



The apple of my (mind's) eye: Exploring the relationship among autistic traits and cognitive introspection patterns



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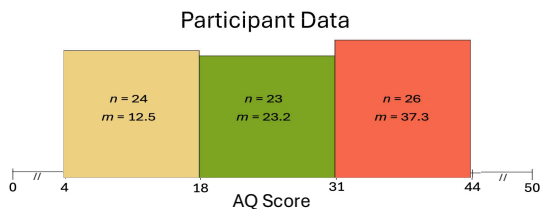
Introduction

- Visual thinking, imagery-based cognition rooted in Dual Coding Theory^[1] (DCT), is demonstrated through concreteness effects. In the DCT framework, especially strong activation of associated images in response to language inputs could present as a “thinking in pictures” cognitive style.
- Verbal thinking is typically used in reference to linguistic elements of cognition, particularly the varied kinds and functions of inner speech. Inner speech functions as a cognitive tool for linguistic, abstract, and complex tasks.
- The Visual Ease Assumption^[2] (VEA): visual stimuli is easier to process than verbal stimuli among autistic individuals.
 - This has promoted to widespread use of visual supports despite insufficient evidence that this assumption is generalizable to all autistic populations.

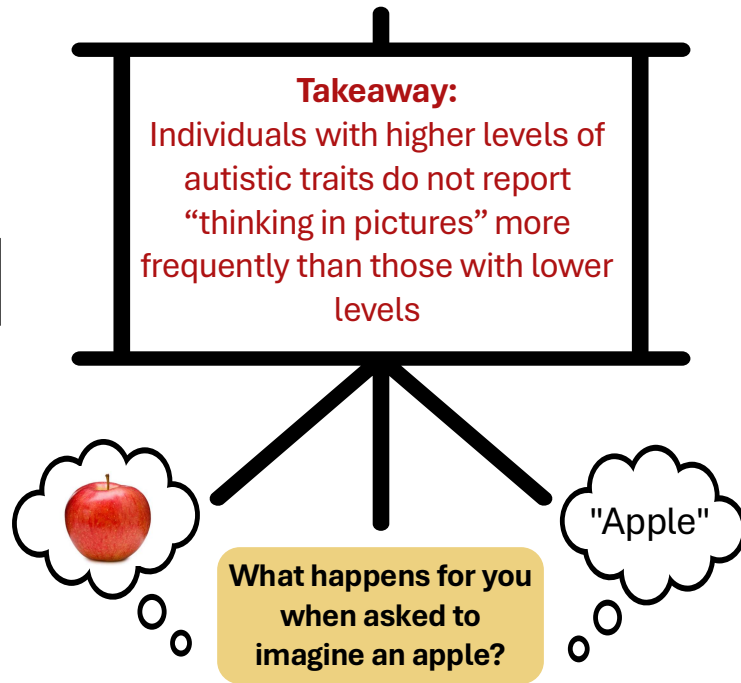
Objective:
Explore participant thinking styles (via introspection) and examine whether these were associated with autistic traits

Methods

- Conducted a thematic analysis^[3] (TA) on full sample
- Divided sample using 1/3 percentile function based on their Autism Quotient^[4] (AQ) questionnaire scores
- Conducted TA for 1/3 percentile AQ groups



Main Themes	Quotes	AQ Group
Attempts at articulating abstract notion	"I think of more like text-wise because it's like more abstract so I can't think up like an image." (participant #45)	Low
	"it's more so like a feeling of a thing that I get rather than like a picture or like a set of words" (participant #82)	Middle
	"if you tell me to picture an apple like I know what an apple looks like but I'm not seeing it, you know, like if I closed my eyes I'm not seeing an apple right now." (participant #17)	High
Visual thinking associated with learning and memory	"I try to—I do kind of create like a picture map in my head" (participant #55)	Low
	"when I imagine specific objects or things that I have seen before, I have memories of, there is a very visual component" (participant #42)	Middle
	"if I'm trying to figure something out ... I have to visualize it in order to understand it" (participant #48)	High
Contextual influences on modality initiation	"I think maybe it's a mix of both ... I guess it depends also on what I'm doing." (participant #79)	Low
	"it's kind of like a combination of both ... but it kind of depends on the situation too" (participant #06)	Middle
	"I think it depends on the thing I'm trying to imagine." (participant #30)	High



Discussion

- All 3 themes present across AQ groups
 - Thus, we found insufficient evidence to suggest that visual thinking is characteristic of autism
- The design of treatment and intervention programs should consider both visual and verbal capacities and preferences, as most participants in our study tended to use both
- When crafting materials (e.g., lesson plans and activities), consideration should be given to subject matter and situational context in selecting a modality
- Future research aimed at uncovering the origin of the VEA will illuminate additional implications for clinical practice

References

[1] Paivio, A. (2014). Intelligence, dual coding theory, and the brain. *Intelligence*, 47, 141–158. <https://doi.org/10.1016/j.intell.2014.09.002>

[2] Coderre, E. L. (2020). Dismantling the “Visual Ease Assumption”: A review of visual narrative processing in clinical populations. *Topics in Cognitive Science*, 12(1), 224–255. <https://doi.org/10.1111/tops.12446>

[3] Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. Sage.

[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. <https://doi.org/10.1023/A:1005653411471>