

Gaze patterns to social and nonsocial videos in toddlers with high and low ADOS total scores

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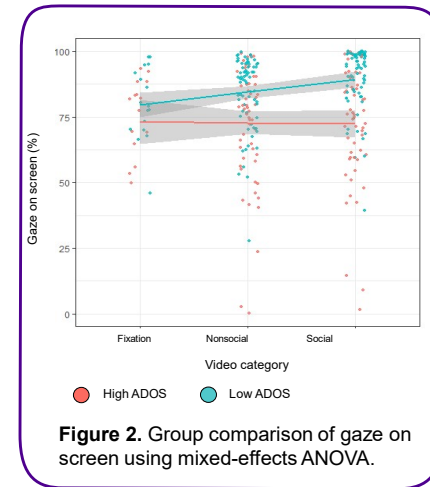
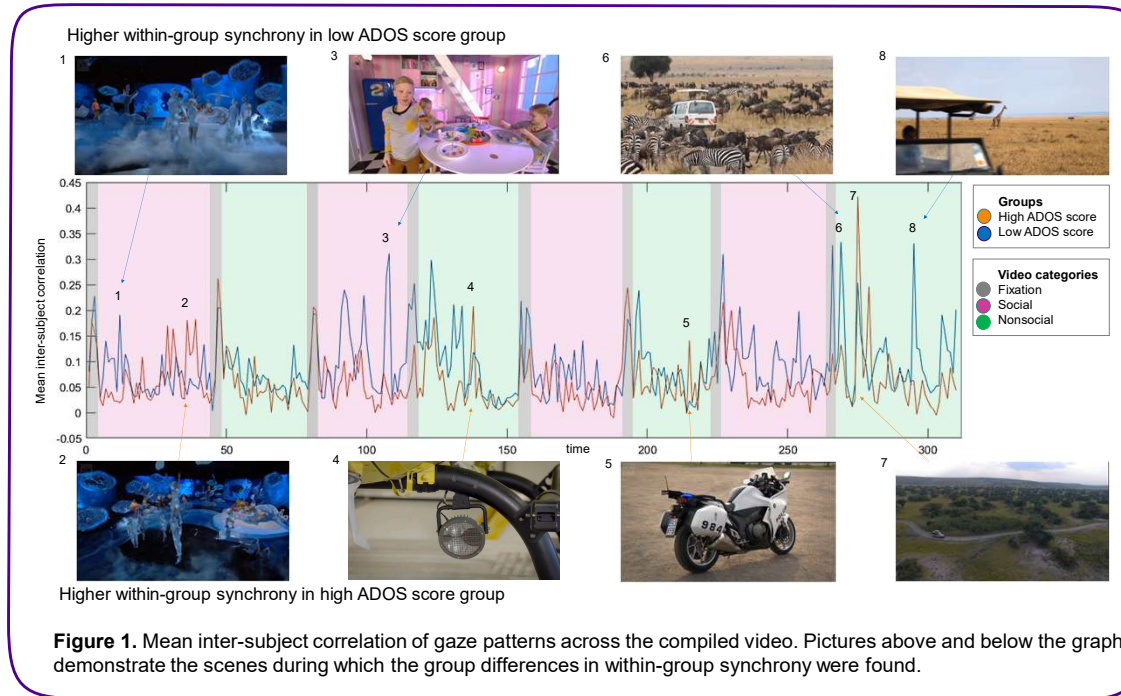
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Background

Previous studies have shown atypical gaze patterns in autistic individuals during video viewing: they gaze less on-screen and show larger within-group heterogeneity in gaze patterns than typically developing individuals. Also, autistic individuals do not fixate typically to social content of videos, including faces.

Objectives

- To investigate whether atypical gaze to social and nonsocial videos is evident already in prodromal autism indicated with high ADOS scores.
- To compare gaze patterns in toddlers with high and low ADOS scores focusing on 1) within group gaze synchrony, 2) events within videos where gaze synchrony differs most between groups, and 3) gaze on screen.



Conclusions

- Toddlers with high ADOS scores look less on the screen and show more heterogeneous gaze patterns than toddlers with low ADOS scores.
- Group differences were also found in toddler's attention to social vs nonsocial videos.
- Our longitudinal study will follow gaze pattern development in larger samples with diagnostic outcome.

Methods

We recruited 32 toddlers (20 males, mean age 18 months, range 13–31 months) from the ongoing-Gaze@Toddler study and divided them to two groups based on ADOS-2 Toddler Module total scores: high ADOS scores (N=15; ADOS ≥13 points), low ADOS scores: (N=17; ADOS <13 points). Gaze patterns to social and nonsocial videos were measured with eye-tracking during video viewing. Gaze synchrony was estimated with inter-subject correlations both across the whole video and for each time point using a 1-s-long sliding window.

Results

- Low ADOS group had higher within-group gaze synchrony during both social and nonsocial videos (Table 1).
- The low ADOS group had higher within-group synchrony during scenes with people and intentional actions, and the high ADOS group during scenes with objects (Figure 1).
- High ADOS scores were associated with less gaze on screen (Figure 2). Low ADOS group gazed more on screen during social videos than during fixation or nonsocial videos, but this effect was absent in the high ADOS group.

Table 1. Mean inter-subject correlation of gaze patterns for each video category

Video category (dur.)	Mean correlation within low ADOS group	Mean correlation within high ADOS group	Group difference (Cohen's d)
Social (2:35)	0.121	0.102	0.266 *
Nonsocial (2:12)	0.131	0.111	0.306 *

