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ORIGINAL PAPER

Realistic Drawing Talent in Typical Adults is Associated with the Same Kind of Local Processing Bias Found in Individuals with ASD

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Abstract A local processing bias has been found in individuals with autism as well as in typical children with a gift for drawing realistically. This study investigated whether a local processing bias in typical adults is more strongly associated with drawing realism or autistic-like traits. Forty-two adults made an observational drawing (scored for realism), completed four measures that assessed a local processing bias, and completed the Autism-spectrum Quotient (AQ) which assesses autistic-like traits. Drawing Realism score and not AQ score was associated with a local processing bias as shown by performance on two of the tasks. Typical adults who score high in the ability to draw realistically show the same kind of local processing bias found in individuals with ASD.

Keywords Autism · Local processing bias · Autistic traits · Drawing talent

Introduction

There is considerable evidence demonstrating that individuals with autism spectrum disorder (ASD) show a local processing bias, a tendency to focus on the local parts of an array rather than its overall structure. This is referred to as weak central coherence (Happé and Frith 2006). A local processing bias in individuals with ASD has been reported in four domains: perceptual, visuo-spatial, auditory, and verbal. However, it is unknown whether the local processing bias is domain-specific or domain-general.

Evidence for a visuo-spatial local processing bias in individuals with ASD comes from their reported performance on a variety of tasks requiring finding parts within wholes (Wang et al. 2007). Compared to those without ASD, individuals with ASD detect embedded figures more rapidly (Edgin and Pennington 2005; Jolliffe and Baron Cohen 1997; Mottron et al. 2003; Shah and Frith 1983), copy impossible figures more quickly (Mottron et al. 1999), and perform better on unsegmented versions of the Block Design Task (Caron et al. 2006; Pellicano et al. 2006; Shah and Frith 1993; Siegel et al. 1996).

The local processing bias has also been found in individuals not diagnosed with ASD but who show high autistic-like traits. Scores on the Autism-Spectrum Quotient (AQ) test are positively related to performance on the Embedded Figures Test (Grinter et al. 2009) and the Block Design Task when presented in the more difficult unsegmented form (Stewart et al. 2009). These findings are consistent with research suggesting that ASD represents the extreme end of a continuous distribution of traits in the general population (Constantino and Todd 2003; Mandy and Skuse 2008).

There is evidence that a bias towards processing information at the local level is one of the determinants of the ability to draw realistically. For example, the drawing savant E.C., described by Mottron and Belleville (1993), did not begin to draw a figure by sketching in the global outline. Rather, he constructed his drawings by adding contiguous parts in a "local progression" (p. 29), moving to an adjacent part before completing a part already begun. And when individuals with ASD not selected for drawing talent were asked to copy objects, they drew more local

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features at the beginning of their drawing sequence than did those without ASD (Mottron et al. 1999). This association between the local processing bias and realistic drawing skill could help to explain the often-reported finding of realistic drawing talent in individuals with ASD (Rimland and Fein 1988; Ropar and Mitchell 2002; Sacks 1995; Selfe 1977; Sheppard et al. 2007; Vital et al. 2009).

A local processing bias appears to underlie drawing talent not only in ASD populations but also in typical populations (Pring et al. 1995). When four groups of participants were compared—autistic individuals with and without drawing talent, and typical individuals with and without drawing talent, those with drawing talent (irrespective of diagnosis) were faster than those without talent at completing a jigsaw puzzle task and the Block Design Task (both tasks aided by a local processing bias).

Processing information at the local level also appears to be related to the ability to draw realistically in non-ASD children. Children with a gift for drawing realism performed at a superior level on Caron et al.'s (2006) modified version of the Block Design Task and on the Group Embedded Figures Test (Drake et al. 2010). This superiority occurred independently of verbal IQ, age, and years of art lessons. Talent in drawing was also associated with higher scores on the restricted and repetitive behaviors and interest scale of the Childhood Asperger Syndrome Test (CAST). Taken together, these findings demonstrate that a local processing bias is not restricted to ASD, but also extends to typically developing children and adults talented in realistic drawing.

