

A Comparison of Typically Developing and Atypically Developing ToM

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Summary

This thesis examines Theory of Mind (ToM) in relation to the areas of language and cognitive development. The thesis explores both popular and alternate theories of ToM and how they account for the important relationships between language and theory of mind. It examines the theories in the context of published ToM findings as well as the findings from three studies conducted by the author.

The first study took the form of a pilot study which re-analysed data, collected for the author's honours project, from a small group of children with ($n = 10$) and without autism ($n = 10$). In each diagnostic group (autism and no autism) children were divided into two groups, those passing a ToM task and those failing a ToM task. The aim of the study was to investigate whether the underlying language and cognitive skills required to succeed on ToM tasks are the same for children with and without autism. The key finding of the study was that for both the children with and without autism, those who passed the ToM task performed better on all the developmental measures, although only the difference in language ability was statistically significant.

The second study expanded on the pilot study, examining the relationship in typically developing 4 and 6-year-old children, between ToM, language, cognitive development, and subtractive reasoning. The study's aim was to examine the developmental structure underlying ToM using factor analysis. The results indicated that for 4-year-old children the most important skill for ToM success was language, but that for 6-year-old children ToM success was more strongly related to subtractive reasoning ability. The findings of the study also raised the question of whether presentation method for ToM tasks impacted on task difficulty.

A final study therefore examined the effect of presentation mode 2-dimensional versus 3-dimensional, on the success of typically developing 4-year-old children on the ToM task battery.

The findings indicated that tasks presented in cartoon format were more difficult than tasks presented with dolls and props.

Reliability and validity of common ToM tasks and new ToM test batteries are discussed.

Alternative conceptions of ToM in relation to social interaction are considered.

Declaration

I declare that this work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

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Yasmin Harman-Smith

Signed _____ Date _____

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PREFACE - Synthesis of the Studies Comprising this Thesis

This thesis is comprised of both traditional chapters and manuscripts. Specifically, Chapters 3, 4, and 6 of this thesis are presented in manuscript format. These manuscripts have been prepared for publication, but at this time have not been published. The first manuscript, Chapter 3, was presented at the Biennial National Autism Conference, Gold Coast, Qld, Australia, March 2007. It is anticipated that Chapters 4 and 6 will be submitted for review either separately or as a combined manuscript. As a result of the manuscript format of the aforementioned chapters some redundancy in the introduction sections of the manuscripts is inevitable, because to some extent these introductions reflect the literature reviewed in preceding chapters. It is also the case that all references cited within each of the manuscript chapters have been collated and included in the single reference section, beginning on page 165. With the aim of synthesising the thesis a brief overview of the manuscripts and rationale for each study is presented here.

Pilot Study - Chapter 3

The pilot study, in which I reanalysed the data collected from my honours project, was conceived to examine the viability of a larger study designed to compare abilities underlying ToM in children with autism with abilities underlying ToM in typically developing children. The main idea for the honours study stemmed from personal experience in working closely with children with autism in an early intervention setting. I was fortunate to be able to observe the learning of children with autism across a number of years while conducting one-on-one intervention. It occurred to me that when children with autism were engaged in less complicated social interaction - goal directed interaction that limited excessive communicative cues - children were better able to focus on the communicative exchange. Thus, the honours study was devised to examine whether early one-on-one intervention improved social interaction skills in children

with autism as a by-product of the focused communicative exchanges. ToM was chosen as a measure of social ability because of its prominent role in early social developmental research, but also because ToM was thought to be easily assessed with an experimental task, the false-belief test.

Although the honours sample was limited, it appeared that ToM ability in children with autism was relatively good in comparison to what was expected in light of findings presented in the literature. Not only did children with intervention perform well, but those without intensive intervention had also performed better than expected. For this reason it appeared to be important to examine the factors that might have contributed to the seemingly above average ToM performance. Thus the pilot study, presented in Chapter 3, was devised. The rationale for the reanalyses was that comparing developmental abilities in relation to ToM ability might better explain ToM success in autism relative to ToM success in typically developing children. The literature reviewed in Chapters 1 and 2 highlighted that there were some similarities but also some differences in the ways in which ToM was related to early child development in autism when compared to typical development. Generally the literature used a wide range of measures to assess developmental aspects of interest, and often these measures were different for different populations of children. For that reason it seemed sensible to examine differences in skills assessed by a single measure that was appropriate for use with both children with autism and children without autism. The honours data were deemed to be acceptable for a pilot analysis because all children had been assessed with the same developmental measure and the same ToM task.

Study 1 - Chapter 4

Following analysis of the pilot data my supervisors and I discussed the design for subsequent research. The aim of future research was to examine in more detail the differences

and similarities in skills that the pilot analysis had found to be related to ToM in children with autism and normally developing children. During these discussions my supervisors pointed out that intelligence research showed that in young pre-school children relatively independent cognitive abilities that subsequently emerge are not yet well differentiated. We considered that this could contribute to findings when examining relationships between variables. In response to this possibility I decided to incorporate two well defined age groups in order to examine how ToM relates to development when ToM begins to emerge but also later in childhood when children's abilities are better differentiated from one another. Thus, the study presented in Chapter 5 was conceived.

Study 2 - Chapter 6

Study 2 expanded on questions raised by results from Study 1. The test battery developed for use in Study 1 appeared to be inordinately difficult for both age groups participating in the study. One strong possibility was that this might have been a result of the materials used to present ToM tasks. For ease of presentation and to ensure presentation consistency, the ToM tasks in Study 1 had been presented with cartoon strips and pictures, rather than dolls and props. To assess the plausibility of this explanation, an additional review of the literature was conducted (Chapter 5 of this thesis), specifically in relation to reliability and validity of ToM tasks. Although much of this literature had already been considered, it seemed appropriate to consider this literature in closer detail. Closer examination of this literature found no studies in which task difficulty as a result of presentation method had been experimentally investigated. Hence, the second study was conceived to address this gap in the literature. Principally, the study aimed to address whether method of presentation could impact task difficulty sufficiently to account for the perplexing difficulty of the task battery used in Study 1.

In summary, the studies comprising this thesis address questions raised both in the literature and questions arising from studies conducted previously by the current author.