

UNDERSTANDING THEORY OF MIND DEFICITS IN AUTISM SPECTRUM DISORDER: IMPLICATIONS FOR INTERVENTION

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Abstract

The skill of “Theorize of Mind (ToM)” It is crucial to be able to identify and label one’s own and other people’s mental states. Those who are labeled as having “Autism Spectrum Disorder (ASD)” may have challenges related to “theory of mind (ToM)”, which might influence their ability to communicate and engage with others. Depending on the assessment activity and the particular element of ToM being assessed, these restrictions may have different implications. Results showed that people with ASD did better on tasks requiring explicit theory of mind (ToM) than on those requiring implicit ToM. In addition to sensitivity and intrinsic inspiration, organizational ability and other variables impact ToM skills. People on the autistic spectrum need assistance in social relationships, particularly in recognizing and resolving issues “related to theory of mind (ToM)”. We require more research on the links between theory of mind (ToM) and social competence, the effects of mind-reading problems on constraining behaviours and social communication symptoms in adolescent with “autism spectrum disorder (ASD)”, and other pertinent topics. Patients on the autism spectrum also require more all-encompassing intervention programs that focus on improving their organizational skills and their theories of mind.

Keywords: *Theory of Mind, Autism Spectrum Disorder, developmental progression, integrated intervention programs, cognitive domains*

Introduction

By tying together people's emotional and psychological states with their wants, needs, and ambitions, "The Theory of Mind (ToM)" provides a comprehensive framework for understanding and predicting behavior. “Autism Spectrum Disorder (ASD)” is an age-related disorder that affects the nervous system and is characterized by repetitive habits, restricted interests, and persistent difficulties with social conversation and interaction. “(Baron-Cohen et al., 1985)”. A number is highly supported by physical proof of “Theory of Mind (ToM)” deficits in individuals with ASD, as shown by their consistently poor performance on assessment tasks (Kimhi, 2014). “Autism Spectrum Disorders (ASD)” affects “Theory of Mind (ToM)” abilities, affecting cognitive ability, language proficiency, empathy, and communication in social interactions, affecting daily tasks.

Mazza et al. (2017) cautioned that Theory of Mind (ToM) has a crucial influence on the acquisition of social skills, and that children with autism who lack ToM competence have changes in their proficient social conduct. Altschuler et al. (2018) found a direct correlation between the ability to perceive and deduce the feelings of others "(affective Theory of Mind)" and other social manifestations of these symptoms typical of “Autism Spectrum Disorder (ASD)”. Research shows that “Theory of Mind (ToM)” is crucial in explaining social competence in individuals with “Autism Spectrum Disorder (ASD)”.

Limited evidence suggests that high compensators with ASD, who struggle with understanding others' emotions but have few social impairments, may benefit from Theory of Mind competency and pragmatic language skills. Using an organizing a hierarchy, "Hoogenhout and Malcolm-Smith (2017)" found that "Theory of Mind (ToM)" skills may differentiate across ASD severity levels. This study aims to improve treatments and resources for individuals with "Autism Spectrum Disorder (ASD)" by using structural equation modeling to investigate "Theory of Mind (ToM)" inadequacies.

Objectives

1. To investigate the relationship between "Theory of Mind (ToM)" skills and social competence in individuals with "Autism Spectrum Disorder (ASD)".
2. To examine how ToM abilities differ across different levels of ASD severity.

Literature review

The ability to understand and articulate one's own along with additional people's mental states, such as their wants, goals, and ideas, is called "theory of mind" (ToM). To communicate and engage with other individuals, this cognitive capacity is essential. A diagnosis of "Autism Spectrum Disorder (ASD)" may be based on a person's difficulties with Theory of Mind, sometimes called "mindblindness." These difficulties do not affect individuals of various ages equally, according to recent studies (Pellicano, 2007). Theory of Mind is an area where "Children with ASD" may have difficulty or develop compensating mechanisms, in contrast to EF, which includes skills including retention, flexibility, and inhibitory control. All of the behavioral and mental health issues linked to autism spectrum disorder are believed to originate from executive function disorders, which are prevalent among people with the disease (Fletcher-Watson et al., 2014). Assessments that test various aspects of executive control, such as the Stroop Test and the "Wisconsin Card Sorting Test (WCST)" (to name a few), often provide poor results for children on the autism spectrum. This population also tends to have problems with working memory, as seen on assessments such as the "Digit Span (Hill, 2004)". Both the study of the mind and mental processing benefit greatly from the close relationship between the two. Competence and theory of mind sound to be related to concentrate, due to the previous may serve as a precursor to the latter all throughout infancy (Geurts et al., 2004). If a child struggles with self-control, for instance, it can impact their capacity to understand how another person's mind functions (Chevallier et al., 2012).