Thus, previous research has demonstrated that a local processing bias is associated with drawing talent (Drake et al. 2010; Pring et al. 1995) as well as autistic-like traits (Grinter et al. 2009; Stewart et al. 2009). The primary goal of the study reported here was to replicate these findings and determine which characteristic –autistic-like traits or drawing talent—is the strongest predictor of a local processing bias. If it can be shown that drawing talent is the strongest predictor, it will be necessary to revise the view of the local processing bias as a trait specific to individuals with autism spectrum disorder, and to understand local processing bias as a strength rather than a deficit.

A secondary goal of this study was to determine whether there are developmental changes in the relationship between a local processing bias and drawing talent. There is some evidence that drawing strategy becomes more global with age (Akshoomoff and Stiles 1995; Waber and Holmes 1985). Thus we sought to determine whether a local processing bias and drawing realism talent were strongly associated in adulthood, as has previously shown to be in childhood (Drake et al. 2010).

We examined the association between both realistic drawing talent and autistic-like traits in a sample of typical adults, using four measures of local processing bias. Participants also completed a questionnaire, the Autism-Spectrum Quotient, that assessed autistic-like traits.

Method

Participants

Participants were 42 undergraduates (30 women, 12 men) ranging in age from 18 to 21 ($M = 19.3$, SD = .9). Participants were recruited from undergraduate psychology classes and received research credit as part of a course requirement. The sample consisted primarily of students from middle- to upper-middle class, well-educated families.

Procedure

Participants were seen individually for 1.5–2.0 h. For all tasks, the participant and the experimenter were seated next to each other at a table.

Years of Art Lessons

Participants were asked to indicate on a questionnaire the number of years of art lessons they had taken in addition to the ordinary school curriculum.

Autism-Spectrum Quotient

Participants completed the Autism-Spectrum Quotient (AQ) (Baron-Cohen et al. 2001), a self-report measure that assesses autistic-like traits in non-clinical settings. Items are rated on a 4-point scale from "definitely agree" to "definitely disagree". The AQ yields scores ranging from 0 to 50, with higher scores indicating more autistic-like traits. A score of 32 or above represents clinically significant autistic-like traits. Using DSM-IV criteria, items were divided into three scales: Social Impairments (SI), Communication Impairments (CI), and Restricted Repetitive Behaviors and Interests (RRBI) (American Psychological Association 1994; Ronald et al. 2006). Analyses were performed first on the overall score and then on subscale scores.

Drawing Realism Task

Participants were given a 9″ × 11″ sheet of white paper and a sharpened pencil with an eraser and were asked to draw a still-life consisting of a corkscrew and six connected transparent cylinders, one of which contained a branch of dried leaves (Fig. 1). These objects were chosen

Fig. 1 Still-life model

because they were difficult to draw: the leaves were irregular and organically shaped; the corkscrew was a complex object; and the way in which the cylinders connected and occluded one another was challenging. These objects were placed in the same position for each participant. The drawing paper was placed directly in front of the participant and the objects were placed on a piece of same-sized white paper about two inches to the left of the participant's sheet of drawing paper. Participants were instructed to look at the "still life" and draw what they saw for up to 15 min.

Drawings were independently rated by two experimenters for elements that were characteristic of artistically gifted drawings (Milbrath 1998; Winner 1996). The elements included: (a) use of line to indicate edge rather than use of line to stand for object (e.g., drawing the curlicue of the corkscrew with two lines, drawing the stem with two lines); (b) detail (e.g., drawing square-shaped rather than rounded gears, drawing at least one organically shaped leaf rather than a stereotyped circle for a leaf); (c) foreshortening (e.g., shortening the base of the corkscrew, drawing the tops of the cylinders as ellipses rather than circles); (d) occlusion (e.g., one demonstration of occlusion of one part of the corkscrew by another, drawing the back row of cylinders behind the front row); and (e) modeling (e.g., shaping the gears of the corkscrew, rounding the cylinder tubes to appear three-dimensional). Participants were also scored on three additional elements: (f) drawing the bottom clamp of the corkscrew; (g) drawing the corkscrew and cylinder on the same plane; and (h) drawing the corkscrew and cylinder in proportion to one another.

