

Autistic Individuals Do Not Alter Visual Processing Strategy during Encoding Versus Recognition of Faces: A Hidden Markov Modeling Approach

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Question

Do autistic adolescents employ different eye movement patterns during encoding and recognition of faces?

Background

Reduced social attention is a hallmark feature of autism that may impact face processing and recognition.¹

Since eye movement patterns have a functional role in face recognition², differences in looking behavior across time may explain why many autistic individuals have difficulty recognizing faces.

Little is known about the spatiotemporal dynamics of eye movements in autism while viewing faces.

Participants

	NT	Autism	p
N	17	15	
Sex	13 Male	13 Male	
Ethnicity	13 White, 4 Other	14 White, 1 Other	
Handedness	15 Right	13 Right	
Age, years	14.5 (1.3)	14.5 (1.7)	
FSIQ	117.88 (11.75)	109.20 (12.18)	.05
PIQ	115.53 (13.62)	115.13 (11.80)	.93
VIQ	115.59 (13.08)	101.00 (12.94)	.003
Vineland Social	88.65 (12.91)	49.07 (6.10)	<.001
Vineland Communication	94.35 (14.16)	56.00 (8.05)	<.001
SRS	19.29 (11.46)	115.27 (23.74)	<.001

Method

Encoding



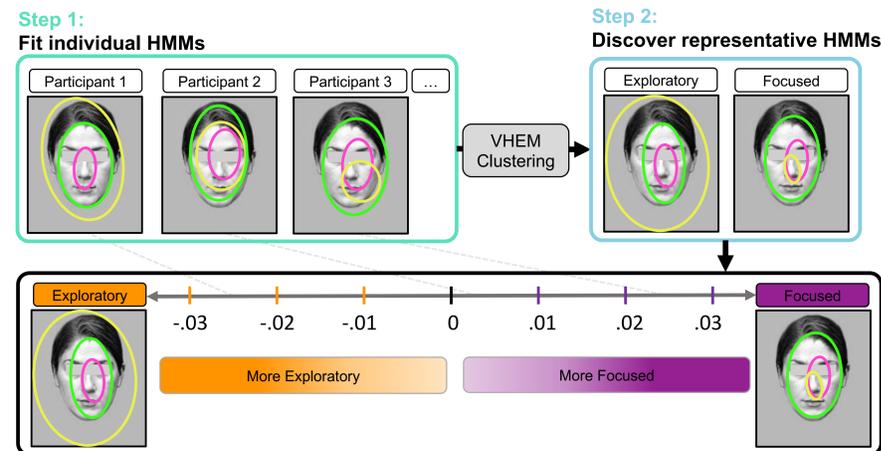
Recognition



Do you remember this face?

Method

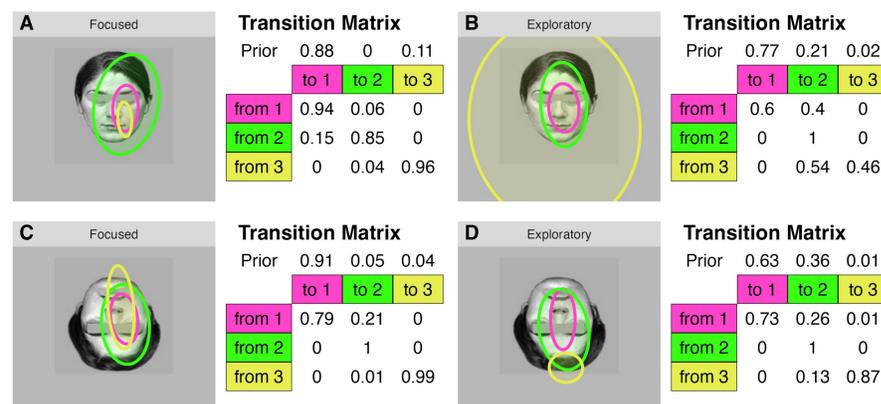
Discover common patterns among all participants using a probabilistic approach



Eye Movement Analysis with Hidden Markov Models³
Data driven ROIs
Transitions among ROIs
Hierarchical variational expectation maximization (VHEM) clustering to discover common patterns

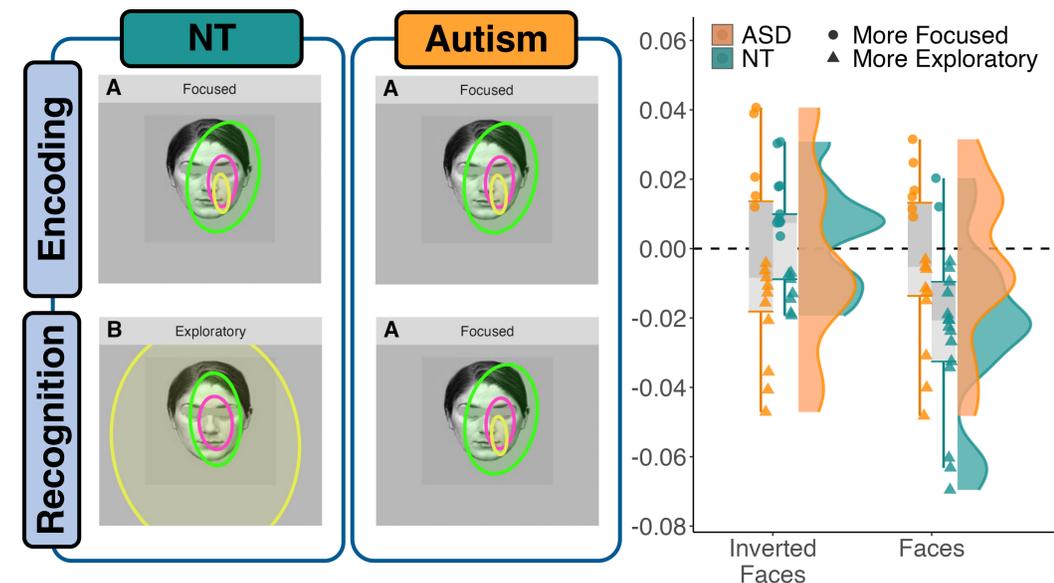
Results

Focused and exploratory patterns emerged across face recognition in autistic and neurotypical individuals



Results

Autistic individuals *did not* modulate eye movement patterns across recognition phase



Conclusions

We discovered that participants in both groups applied both focused and exploratory eye movement patterns during face recognition.

Autistic individuals tend to not change their eye movement patterns during encoding versus recognition of faces, which may be an indicator of less efficient encoding of faces.

References

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