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Cognitive and Affective Correlates of Theory of Mind as Influenced by Task Modality

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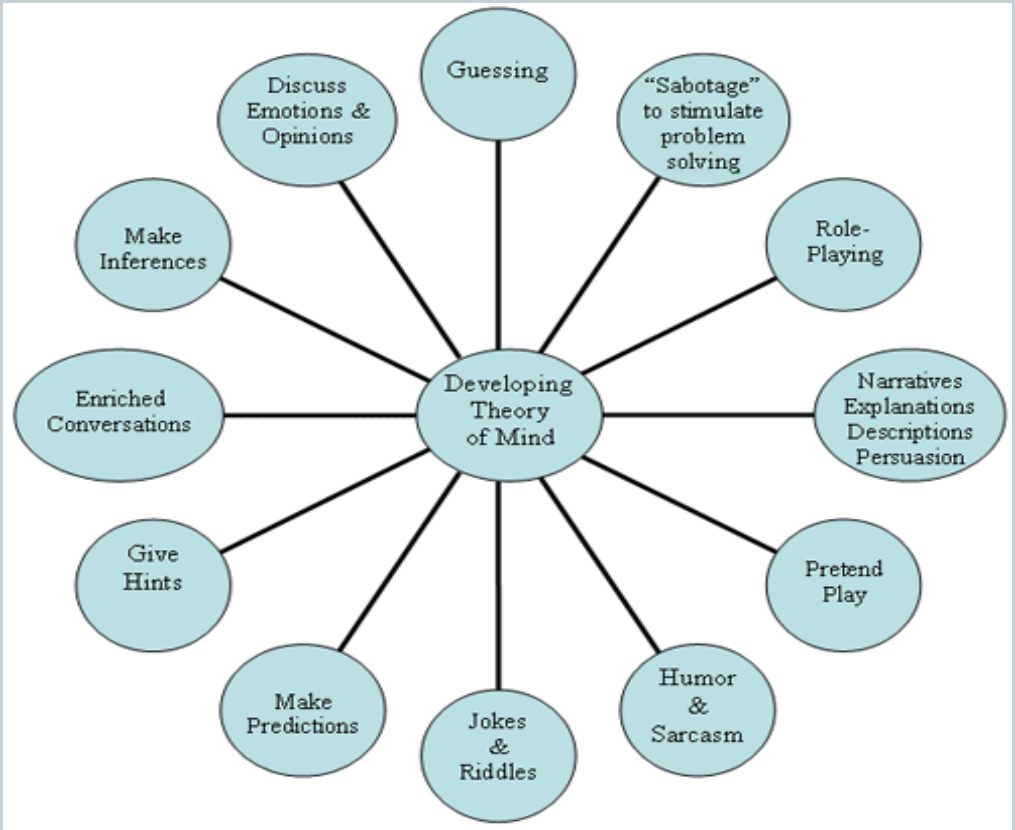
Introduction

- ToM refers to our ability to accurately perceive the mental states of others (i.e. emotions, thoughts, intentions, beliefs)



Cognitive & Affective ToM

Cognitive ToM

- Requires systematic reasoning independent of our own mental state in order to do this (Kalbe et al., 2007)

Affective ToM

- Refers to a more empathic process of understanding (Peron et al., 2009)

Previous Research

- Previous research investigated task modality in relation to ToM, and also cognitive and affective ToM. These aspects were investigated *independently* of each other:
  - **Task modality:** Visual and verbal tasks engaged common neural areas, regardless of task modality, suggesting that ToM ability is *independent of the mode of the stimulus* (Peron et al., 2009). This study did not, however, distinguish between assessing affective and cognitive ToM.
  - **Cognitive & Affective ToM:** Research has found that impairments in ToM ability on either a *cognitive* or *affective* task may be independent of each other (Shamay-Tsoory, Tomer, Berger, Goldsher, & Aharon-Peretz, 2005) .

Research Question/Hypothesis

- This study investigated whether the ToM construct is modality dependent, particularly in relation to both the affective and cognitive processes of ToM

- Results were expected to yield higher correlations between the processes than the modality of tasks, highlighting that task modality does not affect performance on ToM tasks

Research Design

The present study involved a "healthy" sample of 56 adults. Participants were screened for possible confounding mental health issues(e.g. depression, anxiety), using Depression Anxiety and Stress Scales (DASS) and a Demographic Questionnaire.