One point was awarded for each element successfully drawn, for a total possible score of 13 (five characteristics $\times$ two objects scored + three additional elements = 13). All participants completed the corkscrew, vase, and leaves in the time allotted. Thus, participants were scored on all elements. For each participant, a proportion score was calculated by dividing the number of correct elements drawn by the total number of elements (13). Participants received a continuous score ranging from 0% to 100%. Inter-rater reliability was calculated at $\Phi = .80$. The experimenters resolved disagreements by reviewing the drawings and coming to a consensus.

Measures of Local Processing Bias

Block Design Task

Caron et al.'s (2006) modified version of Wechsler Intelligence Test Block Design Task was administered. In this task, participants must mentally segment the image in order to construct the design with the available blocks. The items vary in perceptual cohesiveness (minimal, intermediate, and maximal) and number of blocks (4, 9, and 16). In the minimally cohesive items, the boundary between red and white always co-occurred with the edge separating two blocks, making it easy to see each block as a unit. Minimally cohesive items are easily solvable: participants must match each square to a block, and do not require the ability to analyze a whole into its parts since the parts clearly emerge from the figure to be reproduced. In the maximally cohesive items, the boundary between red and white never co-occurred with the edge separating two blocks, making it difficult to see the contribution of each block as a unit. Maximally cohesive items require analysis of a whole into its parts (blocks) by spontaneous mental segmentation since the edges do not provide natural segmentation information. Intermediate cohesive items have about 50% of same colored adjacencies.

The task was presented first in traditional unsegmented form and then in segmented form with the units of the design separated from one another by 1/3 of the width of each unit (Shah and Frith 1993) (see Fig. 2 for an unsegmented and segmented version at the three levels of cohesiveness). The unsegmented version was always administered first in order to avoid a facilitation effect (Caron et al. 2006; Shah and Frith 1993). Time limit differed by number of blocks to be used: 120, 180 and 240 s for 4, 9, and 16 blocks respectively. Participants were presented with 18 unsegmented items and 18 segmented items. For the unsegmented and segmented designs, six

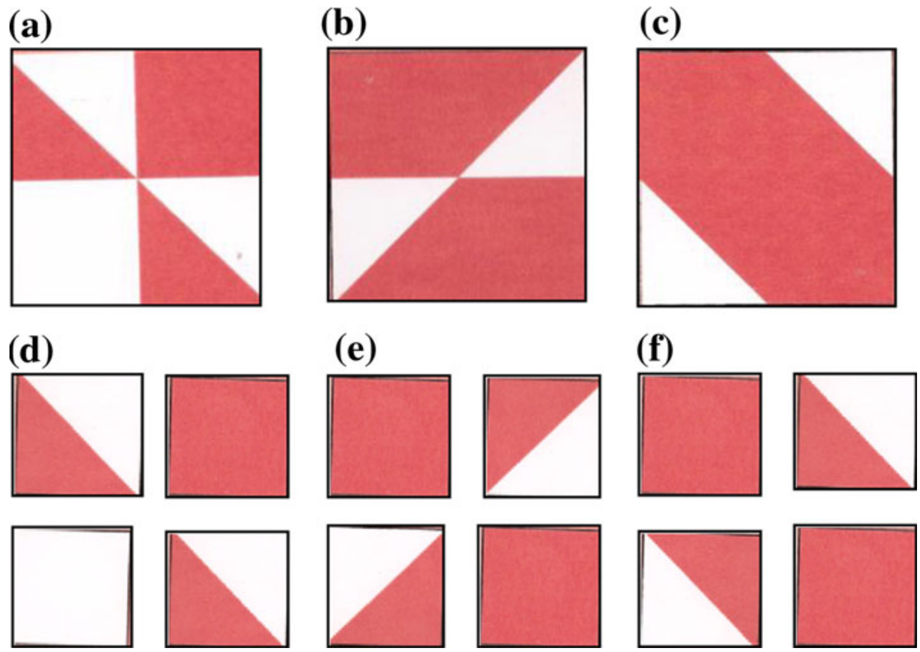

Fig. 2 Unsegmented minimally cohesive item (**a**); Unsegmented intermediate cohesive item (**b**); Unsegmented maximally cohesive item (**c**); Segmented minimally cohesive item (**d**); Segmented intermediate cohesive item (**e**); Segmented maximally cohesive item (**f**)

