.

METHODS

General Framework

- 30 – 40 minutes semi-structured interviews with participants (N=25) from Japan (5), India (10), Germany (5) and the U.S. (4)
- Requirements of the interviewees: adults with visual impairment who demonstrated both a passion and proficiency in STEM, evidenced by their engagement in at least one of the following:
  - focused their studies in STEM fields in high school
  - pursued STEM disciplines at university or college
  - obtained occupations in STEM-related fields

Questionnaire Tool

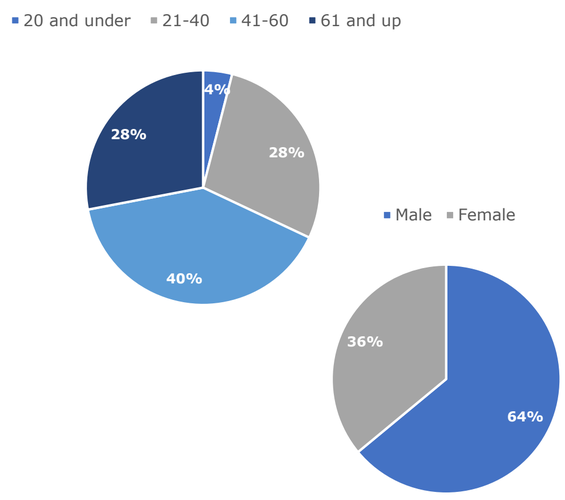
- What was your favorite childhood toy or game?
- How did you play with this toy or game?
- Why did you like this toy?
- Other

Analysis of Interviews

- Use of content analysis to categorize the toys (Elo & Kyngäs 2008)

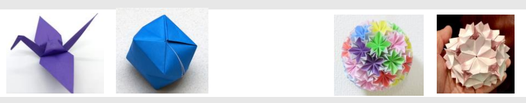
RESULTS

Result I – Participants Demographics



- All had severe visual impairment at the time of the interview; however, some had vision in their early childhood.
- All had associate's degree or above, some had master's degree and Ph.D.
- Professions varied from computer programmer to teachers and university lecturers.

Result II – Favorite Toys and Games and Their Traits

f	m	Types of plays/toys	Examples
5	11	Board games	Pallankuzhi, Snake and Latter, Chess (India) Shut the Box, Memory (odor/tactile) (Germany) Card games, Shogi, Diamond board game (Japan)
2	9	Building blocks	Legos (U.S. and Germany) Magnetic building blocks (Germany) Wooden blocks (Japan and U.S.) Building blocks that stick to on another (Japan)
0	4	Puzzles	3D puzzles (Japan), puzzles (Germany)
7	5	Crafts	Cutting paper, kneading (Germany) Origami (Japan) Painting/drawing (Germany and Japan) 
1	3	Dolls and figures	Animals by Schleich, figures by Playmobil, stuffed toys (Germany)
2	6	Toys/figures with movement or noise	Slinky (U.S.), Transformers (U.S., Japan), toy cars/railroad trains that move with battery, Matchbox cars (U.S.), Robot cassette player (U.S.), marble run (Germany)
1	0	Tactile books/picture books	Germany
0	1	Everyday objects that become toys	Alarm clock, old radios (Germany)
3	11	Playing in the nature	Climbing trees (Japan), riding pedal cars (Germany), riding tricycles/bicyles (Japan), playing with "melody ball" (Japan), playing in the sand box (Japan), visit construction sites (Germany), playing house (Japan)

- All toys were inclusive, offering tactile and/or auditory feedback, allowing individuals to engage independently cooperatively, and at their own pace.
- Depending on the toy, play was either **solitary** or **cooperative** (with siblings or peers).
- Some games/toys could be played both simply and complexly (e.g. Origami).

CONCLUSIONS AND LIMITATIONS

Conclusions

- All toys were inclusive, offering tactile and/or auditory feedback, allowing individuals to engage independently cooperatively, and at their own pace.
- Unexpected Insights: expected games (tactile books) were hardly mentioned.

Limitations

- The number of participants interviewed is low and includes a wide age range.
- More males than females were interviewed, likely influencing the types of play and toys mentioned. While interviewers asked participants to name several of their favorite toys, some individuals may remember more vividly than others, and their recollections may be influenced by time and subsequent experiences.

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