- 26 Males, 30 Females
- Aged between 19 and 59 years old (M = 31.13, SD = 8.33)
- Participants completed four tasks:
  - Eyes Task (Affective + Visual)
  - Cartoon Task (Cognitive + Visual)
  - Faux Pas stories (Affective + Auditory)
  - Strange stories (Cognitive + Auditory)

Eyes Task (Affective + Visual)

- Participants viewed 36 pictures of eyes. For each set, they were required to circle one of four words to best describe what the person in the picture was thinking or feeling.
- E.g.
  - playful
  - comforted
  - irritated
  - bored

Cartoon Task (Cognitive + Visual)

- Participants were presented with 35 cartoon pictures. They were required to write what they understood the meaning of the cartoon to be. An answer was considered correct if they correctly attributed either "false belief" or "ignorance" to one or more of the characters.
- E.g.

The hunter thinks he is hunting the tiger *(false belief)*, and has set some traps. He doesn't realise *(ignorance)* that the tiger is right behind him, and he is the one being hunted.

Stories Tasks

Adapted Faux Pas stories (Affective + Auditory)

- Participants listened to audio recordings of 10 stories and were required to answer a question about each story: Did someone say something awkward or something they shouldn't have? If so, what was it and why?
- E.g. *Helen's husband was throwing her a birthday party. He invited her friend Sarah and told her not to tell Helen because the party is a surprise. Whilst Helen was visiting Sarah, Sarah spilt coffee over a dress which was hanging on a chair "Oh no!" said Sarah, "I was going to wear this to your birthday party".*

Adapted Strange stories (Cognitive + Auditory)

- Participants listened to audio recordings of 10 stories and were required to answer a question about each story: Why did ____ say that?
- E.g. *Jodie has bought a new dress for her birthday party. Jodie's mother knows how much Jodie is looking forward to her party and how much effort she has put into looking her best but she does not like Jodie's new dress. Jodie asks her mother "do you like my new dress?" "It's lovely dear, you look fabulous".*

Results

		MODALITY		Results
		Visual	***Auditory***	***Results***
PROCESS	***Affective***	Eyes Task	Faux Pas stories	$r = .347$ $p < .01$
	Cognitive	Cartoon Task	Strange stories	$r = .421$ $p < .01$
Results		$r = .185$ $p = .173$ *(ns)*	$r = .213$ $p = .114$ *(ns)*	

Findings

- Results were in the expected direction:
  - Correlations for *Process* (i.e. Cognitive or Affective ToM used) were higher than those for *Modality* (i.e. Visual or Audio task administered).
  - These results support the hypothesis that the affective ToM tasks would correlate highly with each other, and cognitive ToM tasks would correlate highly with each other, regardless of the task modality (i.e. visual or auditory).
- To more accurately compare these correlation coefficients, further analyses were carried out using a formula developed by Meng, Rosenthal and Rubin (1992):
  - However, these results were non-significant.

Conclusions

- Overall, results were in the expected direction. The tasks using the same process (i.e. either cognitive or affective ToM) were significantly correlated regardless of the type of task (i.e. Visual or Auditory).

- This supports the research that cognitive and affective ToM abilities are *independent* of the mode of the stimulus presented.

- Further studies may be able to clarify these results using different tasks.

References

Kalbe, E., Grabenhorst, F., Brand, M., Kessler, J., Hilker, R., & Markowitsch, H. J. (2007). Elevated emotional reactivity in affective but not cognitive components of theory of mind: A psychophysiological study. *Journal of Neuropsychology, 1,* 27-38. doi:10.1348/174866407X180792

Meng, X., Rosenthal, R., & Rubin, D. B. (1992). Comparing correlated correlation coefficients. *Psychological Bulletin, 111*(1), 172-175. doi: 10.1037/0033-2909.111.1.172

Peron, J., Vicente, S., Leray, E., Drapier, S., Drapier, D., Cohen, R., Biseul, I., Rouaud, T., Le Jeune, F., Sauleau, P., Verin, M. (2009). Are dopaminergic pathways involved in theory of mind? A study in Parkinson's disease. *Neuropsychologia, 47,* 406-414. doi:10.1016/j.neuropsychologia.2008.09.008

Shamay-Tsoory, S. G., Tomer, R., Berger, B. D., Goldsher, D., & Aharon-Peretz, J. (2005). Impaired "affective theory of mind" is associated with right ventromedial prefrontal damage. *Cognitive Behavioral Neurology, 18*(1), 55-67. Retrieved from http://journals.lww.com/cogbehavneurol/pages/aboutthejournal.aspx

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