Differential Associations between Autistic Traits and Eye Movement Consistency in Face and Object Recognition in Neurotypical Adults

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Abstract

Recent research has found an association between reduced eye movement consistency in face recognition and autistic traits in social skills in autistic individuals, which may be related to their less well-developed visual routines for social stimuli resulting from lack of social interest. Here we showed that this association was not observed in neurotypical adults, which may be related to their well-learned visual routines that have converged to a similar consistency level, obscuring the potential association. In contrast, neurotypicals' eye movement consistency in subordinate-level object recognition was associated with autistic traits in Social Skills, and their subordinate-level object recognition performance was associated with autistic traits in Patterns/Details. These results suggested a link between autistic traits and subordinate-level object processing, consistent with a domain-general view of autism where atypical visual processing may underlie the social cognitive deficits in autism. Our findings thus have important implications for early screening and intervention for autism.

Keywords: Subordinate object recognition**;** face recognition; eye movement consistency; EMHMM; broader autism phenotype

Introduction

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition characterized by significant and persistent deficits in social communication and interaction, as well as in sensory and perceptual processing (American Psychiatric Association, 2013). Traditionally, ASD has been conceptualized as a categorical diagnosis, wherein individuals are classified as either autistic or non-autistic (Frazier et al., 2010). However, emerging evidence suggests that autism exists on a continuum of social-communication disabilities, challenging the notion of clear boundaries between clinical cases and typical development. Specifically, the phenotypic expressions of autism gradually blend into subclinical manifestations observed in the general population, a phenomenon referred to as the broader autism phenotype (Austin, 2005; Grove et al., 2014, 2015). This dimensional perspective shifts the focus from a strictly categorical diagnosis to a more quantitative assessment, exemplified by the Autism-Spectrum Quotient (AQ; Baron-Cohen et al., 2001). The distribution of autistic traits across the entire population forms a continuum, with formal autism diagnoses situated at one end (Constantino & Todd, 2003; Ruzich et al., 2015). Consequently, quantifying autistic trait variations in neurotypical individuals (NTs) may yield valuable insights into the understanding of autism symptoms and their underlying mechanisms.

Research has consistently demonstrated that autistic individuals exhibit atypical eye movement behaviors across various visual tasks. For instance, they spend less time looking at the eye region compared to NTs during face and facial expression recognition tasks (See Chita-Tegmark, 2016, for a review). Additionally, autistic individuals often direct their gaze toward specific, idiosyncratic details of objects rather than focusing on their overall shapes (Scherf et al., 2008; Dakin & Frith, 2005). Beyond atypical gaze locations, the scanpaths of autistic individuals tend to be more disorganized and inconsistent than those of NTs. For example, Wang et al. (2022) found that while neurotypical children maintained consistent scanpaths when viewing different faces, autistic children exhibited frequent changes in their scanpaths across different trials. Furthermore, autistic individuals were found to demonstrate significantly higher intra-trial variability in saccade amplitudes than NTs (Mosconi et al., 2013; Schmitt et al., 2014). Indeed, many of these atypical eye movement behaviors have been shown to exist on a continuum with autistic traits. For example, as compared with NTs with low AQ scores, Wegner-Clemens et al. (2020) found that those with higher AQ scores looked longer at the lower half of the face during face viewing. Bayliss & Tipper (2005) found that, when viewing stimuli consisting of both normal faces and randomly rotated and reorganized face parts, NTs with higher AQ scores looked more at the latter stimuli, suggesting an over-focus on local details. These findings suggest that variations in eye movement behaviors may reflect a broader spectrum of autistic traits within the general population.

