Do autistic traits relate to different reasoning styles in social versus non-social domains?

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INTRODUCTION

Reasoning is an area in which autistic people tend to show preserved or enhanced abilities [1]. Autistic people differ from non-autistic people in reasoning more rationally (more objective and bias-free) [2].

We adapted a moral reasoning task [3] to examine:
- whether reasoning differs in social versus non-social domains,
- whether such differences relate to autistic traits.

METHODOLOGY

Experiment 1	Experiment 2
N = 72 (F: 60, M: 12)	N = 217 (F: 191, M: 23, NB: 3)
over Zoom, with the researcher	online, alone

For both experiments, young adults from the general population,
1. first, completed **The Adult Autism-Spectrum Quotient** [AQ-50] to self-report their level of autistic traits [4].
2. then, they completed **The Comparison Task** which includes several comparisons of scenarios, representing social and non-social relationships. Participants made a judgement on which (a) person (in social domain) or (b) object (in non-social domain) 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' judgements. 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.

The Comparison Task

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

a. Example comparison in social domain (inconsistent).

(1) Lisa is a generous girl who likes to do nice things for people.
(1) 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.
(2) 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.
(3) Her dad frowned after drinking the coffee, which was disgusting.

Which child is worse?
| Lisa | Emma |

b. Example comparison in non-social domain (consistent).

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?
| William | Callum |

RESULTS

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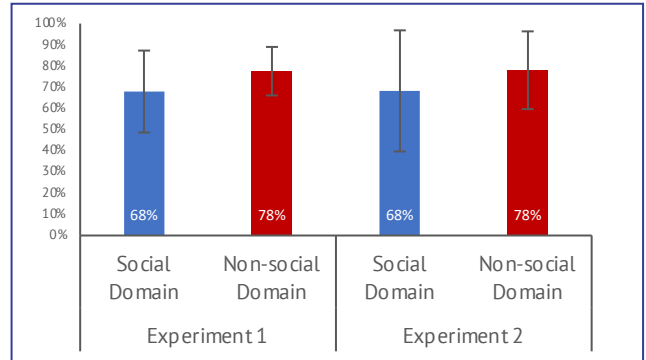

Figure 1. Ms and SDs of the behaviour-based judgements for inconsistent scenarios

We, first, found that higher level of autistic traits correlate with higher reliance on behaviour-based information when making judgements about a person but not about an object, r_s = .357, $p < .01$. However, when the experiment was run with **a bigger sample**, **asked justification** and completed **alone**, there was no significant relationship, $r_s(215)$ = .010, $p = .886$.

When providing their justifications, for non-social domain, participants significantly mentioned both characteristics and behaviour of the objects more. For social domain, they mentioned only characteristics of the persons more.

There was, surprisingly, a significant negative correlation between the level of autistic traits and the % of justifications that exclusively mentioned only behaviours of the objects (in non-social domain), $r_s(215)$ = -.155, $p < .05$.

CONCLUSION

There seems to be different patterns that people follow when making moral judgements in social and non-social domains. We found that the relationship between rationality and the level of autistic traits is complex.

RELATED LITERATURE

[1] Rozenkrantz, L., D'Mello, A. M., & Gabrieli, J. D. E. (2021). Enhanced rationality in autism spectrum disorder. *Trends in Cognitive Sciences*, *25*(8), 685–696.
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[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.