

Reasoning in social versus non-social domains in relation to autistic traits

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INTRODUCTION

Reasoning is an area in which autistic people tend to show preserved or enhanced abilities [1]. Autistic people and those who self-report higher levels of autistic traits are more likely to reason more rationally (objectively and bias-free) than non-autistic people and those who self-report lower levels of autistic traits. [2].

We adapted a moral reasoning task [3] to examine:

- whether reasoning differs in social versus non-social domains,
- whether such differences correlate with autistic traits.

METHODOLOGY

Experiment 1

N = 72 (F: 60, M: 12)
 over Zoom, with the researcher

Experiment 2

N = 217 (F: 191, M: 23, NB: 3)
 online, alone

For both experiments, young adults from the general population:

- first, completed **The Adult Autism-Spectrum Quotient** [AQ-50] to self-report their levels of autistic traits [4];
- then, completed **The Comparison Task** which includes several comparisons of scenarios representing social and non-social relationships.

The Comparison Task

Each scenario had three lines of information: (1) the first contained character-based information, (2) the second behaviour-based information, and (3) the third scenario outcome. Scenarios followed either (a) inconsistent or (b) consistent structure.

a. Example inconsistent comparison in social domain.

(1) Lisa is a generous girl who likes to do nice things for people.	Emma is an annoying girl who likes to play jokes on other people.
(2) She put a lot of salt in her dad's coffee to see her dad's reaction.	She put a lot of sugar in her dad's coffee as a treat for him.
(3) Her dad frowned after drinking the coffee, which was disgusting.	Her dad frowned after drinking the coffee, which was disgusting.
Which child is worse?	
<input type="radio"/> Lisa	<input type="radio"/> Emma

b. Example consistent comparison in non-social domain.

William has a pair of good quality running shoes.	Callum has a pair of low quality running shoes.
They felt comfortable after a five-mile run.	He had a blister after a short run.
He has been running happily for a month without any injuries.	He has been running happily for a month without any injuries.
Whose running shoes are better?	
<input type="radio"/> William	<input type="radio"/> Callum

Participants made a judgment on which (a) person (e.g., Lisa or Emma) or (b) object (e.g., William's or Callum's running shoes) was "better" or "worse". We calculated the % of behaviour-based responses for these forced-choices.

For **Experiment 2**, we asked for written justifications for participants' judgments. We coded those that were exclusively character-based, those that were exclusively behaviour-based, and those based on a mix of both character and behaviour. We calculated the % for each category.

RESULTS

In both experiments, the non-social domain received higher proportion of behaviour-based judgments compared to the social domain, suggestive of more rational responses (Figure 1).

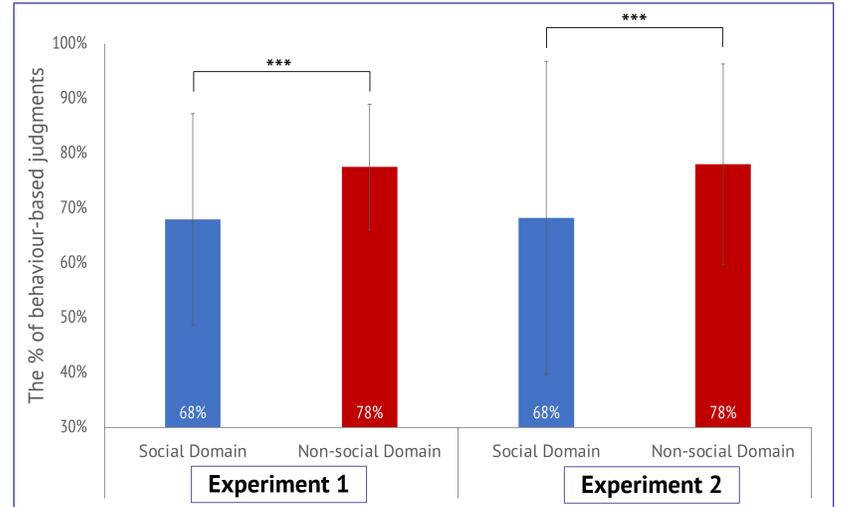


Figure 1. Ms and SDs for inconsistent scenarios, *** $p < .001$

We found that higher levels of autistic traits correlate with higher reliance on behaviour-based information in social domain (Figure 2), and did not find this correlation in non-social domain. When the experiment was run with a **bigger sample, requested justification** and completed **alone**, there was no significant relationship.