items were presented at each level of cohesiveness (six minimal, six intermediate, and six maximal). Participants received one point for each design correctly constructed, and construction times were recorded.

Incidental Visual Memory

Incidental memory for the unsegmented figures from the Block Design Task was assessed 30 min after completion of the Block Design Task using a computerized memory test designed by Caron et al. (2006). The maximally cohesive items form coherent patterns while the minimally cohesive items form fragmented patterns. Superior memory for the minimally cohesive items would indicate a local processing bias.

Participants were seated in front of a laptop computer and were presented with 36 designs, one at a time, and were asked to indicate by a key press whether or not they had seen it before. Half of the designs were from the Block Design Task and half were distractors. Distractors were items the participants had not seen before but that were matched to the Block Design Task items on perceptual cohesiveness and size. Participants received one point for correct identification as well as for correct rejection, and reaction times were recorded.

Group Embedded Figure Test

The Group Embedded Figure Test (GEFT) was administered (Witkin et al. 1971). Participants were presented with a geometric shape and were asked to find it in a complex figure (Fig. 3). They were told that when they saw the

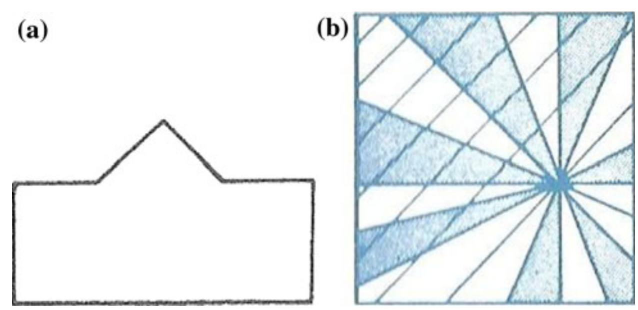

Fig. 3 Simple shape (**a**) that must be found in the complex figure (**b**) from the Group Embedded Figure Test

shape they should trace the geometric shape within the complex figure. To succeed, one must avoid the global pattern and focus on the local details. The test consisted of 7 control items followed by 18 test items. Participants were given 2 min to complete the control items and then 10 min to complete the test items, and were instructed to trace the shape completely and erase all mistakes. Participants were told to complete the items in the order presented and were not allowed to skip items. One point was given for each correctly traced item, with a maximum score of 18.

Copy Task

Participants were given a pencil without an eraser and were asked to copy four drawings–two objects and two nonobjects (Mottron et al. 1999). Nonobjects were created by decomposing the objects features (i.e., lines, curves) and regrouping the features into a new two-dimensional design (Fig. 4). Participants were told to copy the pictures as

