Who you looking at? Social gaze behaviors of autistic adolescents during a live, group interaction

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INTRODUCTION

- Most information on face-directed gaze in autism based on looking at computer screen
- However, gaze to computer faces does not predict gaze during live interactions[1,2]
- Face-directed gaze changes with context, such as listening or speaking[3]

HYPOTHESIS

Autistic adolescents will show less modulation of speaker-directed gaze based on conversational context than neurotypical adolescents

STUDY PARTICIPANTS

Measure	ASD (n=15)	NT (n=11)	Significance	
Age	13:1	12:7	$F(1, 25) = .34,$	$p = .57$
Sex (M:F)	12:3	9:2	$\chi^2(1, 26) = .01,$	$p = .91$
K-BIT 2, Verbal	110.67	111.82	$F(1, 25) = .03,$	$p = .88$
K-BIT 2, Nonverbal	109.27	115.18	$F(1, 25) = .91,$	$p = .35$
K-BIT 2, Total	111.67	116.36	$F(1, 25) = .51,$	$p = .48$
CELF 5 (Core Language)	106.93	111.73	$F(1, 25) = .50,$	$p = .49$
AQ	44.8	26.36	$F(1, 25) = 4.45,$	$p = .05$
SCQ	16.33	3.73	$F(1, 25) = .39.84$	$p < .001$

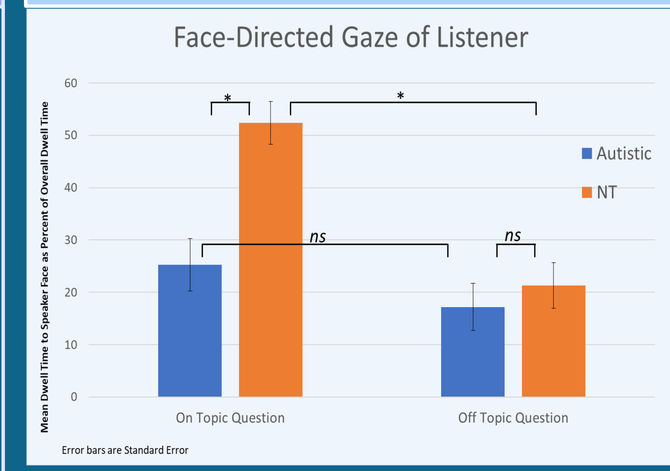
CONCLUSION

Autistic and neurotypical adolescents have comparable face-directed gaze in one conversational context but diverge in another

Autistic adolescents gaze equally at on-topic and off-topic speakers' faces

NT adolescents gaze less at off-topic speaker's face vs. on-topic speaker

RESULTS



ANALYSIS

Two (diagnosis) by two (condition: on-topic vs. off-topic) repeated measures ANOVA

Main effect for diagnosis
($F(1, 24) = 5.52$, $p < .03$, partial $\eta 2 = .19$
- **NT participants gaze at both speakers more than autistic participants**

Main effect of condition
($F(1, 24) = 15.15$, $p < .001$, partial $\eta 2 = .39$),
- **Both groups gaze more at face of on-topic than off-topic speaker**

Significant diagnosis by condition interaction
($F(1, 24) = 5.22$, $p = .03$, partial $\eta 2 = .18$)
- **NT participants increase gaze to on-topic vs. off-topic speaker more than autistic participants**

Post-hoc comparisons:
- NT participants more speaker-directed gaze in on-topic vs. off-topic question ($p = .001$)
- Autistic participants no difference in speaker-directed gaze across conditions
- NT more speaker-directed gaze than autism for on-topic ($p = .005$), but not off-topic question

Methods

RAs and participant talking while facing each other
Participant Gaze recorded via eyetracking glasses

- Participants wore SMI eyetracking glasses during conversation with two RAs
- Captured audio-video recordings of the interaction and participant gaze data
- Extracted and analyzed gaze patterns to both RA's faces during two timepoints:
  - RA1 asked an on-topic, contextually relevant question
  - RA2 asked an off-topic, contextually irrelevant question
- Calculated dwell time to each speaker's face during respective question as percent of overall dwell time to the participant's full field of view
- Position of the on-topic vs. off-topic RA (left or right) alternated between participants

On-Topic Question

RA described someone as looking like "Cruella Deville" during a story about a time they were lost in New York:

Q: "Have you ever seen 101 Dalmatians?"

Directly relevant to topic and confirming listener knowledge

Off-Topic Question

RA shared about a time they were in a room with others:

Q: "What's a time you had when it was hard to breathe?"

Less relevant to topic and meant to take conversation partner by surprise

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