Three Key Factors that Influence EDA in Observational Studies of Occupational Therapy

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Motivation

Changing child's arousal is an important goal of occupational therapy, but therapists do not have a way to objectively measure how therapy affects arousal. We hypothesized that using children with Sensory Processing Disorder (SPD), who often have difficulty regulating arousal, to observe changes in occupational therapy setting, information changes in environmental stimuli (EDA) could be detected using data. Given a small, wearable sensor developed at MIT that monitors EDA and motion, we can accurately measure the child’s arousal.

Do therapeutic activities create a consistent EDA response?

In our observation of 77 therapy sessions, average changes in EDA, across children and different pieces of equipment was not statistically different from zero.

Individual therapeudic activities affected EDA changes, but these changes had a high degree of variability.

Three Factors that Affect EDA

1. Therapist’s Intent

The intent of a therapist helps determine the effect of therapeutic equipment. For example, Child 19's EDA responses to two guided activities on the sensory ball show opposite EDA responses.

2. Environmental Factors

Sometimes external stimuli that are separate from the therapeutic activity can influence a child’s EDA response. Child 13 gently rocked a table using slightly increases the EDA.

3. Individual Differences

Different children may respond differently to the same stimuli. Child 15’s EDA closely tracks the child’s emotions during play with a large room for hidden animals. While in the ball pit, Child 15's EDA decreases when she lies still but her EDA increases when she begins looking for hidden animals inside the ball pit.

Conclusion

Looking at EDA changes on a group level was inaccurate due to many uncontrolled factors. Therapist’s intent, environmental influences, and individual differences influence interventions but are difficult to account for in a statistical model. By analyzing case studies in conjunction with EDA, we may be able to generate new perspectives on how therapeutic activities work while still taking into account these influential factors.