Research Gap

More comprehensive research on the maturation of "Theory of Mind and Executive Function abilities" in "autistic children and adolescents" is needed, to name just one example of the numerous outstanding questions in the field. It is disappointing that there is a dearth of research on coordinated prevention initiatives that target both cognitive areas concurrently. Such studies might provide valuable insights for improving treatment procedures.

Research Methodology

People in the research ranged in age from 5 to 17, and 130 of them were diagnosed with "autism spectrum disorder (ASD)". Split into two different ages, those involved ranged from 5 to 11 years old and from "12 to 17 years old. Executive Function (EF) and Theory of Mind (ToM)" were two areas that were tested.

The Sally-Anne, the Smarties Task, and the Assessing Facial Expressions to comprehend Thinking and Emotions Examination were used to test for incorrect views. Examining cognitive flexibility and the capacity to control automatic impulses, "The Wisconsin Deck Sort Test, that Stroop Test, and Digit span Task" were administered. Analysis of statistics and structured discussions were used to get the data. The research followed all relevant ethical guidelines, and the organizational reviews board gave its approval.

Discussion and Analysis

Table 1: “Correlation between Theory of Mind Skills and Executive Functioning in Children (5-11 years)”

ToM Task	Cognitive Flexibility (WCST)	Inhibitory Control (Stroop Test)	Working Memory (Digit Span)
Sally-Anne Test	$r = 0.45, p < 0.01$	$r = 0.31, p < 0.05$	$r = 0.42, p < 0.01$
Reading the Mind in the Eyes	$r = 0.34, p < 0.05$	$r = 0.38, p < 0.01$	$r = 0.29, p < 0.05$
Smarties Task	$r = 0.28, p < 0.05$	$r = 0.25, p < 0.05$	$r = 0.33, p < 0.05$

Table 2: “Correlation between Theory of Mind Skills and Executive Functioning in Adolescents (12-17 years)”

ToM Task	Cognitive Flexibility (WCST)	Inhibitory Control (Stroop Test)	Working Memory (Digit Span)
Sally-Anne Test	$r = 0.40, p < 0.01$	$r = 0.35, p < 0.01$	$r = 0.41, p < 0.01$
Reading the Mind in the Eyes	$r = 0.44, p < 0.01$	$r = 0.44, p < 0.01$	$r = 0.38, p < 0.01$
Smarties Task	$r = 0.52, p < 0.01$	$r = 0.39, p < 0.01$	$r = 0.50, p < 0.01$

Table 3: “Analysis for Theory of Mind and Executive Functioning in Children (5-11 years)”

“Predictor Variables”	B	SE B	β	t	p
Cognitive Flexibility (WCST)	0.45	0.07	0.45	6.43	< 0.01
Inhibitory Control (Stroop)	0.29	0.08	0.31	3.63	< 0.05
Working Memory (Digit Span)	0.39	0.06	0.42	6.5	< 0.01

Table 4: “Analysis for Theory of Mind and Executive Functioning in Adolescents (12-17 years)”

Predictor Variables	B	SE B	β	t	p
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Cognitive Flexibility (WCST)	0.5	0.06	0.52	8.33	< 0.01
Inhibitory Control (Stroop)	0.35	0.07	0.39	5	< 0.01
Working Memory (Digit Span)	0.49	0.05	0.5	9.8	< 0.01

An association between "Theory of Mind (ToM) occupations and Emotional Functioning (EF)" was found in "children aged 5-11 years old," as per the research. According to the research, kids who do well on the Sally-Anne Test for cognitive versatility and active memory often have these skills at a high level. Furthermore, the predicted relationships between ToM tasks and EF domains, particularly working memory and cognitive flexibility, were shown by the regression analysis. The Smarties Test indicated that among adolescents (12–17 years old), the relationships between EF subcategories and Theory of Cognition activities were stronger. The correlation between managerial abilities and the concept of mind skills becomes more apparent in older "children with autism spectrum disorder (ASD)" according to the conclusions. Adolescents could benefit greatly from programs that enhance executive function, particularly theory of mind skills.

Conclusion

Because they are lacking in "theory of mind (ToM)" abilities, people with "Autism Spectrum Disorder (ASD)" may struggle to develop social capabilities and fundamental intellectual capacities. A higher frequency of errors is associated with poor achievement on implicitly tasks compared to greater effectiveness on explicit ones. The intricacy of the " connection between ToM and the executive functioning (EF)" suggests that problems in one area can make problems in another worse. The time-based structure of "ToM and EF ability in ASD" and integrated therapeutic techniques that address both brain areas separately need further investigation.

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