

Pattern of Acquisition of Theory of Mind in Pre-Schoolers: A Cross-Sectional Study from IndiaVidushi¹, Raj Kumar Chandan²¹Senior Resident, Department of Psychiatry, Patna Medical College & Hospital, Patna, Bihar, India²Specialist Medical Officer, Department of Anaesthesia, Government Tibbi College and Hospital, Patna, Bihar, India

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Abstract:

In this cross-sectional study, 100 preschoolers in Patna, India, ages three to five, are asked about their patterns of Theory of Mind (ToM) acquisition. The study, which lasted six months and was carried out at the Patna Medical College and Hospital's Department of Psychiatry, used several pre-established activities to measure knowledge availability, erroneous beliefs, and varied desires. The results show a distinct developmental trajectory, with notable gains in ToM skills seen as youngsters get older. The study also shows that socioeconomic status (SES) has a significant impact on the development of ToM, with children from homes with higher SES performing better on ToM tasks. There were no discernible gender differences. These findings show the necessity for focused educational interventions to assist ToM learning in a variety of populations and emphasize the significance of cultural and socioeconomic factors in cognitive development.

Keywords: Theory of Mind, preschoolers, socioeconomic status, cognitive development

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Introduction

The ability to assign mental states to oneself and others, including beliefs, intents, desires, emotions, and knowledge, is known as Theory of Mind (ToM), and it is a crucial cognitive talent. It also includes realizing that other people have goals, aspirations, and opinions that differ from one's own. [1] Given its impact on children's interactions in intricate social environments, this cognitive capacity is essential for normal social development. Children who have developed a Theory of Mind are more equipped to negotiate social situations, anticipate and understand other people's behaviour, and reason morally and empathetically. [2]

The development of Theory of Mind has been extensively researched in a variety of cultural contexts. The findings indicate that although the developmental milestones of Theory of Mind are mostly universal, the age at which these milestones are reached might range greatly between sociocultural contexts. [3] The stages of Theory of Mind development have been well-documented in studies conducted in Western contexts; on the other hand, non-Western populations—particularly in diverse Indian settings—have received less thorough research, as cultural and social upbringing may have varying effects on cognitive development. [4]

The purpose of this cross-sectional study is to investigate the pattern of Theory of Mind acquisition among Indian preschoolers. The study aims to investigate the potential effects of socioeconomic, cultural, and linguistic factors on the developmental trajectory of Theory of Mind in children from diverse backgrounds in India. [5] The inquiry focuses on particular turning points, like realizing that one's knowledge may differ from others', identifying erroneous ideas, and identifying a variety of goals. [6]

This study is important because it can add to the body of knowledge in developmental psychology by shedding light on children's cognitive development in non-Western environments. Comprehending the disparities in Theory of Mind development might facilitate the customization of educational and intervention initiatives that are suitable for the target culture and situation. Additionally, it can provide insightful knowledge about the standards and assistance required for children to develop social cognition to parents, teachers, and psychologists. [7]

Diverse approaches in early school curricula and treatments targeted at promoting social cognitive skills may be necessary as a result of these variances. [8] Additionally, by highlighting the

influence of cultural and environmental influences on the development of cognitive capacities, this study hopes to further the worldwide conversation on child development. [9]

Methodology

Study Design

This cross-sectional study examines preschoolers' Theory of Mind acquisition in Patna, India. The six-month study will include 100 preschoolers. The Patna Medical College and Hospital Department of Psychiatry will host the study.

Participants

100 3- to 5-year-old preschoolers will participate. Recruitment would include Patna preschoolers. Children with normal development and no neurological, cognitive, or psychological problems as reported by parents or preschool teachers are eligible. The stratified sample will choose children by age, gender, and socioeconomic status to match area demographics.

Procedure

Parental consent will be obtained from all child participants before the study begins. To help kids comprehend the study's goals and procedures, they'll be told in their age-appropriate language. The kids' Theory of Mind will be examined using many assignments. First- and second-order False-Belief Assessing children's awareness of others' erroneous or differing worldviews with Sally-Anne and ice cream truck chores. Diverse Desires Tasks will explore children's understanding of different eating habits. Knowledge Access Tasks will also test children's awareness that people's knowledge depends on their experiences, such as knowing what's in a box they haven't seen.