Notably, recent studies have applied Eye Movement analysis with Hidden Markov Models (EMHMM), a machine learning-based approach, to investigate eye movement consistency in autistic individuals and NTs during visual tasks. This approach summarises each individual's eye movement behavior across trials into a hidden Markov Model (HMM) and quantifies the inter-trial consistency of visual scanning routine by the entropy of the HMM, and has been used in many previous studies (Chuk et al., 2014, 2017; Hsiao, Liao, et al., 2022; Yang and Hsiao, 2025; Zheng et al., 2024). Using this approach, Hsiao, An, et al. (2022) found that

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autistic children had lower eye movement consistency for face recognition than neurotypical controls. This reduced consistency in eye movements was significantly associated with the children's autistic traits, particularly in the domain of social skills. A similar finding was also observed in adult participants (Zheng et al., 2024), suggesting that reduced eye movement consistency during face recognition may be a reliable behavioral marker of autism. Through computational modeling, Hsiao, An et al. (2022) showed that this reduced eye movement consistency during face recognition in autistic individuals may be related to their lack of social motivation and reduced interest in face stimuli, as demonstrated in its association with AQ-Social Skills, resulting in less well-developed visual routines for faces as compared with NTs. More specifically, eye movement consistency during visual object recognition may reflect individual differences in the amount of recognition experiences for developing a stable visual routine. While individuals with varying autistic traits may differ in eye movement consistency during face recognition due to varying experience and interest in faces, they may not differ in eye movement consistency during the recognition of other basic object types where they have similar experience with. Nevertheless, it remains unclear whether a similar association between eye movement consistency in face recognition and autistic traits can be observed in NTs, and whether a similar phenomenon can be observed in the recognition of other object types.

To address these questions, we tracked NTs' eye movements during both face and object recognition tasks and assessed their autistic traits using AQ. Participants performed subordinate-level recognition in both the face and object recognition tasks to match their task demands. We quantified each participant's eye movement consistency during recognition using the EMHMM method and examined its correlation with their AQ scores. According to the previous studies with autistic individuals, we hypothesized that neurotypicals with higher AQ scores may also demonstrate reduced eye movement consistency during face recognition as compared with those with low AQ scores, and this effect may be particularly related to AQ-Social Skills. In contrast, since NTs typically have similar experience with and interest in non-face object types, eye movement consistency during object recognition may not be associated with AQ scores.

Methods

Participants

We recruited 56 healthy adults (28 females; mean age = 23.4 years, SD = 3.87) with normal or corrected-to-normal vision. According to a power analysis, a sample size of 55 was required (ρ= .36 as estimated from Hsiao, An et al., 2022; α = .05, β = .2) for a moderate two-tailed correlation analysis. A sample size of 55 was required for a moderation analysis (f^2 = .15, α = .05, β = .2), assuming a medium effect size.

Materials and Apparatus

Object Stimuli The stimuli consisted of eight basic object categories from the Vanderbilt Expertise Test 1.0 & 2.0 (VET; McGugin et al., 2012; Van & Gauthier, 2016): leaves, mushrooms, butterflies, wading birds, dinosaurs, cars, motorcycles, and planes. The selection of the categories was based on the need to avoid object categories with face-like configurations; thus, we replaced the owl's category from VET1.0 with the dinosaur from VET2.0. Each category consisted of 72 digitized, eight-bit greyscale images, divided into 24 target images and 48 distractor images. The 24 target images consisted of four exemplars from each of six unique species/models of the category (Figure 1). Each exemplar represented the same species/model captured from different viewpoints or backgrounds (Figure 1b). The 48 distractor images consisted of exemplars from novel species/models (Figure 1c). All stimuli were resized to 224×224 pixels, subtending a 6° horizontal visual angle.

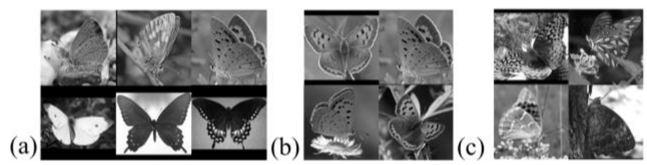


Figure 1: Example stimuli: (a) Six butterfly species. (b) Four exemplar images of one species (targets). (c) Four exemplars from novel species (distractors).

Face Stimuli To create face categories that matched the object categories, we sampled images across three dimensions: age (young *vs*. old), gender (female *vs*. male), and race (Asian *vs*. Caucasian), which yielded eight face categories. Asian faces were from the Tsinghua Facial Expression Database (Yang et al., 2020), and Caucasian faces came from the FACES database (Ebner et al., 2010). Following the same structure as the object stimuli, each face category consisted of 72 greyscale images: 24 target images and 48 distractor images. The 24 target images consisted of four exemplars from each of six unique face models. Each exemplar of a given face model displayed a distinct facial expression (Figure 2b; neutral, happy, sad, and angry). The 48 distractor images consisted of exemplars from novel face models, also displaying different expressions (Figure 2c). We ensured that the distribution of expressions was matched between target and distractor sets so that participants could not recognize a target using facial expression.