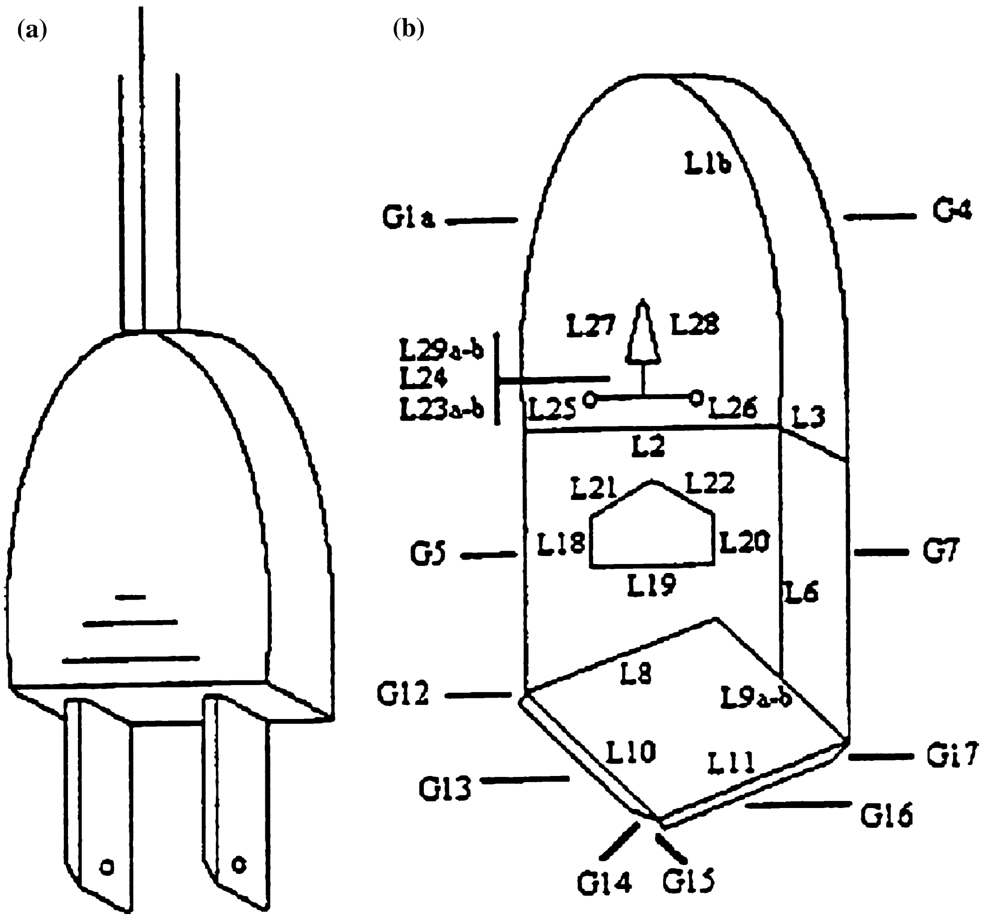

Fig. 4 Copy Task stimuli and scoring procedure for a nonobject. **a** is an object and **b** is a nonobject. Each line is labeled with either a L or G that corresponds to a local (L) or global (G) feature

quickly and accurately as possible and were given a maximum of 3 min to copy each picture. Drawings were videotaped and copy times recorded.

Using a scoring system developed by Mottron et al. (1999), drawings were scored for graphic hierarchization. Graphic hierarchization was assessed by calculating the mean proportion of local and global features correctly copied during the first third set of features copied, followed by the second third, and by the last third. For each third, the number of local and global features correctly copied was calculated. This enabled us to determine whether participants with drawing talent drew local features before global ones, a tendency reported in individuals with ASD (Mottron et al. 1999).

Reliability was established on 49% ($n = 17$) of the videotapes. Inter-rater reliability was calculated at $\Phi = .95$. The experimenters resolved disagreements by reviewing the videotapes and coming to a consensus. Seven of the Copy Task drawings were found to be unusable due to poor quality videotapes. The Drawing Realism scores of those whose Copy Task drawings could not be used ($n = 7$) did not differ significantly from the Drawing Realism scores of those participants whose Copy drawings were included ($n = 35$), F (1, 40) = 1.881, $p = .178$.

Tasks were administered in the following order: Block Design Task, Drawing Realism Task, Copy Task, Incidental Visual Memory, and Group Embedded Figure Test.

Results

Preliminary Analyses

Table 1 presents the means and standard deviations for years of art lessons, Drawing Realism score, AQ score, and the Block Design Task. Participants had an average Drawing Realism score of .48 (range = 0.21–0.79; SD = .15) and .29 years of art lessons (range = 0–4; SD = .83 years). Because 88% of the sample had less than 1 year of formal art lessons, that measure was omitted from subsequent analyses.