Experiment 1

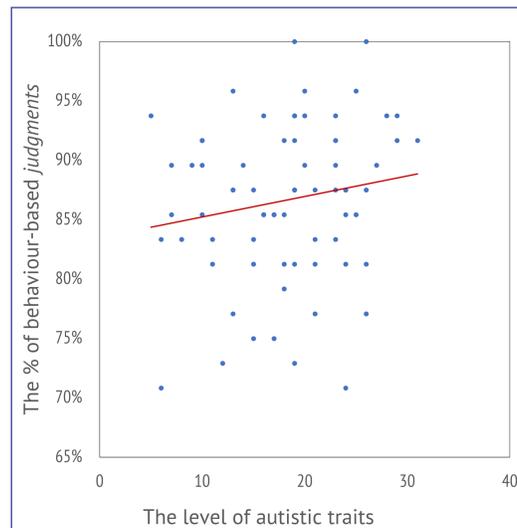


Figure 2. Social domain, $r_s(70) = .357, p < .01$

Experiment 2

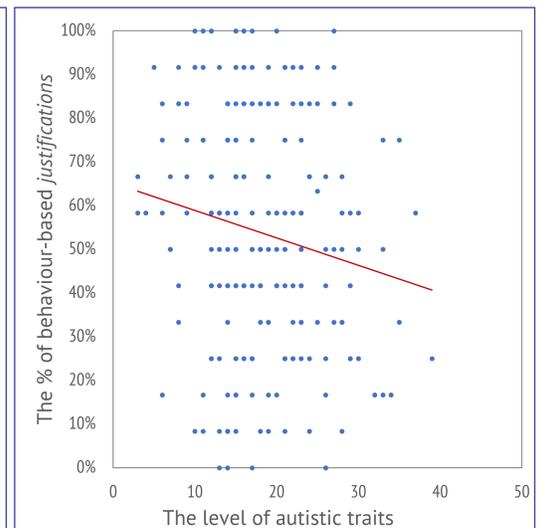


Figure 3. Non-social domain, $r_s(215) = -.155, p < .05$

When providing justification for judgments made in the non-social domain, participants were more likely to rely on both character- and behaviour-based information, compared to justifications given in social domain, where participants relied more on character-based information.

There was a surprising significant negative correlation between the level of autistic traits and the proportion of justifications that relied exclusively on behaviour-based information in non-social domain (Figure 3).

CONCLUSION

There seem to be different patterns people follow when making moral judgments in social versus non-social domains, with more rational judgments made in the latter. That has been replicated by showing that participants relied on behaviour-based information more in the non-social domain.

The relationship between rationality and level of autistic traits is complex. It is not clear whether people who self-report higher levels of autistic traits use different strategies for reasoning or whether the experiment setting and request for justifications influenced our results.

We will further explore the relationship between rationality and autism by recruiting autistic people and non-autistic people for a between group comparison.

Abbreviations N: Sample size, F: Female, M: Male, NB: Non-binary, M: Mean, SD: Standard deviation

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 [2] Brosnan, M., Lewton, M., & Ashwin, C. (2016). Reasoning on the Autism Spectrum: A Dual Process Theory Account. *Journal of Autism and Developmental Disorders*, 46(6), 2115–2125.
 [3] Komeda, H., Osanai, H., Yanaoka, K., Okamoto, Y., Fujioka, T., Arai, S., & Kosaka, H. (2016). Decision making processes based on social conventional rules in early adolescents with and without autism spectrum disorders. *Scientific Reports*, 6(July), 1–9.
 [4] Baron-Cohen, S., Wheelwright, S., Skinner, R., Martin, J., & Clubley, E. (2001). The Autism-Spectrum Quotient (AQ): Evidence from Asperger Syndrome/High-Functioning Autism, Males and Females, Scientists and Mathematicians. *Journal of Autism and Developmental Disorders*, 31(1), 5–17.