All face images were cropped along the face shape to show only facial features, with an aligned distance between the centers of the two eyes (107 pixels). In addition, they were normalized in terms of illuminance and contrast using Spectrum, Histogram, and Intensity Normalization and Equalization (Willenbockel et al., 2010) in MATLAB. Following Pickron et al. (2024), the custom option was run, followed by the lumMatch function to obtain mean luminance matching across the whole image. All images were resized to 295×384 pixels, and each face subtended a 6° horizontal visual angle.

Participants' responses were recorded using a MilliKey SR-5 Response Box, and their eye movements were recorded using a Pupil Lab Neon eye tracker (Baumann & Dierkes, 2023). A calibration was performed before the experiment and after a break. The stimuli were presented using PsychoPy v2022.2.4 (Peirce et al., 2019) on a laptop (345×195 mm monitor; 1360×768 pixels) at a viewing distance of 55 cm.

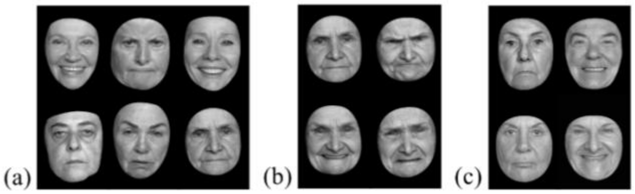


Figure 2: (a) Six face models from the Old Female Caucasian category. (b) Four facial expressions of one face model (targets). (c) Four novel face models (distractors).

Design

The face and object recognition tasks comprised two training phases followed by a formal testing phase, with data analysis restricted to the testing phase. All participants engaged in both face and object recognition tasks. The dependent variables included recognition performance, quantified by accuracy and reaction time (RT), as well as eye movement entropy metrics: overall entropy, marginal entropy of the first fixation, conditional entropy of the second fixation given the first fixation, and conditional entropy of the third fixation given the second fixation (following Hsiao, Liao et al., 2022). These metrics were analyzed using the EMHMM framework (refer to the Eye Movement Analysis section for further details). Correlation analyses were conducted to investigate the relationship between entropy measures and AQ scores. Additionally, moderated mixed-effects regression analyses were performed as exploratory investigations to determine whether the relationships between entropy measures and AQ scores were influenced by Stimulus Type. The general object recognition ability and cognitive abilities were included as control variables for partial correlation analyses to examine the link between entropy measures and AQ scores.

Procedure

Participants performed both face and object recognition tasks with a counterbalanced task order, followed by a general object recognition ability task, cognitive ability tests, and AQ.

Recognition Task Each trial began with a gaze-contingent fixation cross at the screen center. The stimulus appeared only after stable fixation was detected. During the training phase, participants first viewed a study screen displaying one exemplar from each of the six species/models for that category. They studied these images for as long as needed before pressing a button to continue. They then completed six recognition trials. On each trial, participants saw three images in a three-alternative forced-choice format, which contained one identical exemplar image previously studied (Figure 5; same exemplar trials) and two distractors from novel species/models. The target image could appear in any of the three positions (left, middle, or right). Participants were asked to recognize the studied exemplars as quickly and accurately as possible by pressing the corresponding button on a response box. Images remained on screen until a response was made, with no time constraint. After each trial, feedback indicated the correct target image and whether the response was correct. Participants repeated two blocks of this study-recognition trial cycle, completing 12 same-exemplar trials with feedback, after which the formal testing phase began. Participants were informed that subsequent target images would be different exemplars of the studied species/models (Figure 5; different exemplar trials). They were instructed to generalize their recognition across viewpoints and backgrounds for object stimuli, and across different facial expressions for face stimuli. During the formal testing phase, participants again reviewed the study screen for as long as needed before completing 36 different-exemplar trials. The trial structure was identical to the training phase, except that no feedback was provided. For each of the six studied species/models, three different exemplars served as targets, each representing a unique instance/exemplar of the same species/model (e.g., three different images of the same butterfly species for one studied exemplar). Each of the three different exemplars was shown twice, with unique distractors on each trial. A total of 768 recognition trials were performed including both recognition tasks, lasting between 70 and 90 minutes. Following the Cambridge Face Memory Task (CFMT), block order, trial order, and distractor selection followed a fixed randomized order for all participants to standardize practice/fatigue effects.