One-sample t tests showed that performance was not at ceiling for any of the items on the Block Design Task or the Group Embedded Figure Test: Mean scores were always significantly different from the highest possible score of 6 for each item type (e.g., unsegmented minimally cohesive, unsegmented intermediate cohesive, unsegmented maximally cohesive, segmented minimally cohesive, segmented

Table 1 Means and standard deviations for years of art lessons, drawing realism score, AQ score, and the block design task

	M	SD
Years of art lessons	.29	.89
Drawing realism score	.49	.15
AQ score	16.6	5.5
Block Design Task unsegmented		
Accuracy	17.0	1.3
Construction time	32.1	11.0
Block Design Task segmented		
Accuracy	17.0	1.3
Construction time	18.7	4.9

Construction time is in seconds

intermediate cohesive, segmented maximally cohesive) on the Block Design Task ($p < .023$) and the highest possible score of 18 on the Group Embedded Figure Test ($p < .001$).

Block Design Task

Regression analyses were conducted to examine whether Drawing Reaism score and/or AQ score were associated with a local processing bias (Table 2). Two measures of local processing bias on the Block Design Task were used: a segmentation difference score and a cohesiveness difference score. A difference score was calculated for both accuracy and construction time.

The segmentation accuracy difference score was computed by subtracting the accuracy on the segmented version of the task from the accuracy on the unsegmented version (following Drake et al. 2010). Participants copied 18 unsegmented items and 18 segmented items. Since the unsegmented version is harder than the segmented version we would expect a negative score for each participant. The closer the score approaches zero, the stronger the local processing bias. Drawing Realism and AQ scores were regressed onto the segmentation accuracy difference score. Contrary to our hypothesis, neither Drawing Realism score ($p = .488$) nor AQ score ($p = .210$) were related to the segmentation accuracy difference score.

The segmentation accuracy difference score was calculated based on items at all three levels of perceptual cohesiveness (minimal, intermediate, maximal). Minimally cohesive items, the lowest level of cohesiveness, are already presegmented and thus should be unaffected by presentation in segmented version. For this reason, the segmentation accuracy difference score may not be the most sensitive measure of the ability to mentally segment a complex design. We therefore computed a more sensitive measure of a local processing bias—a cohesive accuracy difference score—by subtracting accuracy on the unsegmented minimally cohesive items from accuracy on the unsegmented maximally cohesive items. Participants copied six unsegmented maximally cohesive items and unsegmented six minimally cohesive items. Since the maximally cohesive items are harder than the minimally cohesive items we would expect a negative score for each participant. The closer the score approaches zero, the stronger the local processing bias. Drawing Realism and AQ scores were regressed onto the cohesive accuracy difference score. Our hypotheses were partially supported: Drawing Realism score ($\beta = .330$, $p = .031$) but not AQ score ($p = .195$) predicted the cohesive accuracy difference score.

Segmentation and cohesiveness difference scores were also computed for construction time (Table 2). We calculated a mean construction time score for items that the participants correctly copied. Drawing Realism and AQ scores were regressed onto the segmentation and cohesiveness construction time difference scores. Contrary to

Table 2 Regression coefficients for accuracy and construction time on the Block Design Task, and accuracy on the incidental visual memory

	Block Design Task				Incidental visual memory
	Segmentation accuracy difference	Cohesiveness accuracy difference	Segmentation construction time difference	Cohesiveness construction time difference	Cohesive memory accuracy difference
Mean (SD)	−.02 (1.55)	.19 (.92)	13.35 (8.86)	21.92 (18.86)	2.98 (1.77)
Predictors					
Drawing realism score	.109	.330*	−.216	−.223	−.006
AQ score	.199	−.195	−.091	−.134	−.347*
R^2	.05	.152*	.053	.065	.120[t]

Segmentation accuracy difference = Unsegmented correct—Segmented correct; Cohesive accuracy difference = Maximally cohesive unsegmented correct—Minimally cohesive unsegmented correct; Reaction time is in seconds for the block design task; Reaction time for the incidental visual memory task is in milliseconds

* $p < .05$

our hypothesis neither Drawing Realism score nor AQ score were related to the segmentation construction time difference score ($p = .132$, $p = .147$, respectively) or to the cohesiveness construction time difference score ($p = .158$, $p = .394$, respectively).

