EXPLORATORY BEHAVIORS OF CHILDREN WITH AUTISM SPECTRUM DISORDERS (ASD)

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INTRODUCTION

The study involved the creation of Dlgap2^-/- mice to investigate their phenotypes regarding synaptic function and social behaviors. Jiang et al. (2014) noted that in humans, impaired social reciprocity is one of the core symptoms of autism and aggressive behavior, which is a manifestation of social dysfunction frequently observed in individuals with autism. (p. 2)

Upon examination of other factors such as reversal learning deficit and disruption of synapse in the orbitofrontal cortex, it was concluded that the Dlgap2^-/- mice did not demonstrate social withdrawal, but rather demonstrated exacerbated aggressive behaviors.

PURPOSE

The purpose of this study was to examine the visual and physical exploratory behaviors of normally developing children.

DISCLOSURES

None of the authors had any financial relationships relevant to the content of this presentation.
MATERIALS & METHODS

- The study consisted of three participants with ages ranging from 5 to 10 years old. All participants were male, two typically developing children and one with a diagnosis of autism.
- All data collection sessions were video-taped for future analysis.
- A computer program called Eye Vision XG (Applied Science Laboratories, 2013) along with corresponding eye-gaze hardware was used to conduct this experiment. Special glasses were applied to the child and the lenses were adjusted, so that the pupil and iris of the eye could be seen and projected onto the computer screen.
- The equipment was then calibrated, by asking the child to scan the corners of the computer screen to establish baseline data points.

RESULTS

Figure 1. Graph (A) demonstrates participant gaze fixations per object. Graph (B) demonstrates participant duration of fixations per object. Graph (C) demonstrates participant time spent playing with each toy.

Figure 2. This graph shows the comparison between the physical duration at each of the typically developing participants versus the child with ASD at each toy area.
DISCUSSIONS

GAZE FIXATIONS

- The child with ASD did not demonstrate exploratory behaviors through eye-gaze, rather picked one object (Lego table) and hyperfocused on that object alone.

In comparison to typically developing children, these results indicate that these children tend to hyperfocus upon specific elements of their environment and are unable to shift attention and focus between competing stimuli.

GAZE DURATIONS

- The child with ASD spent the entire duration looking at the Lego table, whereas the typically developing children demonstrated relatively consistent gaze durations upon each object.

AMOUNT OF TIME SPENT WITH EACH TOY

- The child with ASD spent the entire time duration at the Lego table.

These results indicate that children with ASD do not visually explore the entirety of novel environments.

CONCLUSION

- Previous research has indicated that children with autism spectrum disorders tend to exhibit lower levels of exploratory behaviors.

The current study reveals that children with ASD navigate towards one specific area and remain there for the entire ten-minute duration, whereas, the control group dedicated a relatively equal amount of time towards exploring each toy area.

One of the most crucial means of learning about our world and our environment is to explore it.

Future research should be conducted in order to compare those with autism spectrum disorders to these normally developing children.

It is possible that interventions focused on improving or encouraging exploratory behaviors might improve behavioral characteristics of individuals with autism spectrum disorders.

LIMITATIONS

- This research was primarily limited by its small sample size. The sample size was limited due to the short amount of time provided to conduct this study in correlation to the accessibility of participants. It could have been expanded given an extended amount of time to conduct the study.

- In addition, earlier contact between researcher and target sample may have increased participation. Ideally, the number of participants would have been more evenly distributed across gender and age.
RECOMMENDATIONS

- For future studies it could be recommended that the study include:
  - Age-appropriate toy selection
  - Gender neutral toy selection
  - Adequate participant selection time
  - Larger, more diverse sample size

REFERENCES