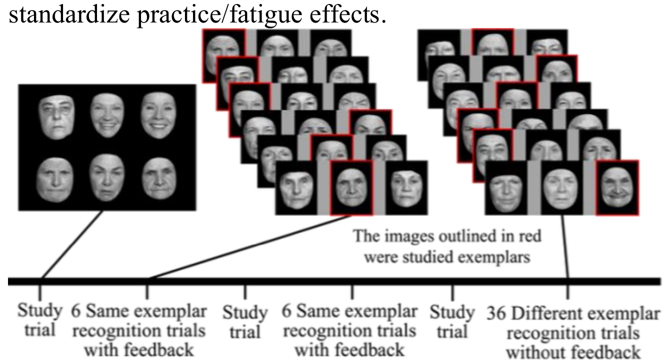


Figure 5: Trial structure. One representative block is shown.

General Object Recognition Ability (GOR; *o*) *o* was estimated based on performance across a 3-alternative forced-choice (3AFC) matching task and a New Object recognition task to measure domain-general object recognition ability (Smithson et al., 2024; Gronau et al., 2026). The tasks differ in their primary demands (perceptual discrimination *vs.* recognition memory), but both require distinguishing visually similar objects at the subordinate level using novel stimuli. During the 3AFC matching task, participants identified target objects (Greebles) from an array of three objects across 48 trials. In the New Object recognition task, participants studied three novel objects (Quaddles) for three seconds, and then were presented with

44 test arrays of four objects and asked to identify the one that had never studied/appeared during their study. Participants' accuracy in both tasks was *z*-scored and averaged to form a composite *o* score to provide a domain-general object recognition ability measure.

Cognitive Ability Tests The Tower of London task (ToL) measures executive function (Phillips et al., 2001). In each trial, participants viewed an initial configuration of three colored balls arranged on three pegs and transformed it into a target configuration by moving one ball at a time in the fewest possible moves. It consisted of 12 trials. The preplanning index (PPI) was computed as planning time/(planning time+execution time) × 100 (Schumacher et al., 2025).

Verbal and spatial two-back tasks assess working memory (WM; Lau et al., 2010). Participants judged whether a presented number or symbol location matched the one shown two trials earlier in the verbal and the spatial task respectively. Each task had 56 trials with accuracy and RT recorded.

The Flanker task evaluates selective attention (Ridderinkhof et al., 1999). Participants were instructed to indicate the direction of a central arrow that was flanked by congruent (same direction), incongruent (opposite direction), or neutral (nondirectional) stimuli. The flanker effect (FE) for both accuracy and RT were calculated using the formula (C – I) / (|C| + |I|), where C and I represent performance on congruent and incongruent trials, respectively.

Autistic-Spectrum Quotient (AQ) We administered the AQ test to measure participants' autistic traits (Baron-Cohen et al., 2001). We adopted the three-subscale model (English et al., 2020), including social skills, patterns/details, and communication/mindreading in our data analysis.

Eye Movement Analysis

Eye movement data was analyzed using EMHMM (Chuk et al., 2017; Hsiao, Lan, et al., 2021). For object recognition, since objects differed in shape, size, and location in the image, each participant's eye movement data in each trial was summarized using a HMM with personalized regions of interest (ROIs) and transition probabilities among the ROIs. For face recognition, since faces were aligned, following previous studies, each participant's eye movement data in all recognition trials of a category were summarized using an HMM. The optimal number of ROIs for each HMM was determined by the variational Bayesian expectation-maximization algorithm (VBEM; Bishop, 2006) from a preset range of 1 to 3. We examined participants' eye movement consistency using the overall entropy of the HMMs. Entropy is a measure of predictability; higher entropy indicates lower consistency (Cover & Thomas, 2006). Previous studies suggested the importance of early fixations in a face recognition trial than later fixations (Hsiao & Cottrell, 2008). Thus, we also measured the marginal entropy of the first fixation, the conditional entropy of the second fixation given the first fixation and of the third fixation given the second to examine the temporal dynamics of eye movement consistency (following Hsiao, Liao, et al., 2022).