Incidental Visual Memory

Drawing Realism and AQ scores were regressed onto the cohesiveness memory accuracy difference score (maximally cohesive items minus minimally cohesive items). AQ score ($\beta = -.347$, $p = .026$) and not Drawing Realism score ($p = .969$) predicted the cohesiveness memory accuracy difference score (Table 2).

Group Embedded Figure Test

Drawing Realism and AQ scores were regressed onto the GEFT accuracy scores. Accuracy on the GEFT was predicted by Drawing Realism score ($\beta = .448$, $p = .003$) but not by AQ score ($p = .354$) (Table 3).

Copy Task

Drawing Realism and AQ scores were regressed onto the proportion of local and global features copied to determine whether they were associated with copying local features before global ones, as has been found with autistic adults (Mottron et al. 1999). A regression was performed separately for each copying section. Contrary to our hypothesis, neither Drawing Realism score nor AQ score predicted the mean proportion of local or global features copied in the objects or non-objects (Table 4).

Table 3 Regression coefficients for accuracy on the GEFT

	GEFT accuracy
Mean (SD)	12.3 (4.7)
Predictors	
Drawing realism score	.448**
AQ score	.133
R^2	.214**

** $p < .01$

Autism-Spectrum Quotient

Correlations were performed to determine whether Drawing Realism score was associated with higher scores on the subscales of the AQ. Neither AQ score nor the subscales were associated with Drawing Realism score.

Thus, we found that Drawing Realism score (but not AQ score) predicted both cohesiveness accuracy difference score and Group Embedded Figure Test accuracy score. However, scores on the AQ (but not Drawing Realism score) predicted the cohesiveness memory accuracy difference score.

Discussion

The present study investigated whether a tendency to process visual information locally is more strongly associated with Drawing Realism score or AQ score. Results showed that adults with a higher score in Drawing Realism show the same local processing bias as has been reported in individuals with ASD (Wang et al. 2007) and in typical children with autistic-like traits (Drake et al. 2010). Drawing Realism score was related to performance on the Block Design Task and Group Embedded Figure Test and it did so independently of the score on the Autism-spectrum Quotient. We also found that the score on the AQ was unrelated to Drawing Realism score. This finding is in contrast to what has been found with children with extreme drawing talent (Drake et al. 2010).

In Drake et al.'s (2010) study, parents of children gifted in drawing realistically reported more restricted and repetitive behaviors and interests in their children than do

Table 4 Regression coefficients for drawing sequence in the copying of objects and nonobjects

	Objects				Nonobjects			
	Local first third	Global first third	Local last third	Global last third	Local first third	Global first third	Local last third	Global last third
Mean percentage (SD)	.21 (.03)	.12 (.03)	.22 (.04)	.11 (.04)	.14 (.05)	.22 (.05)	.20 (.06)	.12 (.06)
Predictors								
Drawing realism score	.018	.039	.149	−.057	.123	.189	−.031	−.079
AQ score	.075	−.009	−.079	.080	−.033	.151	−.077	.065
R^2	.006	.001	.024	.008	.015	.069	.008	.009

parents of typical children without drawing talent. However, in this study, many of the children included had extreme talent for realistic drawing. It is quite possible that the adults in the present study did not, as children, display the same extreme levels of talent as those studied by Drake et al. If so this could explain why there was no association between our adult participants' Drawing Realism scores and their scores on the AQ. In other words, we suggest that a relationship between Drawing Realism and AQ may be found only in those prodigy-like individuals whose gifts in drawing emerge strikingly in early childhood.

On the Caron et al. (2006) Block Design Task, adults with higher Drawing Realism score benefited less from the minimally cohesive items (and less cohesive items make the task easier) than did those with a lower Drawing Realism score. A higher Drawing Realism score protected participants from the added difficulty caused by increased perceptual cohesiveness of the items. This conclusion is consistent with Pring et al. (1995), who found that art talent rather than ASD diagnosis predicted superior performance on a puzzle task, and with Drake et al. (2010), who showed that the local processing bias found in ASD is also found in typically developing children talented in drawing realistically.

