

Electronic supplementary material

Table S1. Group demographics

	Low AQ	High AQ	Clinical
<i>n</i>	15	15	15
Age (years)	30.20 (7.31)	29.87 (8.61)	29.27 (9.17)
Gender (f:m)	8:7	5:10	4:11
AQ			
Sociability	19.27 (3.52)	25.73 (6.89)	28.47 (8.55)
Mentalising	8.47 (1.64)	11.60 (3.31)	14.87 (4.32)
Detail Orientation	10.53 (3.02)	16.67 (3.92)	17.60 (3.85)
Total (likert-scored)	86.80 (10.08)	117.60 (11.64)	132.87 (24.68)
Total (binary-scored)	8.07 (3.96)	22.13 (5.74)	28.60 (10.47)
RAADS-R			
Social Relatedness	–	–	23.93 (12.21)
Circumscribed Interests	–	–	45.73 (16.72)
Sensory Motor	–	–	24.40 (10.74)
Social Anxiety	–	–	20.67 (10.17)
Total	–	–	113.40 (34.30)
SRS-2			
Social Awareness	–	–	59.27 (12.09)
Social Cognition	–	–	62.40 (12.97)
Social Communication	–	–	61.80 (16.32)
Social Motivation	–	–	62.60 (13.36)
RIRB	–	–	67.67 (13.89)
Total	–	–	64.93 (13.29)

Means and standard deviations are shown for continuous variables. Abbreviations: AQ: Autism-Spectrum Quotient [1] (see [2] for description of the subscales reported here); RAADS-R: Ritvo Autism Asperger Diagnostic Scale-Revised [3]; RIRB: Restricted Interests and Repetitive Behavior subscale; SRS-2: Social Responsiveness Scale, Second Edition [4] (SRS T-scores from self ratings are reported here). Four individuals in the clinical group reported co-morbidities (1 depression; 1 anxiety disorder; 1 depression/anxiety disorder; 1 depression/anxiety disorder/dissociative disorder/dyslexia). Co-morbid depression and anxiety are common in ASD [5], thus the sample is likely better representative of the general ASD population with these individuals included. Four clinical participants were medicated (1 serotonin-norepinephrine reuptake inhibitor; 1 lithium/atypical antipsychotic/benzodiazepine; 1 selective serotonin reuptake inhibitor/typical antipsychotic/benzodiazepine; 1 atypical antipsychotic/anticholinergic).

Supplementary results

Illusion ratings

Further to the three-way interaction between statement type, stimulation type and group reported for illusion ratings in the main text: Post-hoc t-tests indicated that all three groups showed (i) increased illusion ratings following synchronous stimulation compared to asynchronous stimulation, and (ii) that illusion ratings were greater than control ratings for synchronous stimulation but not for asynchronous stimulation. These tests are reported below in table S2.

In addition to the interaction effects for illusion ratings reported in the main text, there was a main effect of statement type, $F(1, 42) = 45.73, p < .0001, \eta^2_p = .52$. Illusion statements ($M = 8.26, SD = 4.00$) were rated higher than control statements ($M = 6.00, SD = 2.95$). There was also a main effect of stimulation type, $F(1, 42) = 127.64, p < .0001, \eta^2_p = .75$. Synchronous stimulation ($M = 9.63, SD = 3.98$) was associated with higher statement ratings than asynchronous stimulation ($M = 4.62, SD = 3.30$). All other main and interaction effects were non-significant ($p > .05$).

Further reach analysis

The full width at half maximum parameter was not associated with significant main or interaction effects for either sub-movement ($p > .05$).

To further examine the relationship between autistic characteristics and the features of movement that differed between the clinical and nonclinical (High AQ) groups across the illusion and control conditions, a standard regression was performed with AQ score as the dependent variable and movement features (integrated jerk, time to peak velocity of the first sub-movement, and onset time of the second sub-movement) as the independent variables. Unsurprisingly, given their mutual relationship to movement initiation, there was strong evidence for multicollinearity between the time to peak velocity and onset time variables based on their Pearson's correlation ($>.7$), tolerance ($<.10$) and variance inflation factor (>10). The onset time variable was thus omitted from the regression analysis. The scatterplot of standardized residuals and Mahalanobis distances indicated a single extreme outlier, which was removed from the analysis. The total variance explained by the model was small and non-significant, $R^2 = 9.3\%$, $F(2, 39) = 2.01, p = .15$. Neither integrated jerk ($\beta = .20, p = .19$) nor time to peak velocity of the first sub-movement ($\beta = .22, p = .15$) made a significant unique contribution. Thus, while these features of movement differed across groups as described earlier, there was not evidence that they shared a linear relationship with AQ scores across the sample when combining clinical and nonclinical individuals.

Peak lateral displacement (mm) away from the prosthetic arm was examined with a 2 x 3 mixed ANOVA containing stimulation type (synchronous versus asynchronous) and group (Low AQ versus High AQ versus Clinical) as factors. Synchronous stimulation was associated with greater peak lateral displacement ($M = 74.90, SD = 14.58$) than asynchronous stimulation ($M = 71.00, SD = 15.05$), $F(1, 40) = 9.56, p =$

.004, $\eta^2_p = .19$, $\eta^2_G = .02$. No other main or interaction effects were significant ($p > .05$).

Table S2. Post-hoc *t*-tests for three-way interaction

	<i>M</i> (<i>SD</i>)	<i>t</i> (df)	<i>p</i>	Hedges' <i>g</i> _{av}
<i>Low AQ</i>				
Illusion ratings (Synch)	13.81 (5.04)	9.20 (14)	<.0001	2.49
Illusion ratings (Asynch)	3.28 (3.20)			
Illusion ratings (Synch)	13.81 (5.04)	7.66 (14)	<.0001	1.90
Control ratings (Synch)	6.44 (2.50)			
Illusion ratings (Asynch)	3.28 (3.20)	-3.87 (14)	<.01	0.55
Control ratings (Asynch)	4.82 (2.26)			
<i>High AQ</i>				
Illusion ratings (Synch)	9.82 (6.10)	4.94 (14)	<.001	1.14
Illusion ratings (Asynch)	3.74 (4.24)			
Illusion ratings (Synch)	9.82 (6.10)	3.97 (14)	<.01	0.70
Control ratings (Synch)	6.29 (3.70)			
Illusion ratings (Asynch)	3.74 (4.24)	-1.69 (14)	.11 (n.s.)	0.21
Control ratings (Asynch)	4.56 (3.46)			
<i>Clinical</i>				
Illusion ratings (Synch)	13.93 (4.75)	6.32 (14)	<.0001	2.01
Illusion ratings (Asynch)	4.95 (3.93)			
Illusion ratings (Synch)	13.93 (4.75)	5.13 (14)	<.001	1.56
Control ratings (Synch)	7.50 (3.26)			
Illusion ratings (Asynch)	4.95 (3.93)	-2.61 (14)	<.05	0.40
Control ratings (Asynch)	6.38 (3.03)			

References

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4. Constantino J.N., Gruber C.P. 2012 *Social Responsiveness Scale, Second Edition*. Los Angeles, CA, Western Psychological Services.
5. Matson J.L., Williams L.W. 2014. Depression and mood disorders among persons with Autism Spectrum Disorders. *Research in Developmental Disabilities* **35**, 2003-07.