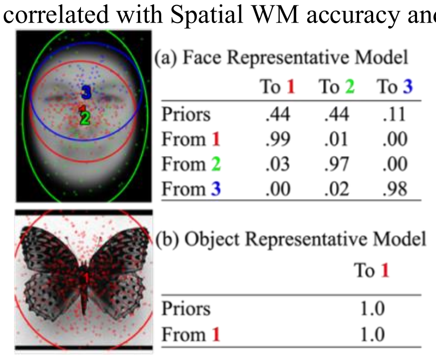
Results

Face Recognition

Figure 6a shows a representative model summarizing all participants' eye movements across all face categories. The model indicated three common regions of interest (ROIs): the face center/bridge of the nose (red), the eye region (blue), and the rest of the face area (green). The mean recognition accuracy was .49 (SD = .07), and the mean RT was 3.84 seconds (SD = 1.28).

We examined whether autistic traits were associated with eye movement consistency as measured by entropy. In contrast to our hypothesis, we found no significant associations (Table 1). This result suggested that within the range of autistic traits observed in NTs, AQ subscales[2] could not predict eye movement consistency, in contrast to what was observed in autistic individuals.

We then examined whether participants' autistic traits or cognitive abilities were associated with face recognition performance (i.e., accuracy and RT). We found no significant associations between any AQ subscales and face recognition accuracy/RT (Table 2). In contrast, face recognition RT was positively correlated with Spatial WM accuracy and GOR.



	To 1	To 2	To 3
Priors	.44	.44	.11
From 1	.99	.01	.00
From 2	.03	.97	.00
From 3	.00	.02	.98

	To 1
Priors	1.0
From 1	1.0

Figure 6: Representative models for (a) face recognition and (b) object recognition. Ellipses show ROIs as 2-D Gaussian emissions. Priors show probabilities of the first fixation landing on each ROI, and transition matrices show transition probabilities among the ROIs.

Table 1: Correlation between AQ scores and Entropy for Face Recognition

Variable	AQ-Total	AQ-SS	AQ-PD	AQ-CM
Overall Entropy	-.04	.03	-.04	.06
Marginal Entropy (1st Fix)	-.12	-.13	.02	-.05
Conditional Entropy (2nd Fix | 1st Fix)	-.00	-.13	-.03	-.08
Conditional Entropy (3rd Fix | 2nd Fix)	-.18	-.00	-.08	-.08

[2] The mean AQ Total was 19.10 (SD = 7.04; Range: 8 - 37).

Note. Fix = Fixation; SS = Social Skills; PD = Patterns/Details; CM = Communication/Mindreading.

Table 2: Correlation between face/object recognition accuracy/RT and AQ subscale scores/cognitive abilities.

Variable	Face Acc.	Face RT	Object Acc.	Object RT
AQ Total	.26	-.08	-.17	-.00
AQ Social Skills	.18	.11	-.05	.18
AQ-PD	.41	-.16	$-.32^{*}$	-.18
AQ-CM	.61	-.21	-.19	.11
ToL PPI	.37	.20	$.41^{**}$	.25
FE Acc.	-.10	.00	-.03	-.08
FE RT	-.10	.06	-.23	.17
Spatial WM Acc.	.24	$.28^{*}$	.16	.16
Spatial WM RT	.10	-.05	.15	-.05
Verbal WM Acc.	.05	-.01	.09	.16
Verbal WM RT	-.17	-.10	-.21	.03
GOR (*o*)	.11	$.29^{*}$	.22	$.34^{**}$

Note. $^{*}p < .05$, $^{**}p < .01$

Object Recognition

Figure 6b shows a representative model summarizing all participants' eye movements across all object categories. Since objects appeared in different sizes, shapes, and locations, on average, they had a large ROI at the image center. The mean recognition accuracy was .55 (SD = .07), and the mean RT was 4.44 seconds (SD = 1.51).