We found a similar result with the Group Embedded Figure Test. Those more skilled in drawing were able to detect a simple shape in a complex pattern with greater accuracy. Once again, this suggests that adults with a higher score in observational drawing show the same kind of local processing bias/visual analysis skills as do individuals with ASD.

While Drake et al. (2010) found that children talented in drawing realistically copied local features early on when copying drawing of objects, we did not find this here. On the Copy Task, neither Drawing Realism score nor score on the AQ test was related to drawing strategy—defined here as the sequence in which local versus global features are copied in the objects and non-objects. This lack of replication may be explained by the finding that drawing strategy becomes more global with age (Akshoomoff and Stiles 1995; Waber and Holmes 1985). It is possible that strengths in both global as well as local processing are associated with the ability to draw realistically in non-ASD adults, while only strengths in local processing are associated with the ability to draw realistically in ASD adults. However, it must be pointed out that the relation between drawing strategy and ASD has not been clearly demonstrated. While some researchers have found that adults with ASD copy more local features early on in their drawings than do non-ASD adults (Mottron et al. 1999), others have failed to replicate this finding (Jolliffe and Baron Cohen 1997; Ropar and Mitchell 2001; Sheppard et al. 2007).

On the incidental visual memory task, score on the AQ test and not Drawing Realism score was associated with memory for the local items. This finding is consistent with Caron et al. (2006) who showed that individuals with ASD have enhanced visual memory for fragmented images. It is possible that recalling unusual details (as in the incidental visual memory task) and noticing unusual details (as in the observational drawing task) involve different skills. The latter involves visual analysis while the former involves visual memory. It is also possible that visual memory is not important for realistic drawing since the model is present and a person does not have to hold the image in long-term visual memory (O'Connor and Hermelin 1990).

Our research demonstrates that talent for drawing realistically is associated with superior performance on the Block Design Task and the Group Embedded Figures Test. Matching a two-dimensional picture with a two-dimensional pattern of blocks is quite different from translating from a three-dimensional still-life to a two-dimensional surface representation (as was required by the still-life drawing task). Detecting a shape hidden in a complex figure is very different from observing a three-dimensional still-life and creating a two-dimensional representation. However, the Block Design Task and Group Embedded Figure Test and the task of drawing realistically require that one look carefully at the model and break it into its component parts. Our research suggests that adults talented in drawing realistically use their visual analysis skills to create a realistic two-dimensional representation of a three-dimensional model.

We conclude that adults who score higher in the ability to draw realistically show the same kind of local processing bias that has been found in individuals with ASD. Yet these adults do not score high on the AQ test. The only outcome in this study associated with scores on the AQ test was superior visual memory for complex designs.

Future research should determine the generality of the local processing bias associated with drawing talent by examining performance on a wider range of local processing tasks, and by designing studies that pit drawing talent against scores on the AQ test. Future research should also investigate whether talent in drawing is associated with a local processing bias and global deficit (weak central coherence) or whether talent in drawing, irrespective of diagnosis, is associated with a local processing bias along with intact global processing (enhanced perceptual functioning).

Two opposing theories have been proposed to account for the local processing bias in individuals with ASD. According to weak central coherence individuals with ASD have a local processing bias that comes at the expense of the ability to focus on the global whole (Happé and Frith 2006). According to enhanced perceptual functioning, individuals with ASD have a local processing bias but are able to focus on the global features of a stimulus (Mottron and Burack 2001). Presumably, non-ASD individuals with drawing talent would demonstrate performance consistent with enhanced perceptual functioning (i.e., local processing bias and intact global processing). It is possible that drawing talent in ASD individuals may account for the two opposing theories: ASD individuals with drawing talent may demonstrate performance consistent with enhanced perceptual functioning and ASD individuals without drawing talent may demonstrate performance consistent with weak central coherence.

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