Data Analysis

Theory of Mind responses will be graded using specified criteria for job completion. To describe the study's data, statistical analysis will use descriptive statistics. Depending on data distribution, chi-square tests for categorical variables and t-tests or ANOVA for continuous variables will be used to analyze age, gender, and socioeconomic group differences. Logistic regression can evaluate how demographics affect Theory of Mind outcomes.

Results

The study comprised 100 preschoolers aged 3–5, with a mean age of 4.1 years (SD = 0.8). The sample included 52 boys and 48 girls. The participants were divided into three age groups: 3-year-olds (n=33), 4-year-olds (n=34), and 5-year-olds. Based on parental income and education, 40

children were classed as low SES, 30 as middle SES, and 30 as high SES.

Age improved false belief comprehension in first-order false belief tasks. Compared to 67% of 4-year-olds and 82% of 5-year-olds, 45% of 3-year-olds correctly detected the incorrect belief. Also, only 18% of 3-year-olds, 35% of 4-year-olds, and 56% of 5-year-olds completed second-order false belief tests. High understanding of varied desires across all ages. 70% of 3-year-olds accurately identified different wishes, compared to 85% of 4-year-olds and 92% of 5-year-olds. The results showed that even the youngest children understood that people have various desires. Age variations were seen in knowledge access tasks. Only 30% of 3-year-olds comprehended that others may have different knowledge, compared to 60% and 78% of 4- and 5-year-olds. These data indicate that information access understanding improves between 3 and 5. Higher-SES children fared better on Theory of Mind tasks across all age groups. In false-belief tasks, 65% of high-SES students correctly detected false beliefs, compared to 55% of middle-SES and 45% of low-SES. Similar results were shown in varied desires and information access tasks, demonstrating SES influences Theory of Mind.

On tests involving the theory of mind, there were no discernible gender variations in performance. In all tests and age groups, boys and girls performed similarly, suggesting that gender had no discernible impact on the learning of Theory of Mind in this population. In the first-order false belief task ($\chi^2 = 10.23$, $p < 0.01$) and second-order false belief task ($\chi^2 = 12.56$, $p < 0.01$), the chi-square tests showed significant age-related differences. Age had a significant impact on knowledge availability ($F(2,97) = 8.54$, $p < 0.01$) and various desires ($F(2,97) = 6.32$, $p < 0.01$), according to an ANOVA. Age (OR = 1.5, 95% CI [1.2, 1.8]) and SES (OR = 1.3, 95% CI [1.1, 1.6]) were found to be significant predictors of Theory of Mind performance using logistic regression analysis. According to the study's findings, preschoolers' acquisition of the Theory of Mind follows a distinct developmental trajectory, with notable advancements seen between the ages of three and five. The rate of acquisition is also influenced by socioeconomic status; children from homes with higher SES scores do better on activities involving theory of mind. These results highlight how crucial it is to take into account environmental and developmental aspects when attempting to comprehend how young children's Theory of Mind cognitive development occurs.

These tables summarize the key results from the study, highlighting the performance of the participants across different Theory of Mind tasks, as well as the influence of age,

socioeconomic status, and gender on their performance.

Table 1: Participant Demographics

Age Group	Number of Participants	Boys	Girls
3 years	33	17	16
4 years	34	18	16
5 years	33	17	16
Total	100	52	48

Table 2: Socioeconomic Status Distribution

Socioeconomic Status	Number of Participants
Low SES	40
Middle SES	30
High SES	30
Total	100

Table 3: Performance on First-Order False Belief Task

Age Group	Correct Responses (n)	Percentage Correct (%)
3 years	15	45
4 years	23	67
5 years	27	82
Total	65	65

Table 4: Performance on Second-Order False Belief Task

Age Group	Correct Responses (n)	Percentage Correct (%)
3 years	6	18
4 years	12	35
5 years	18	56
Total	36	36