In eye movement consistency, we found that all entropy measures were positively correlated with AQ Social Skills (Table 3): higher AQ Social Skills, indicating lower social skills, was associated with less consistent eye movements.

When we examined whether autistic traits and cognitive abilities were associated with object recognition performance, we found that object recognition accuracy was negatively correlated with AQ Patterns/Details: those who reported greater attention to details and patterns showed poorer recognition accuracy. Also, object recognition accuracy was positively correlated with better planning ability in ToL (Table 2). To determine whether the association between AQ Patterns/Details and object recognition accuracy remained significant after controlling for cognitive abilities, we conducted partial correlation analyses controlling for planning ability. The results showed that the negative correlation between AQ Patterns/Details and object recognition accuracy remained significant, $r(56) = -.36$, $p = .007$. This finding suggests that local details may interfere with global processing required for discriminating visually similar objects at the subordinate level in the object recognition task. In RT, we found that it positively correlated with GOR (*o*).

Is the Relationship Moderated by Stimulus Type?

Here we found contrasting results between face and object recognition, where AQ Social Skills was only associated with eye movement consistency for object recognition, but not face recognition. To examine whether stimulus type moderated the relationship between AQ Social Skills and eye movement consistency, we conducted an exploratory moderated mixed-effects regression. The results showed that stimulus type significantly moderated the effect of AQ Social Skills on marginal entropy of the 1st fixation, $F(1, 54) = 5.02$, $p = .029$, conditional entropy of the 2nd fixation given the 1st fixation, $F(1, 54) = 6.07$, $p = .017$, and conditional entropy of the 3rd fixation given the 2nd fixation, $F(1, 54) = 4.10$, $p = .048$. For overall entropy, the moderation effect was not significant, $F(1, 54) = 2.87$, $p = .096$. This phenomenon suggested that the moderation effect may be stronger in the earlier fixations.

Table 3: Correlation between AQ scores and Entropy for Object Recognition

Variable	AQ-Total	AQ-SS	AQ-PD	AQ-CM
Overall Entropy	.21	$.28^{*}$	.09	.09
Marginal Entropy (1st Fix)	.23	$.28^{*}$	.10	.11
Conditional Entropy (2nd Fix | 1st Fix)	.22	$.28^{*}$	.10	.11
Conditional Entropy (3rd Fix | 2nd Fix)	.22	$.28^{*}$	.10	.11

$^{*}p < .05$

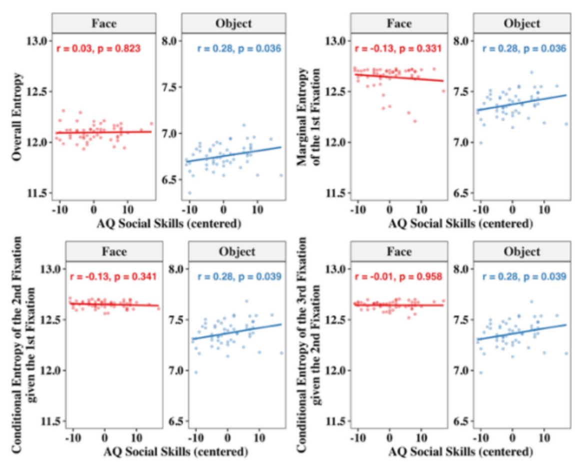


Figure 7: The scatterplots show the association between AQ Social Skills (mean-centered) and entropy measures for face and object recognition.

Discussion

Here we examined whether the association between AQ Social Skills and reduced eye movement consistency during face recognition, previously observed in autistic individuals, could also be observed in NTs, and whether a similar effect could be observed in object recognition. Hsiao et al.'s (2022) modeling study suggested that this association may be related to reduced interest in faces, which leads to reduced face recognition experience and less well-learned visual routines in autistic individuals. Accordingly, we hypothesized that a similar association may be observed in NTs, who also differed in AQ Social Skills, in face recognition; in contrast, this association may not be observed in object recognition, where neurotypicals differing in autistic traits may still have a similar experience. However, in contrast to our hypothesis, our results showed that individuals with higher scores in AQ-Social Skills exhibited significantly lower eye movement consistency during object recognition, whereas during face recognition, the correlations between any AQ scores and eye movement consistency were not significant.

The finding that neurotypical adults did not exhibit a similar association between AQ scores and eye movement consistency to autistic individuals in face recognition suggested that for neurotypicals, whose AQ scores fall within the lower range of the autistic spectrum, may have developed well-learned visual routines for faces that converge to a similar level of consistency (Figure 7) due to abundant experiences in face recognition. More specifically, healthy adults are found to have well-learned person-specific visual routines for face recognition (Or et al., 2015; Peterson & Eckstein, 2012; Wang et al., 2022; Chuk et al., 2017), which are impervious to transient mood changes (An & Hsiao, 2021). Also, adults who were compelled to deviate from their established visual routines for face recognition exhibited reduced recognition performance (Peterson & Eckstein, 2012). Consistent with these findings, adult face recognition performance is shown to have limited plasticity for improvement through training (Tree et al., 2017). This may be the reason why we failed to observe an association between eye movement consistency and AQ Social Skills in neurotypical adults. Indeed, consistent with previous studies (Hsiao, An et al., 2022), there was also no correlation between eye movement consistency and face recognition performance in neurotypical adults (r = .021, n.s.), in contrast to a positive correlation typically observed in children, who are still developing their visual routines for face recognition. Here we also found that adult face recognition performance was associated with spatial working memory and general object recognition ability as measured in o (Smithson et al., 2024), but not with AQ scores.

In contrast to face recognition, our results revealed that participants with higher AQ Social Skills exhibited less consistent visual routines during object recognition, despite the non-social nature of the stimuli and their comparable experience in object learning. Since NTs do not usually have as abundant experience in subordinate-level object recognition (such as distinguishing butterflies of different species) as compared with face recognition (where we frequently individuate faces), there appeared to be a larger variance in eye movement consistency (Figure 7), allowing the association with AQ Social Skills to emerge. This finding also suggested a link between social skills and subordinate-level visual object recognition. In addition to Social Skills, AQ Patterns/ Details was found to be associated with subordinate-level object recognition performance. This finding further confirmed the potential link between autistic traits and subordinate-level object recognition. Consistent with this finding, Scherf et al. (2008) showed that children with autism performed worse in subordinate-level recognition of a novel object type (Greebles) in addition to faces as compared with matched typically developing children, suggesting a domain-general deficit in subordinate-level visual object recognition. Indeed, atypical visual processing has been proposed to be a possible core mechanism underlying social cognitive deficits observed in autism (Mercado et al., 2020; Leekam, 2016; Mottron et al., 2006). For instance, research indicated that individuals with ASD often have weakened top-down expectations, leading them to rely more on raw sensory inputs rather than predictive prior information (Pellicano & Burr, 2012). This reliance can result in difficulties filtering sensory noise, causing idiosyncratic attention allocation and notably inconsistent eye movements (Schmitt et al., 2014; Pomè and Zimmermann, 2024). Some atypical perceptual processing observed in autistic individuals are found to be associated with their social cognitive deficits; for example, Linkenauger et al. (2012) demonstrated that the magnitude of perceptual-motor deficits strongly predicted the extent of social and communicative impairments in autistic individuals. Our results thus aligned well with these previous findings, and further suggested that these atypical perceptual processing may be particularly relevant to their subordinate-level object discrimination.

In conclusion, here we show that the association between eye movement consistency in face recognition and AQ Social Skills, previously observed in autistic individuals, was not observed in NTs. This phenomenon may be related to NTs' abundance experience in face recognition that has led to well-learned visual routines converged to a similar consistency level, obscuring the potential relationship. In contrast, NTs' eye movement consistency in subordinate-level object recognition was significantly correlated with AQ Social Skills. In addition, their subordinate-level object recognition performance was associated with AQ Patterns/Details. These results suggested a link between autistic traits and subordinate-level object processing, consistent with a domain-general view of autism where atypical visual processing may underlie the social cognitive deficits observed in autistic individuals. Our findings thus provide a possible mechanism linking autistic traits in visuoperceptual and sociocognitive domains. Future work may examine whether similar associations can be observed in autistic individuals.

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