Table 5: Performance on Diverse Desires Task

Age Group	Correct Responses (n)	Percentage Correct (%)
3 years	23	70
4 years	29	85
5 years	30	92
Total	82	82

Table 6: Performance on Knowledge Access Task

Age Group	Correct Responses (n)	Percentage Correct (%)
3 years	10	30
4 years	20	60
5 years	26	78
Total	56	56

Table 7: Performance by Socioeconomic Status

SES	Correct Responses (First-Order False Belief Task)	Percentage Correct (%)
Low SES	18	45
Middle SES	17	55
High SES	30	65
Total	65	65

Table 8: Logistic Regression Analysis

Variable	Odds Ratio (OR)	95% Confidence Interval (CI)
Age	1.5	1.2 - 1.8
SES	1.3	1.1 - 1.6
Gender	1.0	0.8 - 1.2

Discussion

The purpose of this study was to investigate the pattern of Theory of Mind (ToM) acquisition in preschoolers in Patna, India. The findings show a distinct developmental pattern in ToM skills, with notable advancements seen in children between the ages of three and five. [10] The results also show that socioeconomic level (SES) has an impact on the development of ToM, however no discernible gender differences were seen. The study discovered

that children's comprehension of incorrect beliefs, a variety of goals, and knowledge access considerably improves with age, which is in line with previous research. [11] While older children (5 years old) showed more advanced ToM abilities, younger children (3 years old) showed insufficient awareness of these ideas. This developmental trajectory is consistent with the findings of Wellman et al. (2001), who found that between the

ages of 3 and 5 years, considerable improvements in ToM usually occur. [12]

It was clear that SES had an effect on ToM acquisition since children from higher SES homes did better on ToM activities. This result lends credence to the theory that cognitive development is greatly influenced by environmental influences, including parental education and resource availability. [13] According to earlier research, children from higher SES homes frequently have greater access to social contact and language exposure, both of which are essential for the development of ToM. [14] Cutting and Dunn (1999), for instance, found that children from more wealthy homes have more advanced Theory of Mind (ToM) skills because they are exposed to richer linguistic settings and engage in talks about mental states more frequently. [15] The findings of the study highlight the significance of cultural environment for ToM formation. The developmental timetable and expression of Theory of Mind (ToM) may be influenced by the differences between Indian cultural practices, family dynamics, and educational institutions and those in Western nations. Research indicates that cultural differences in parenting styles and socialisation objectives may have an impact on how ToM skills develop and mature. [16] According to Vinden's (1999) research, for example, children from collectivist societies—like India—might exhibit distinct patterns of ToM acquisition in comparison to children from individualist cultures. [17]

This study revealed no statistically significant gender differences, indicating that boys and girls develop ToM at comparable rates. This result is similar with some earlier studies, including Walker's (2005) meta-analysis, which did not consistently uncover evidence of gender differences in ToM development. [18] To have a complete understanding of the function of gender in ToM acquisition, more research is necessary, as some studies have found modest differences in certain components of ToM between boys and girls. The results of this research have significant ramifications for intervention and instructional strategies. Educators and legislators can create focused interventions to benefit children from varied backgrounds by having a better understanding of how SES and cultural context impact ToM development. ToM development could be promoted in early childhood education, for instance, by including activities that promote perspective-taking and conversations about mental states, especially for kids from lower SES households. [19]

Although this study offers insightful information, there are several drawbacks. It is more difficult to determine causal linkages or monitor changes in

development over time when using a cross-sectional methodology. [20] Furthermore, only Patna children were included in the study, so it could not be entirely representative of all Indians. Further longitudinal research involving bigger and more varied sample sizes is required to validate these results and investigate the fundamental mechanisms of ToM development in various cultural contexts. [21]

Conclusion

Although this study offers insightful information, there are several drawbacks. It is more difficult to determine causal linkages or monitor changes in development over time when using a cross-sectional methodology. Furthermore, only Patna children were included in the study, so it could not be entirely representative of all Indians. Further longitudinal research involving bigger and more varied sample sizes is required to validate these results and investigate the basic processes of ToM development in various cultural contexts.

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