# The Role of Parental Involvement, Parental Empathy, andEmotional Expressiveness in the Development of the Theory of Mind (ToM) Among Children

**By**

**RABIA MALIK**

*Dr. Muhammad Ajmal*

**NATIONAL INSTITUTE OF PSYCHOLOGY**

*Centre of Excellence*

**QUAID-I-AZAM UNIVERSITY**

**Islamabad-Pakistan**

**2023**

# The Role of Parental Involvement, Parental Empathy, andEmotional Expressiveness in the Development of the Theory of Mind (ToM) Among Children

By

**RABIA MALIK**

A dissertation submitted to the

*Dr. Muhammad Ajmal*

National Institute of Psychology

*Centre of Excellence*

Quaid-i-Azam University

Islamabad, Pakistan

In partial fulfillment of the requirement for the degree of
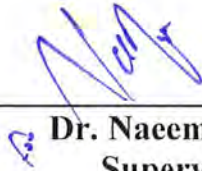
**Masters of Philosophy in Psychology**

**2023**

# The Role of Parental Involvement, Parental Empathy, and Emotional Expressiveness in the Development of the Theory of Mind (TOM) Among Children

By

**Rabia Malik**

**Approved by**

_____
**Dr. Naeem Aslam**
**Supervisor**

_____
**Dr. Mamoona Ismail Loona**
**External Examiner**

_____
**Prof. Dr. Rubina Hanif**
**Director, NIP**

## Certificate

It is certified that M.Phil. Dissertation on **"The role of parental involvement, parental empathy, and emotional expressiveness in the development of the theory of mind (ToM) among children"** prepared by **Rabia Malik** has been approved for submission to Quaid-i-Azam University Islamabad.

_____

**Dr. Naeem Aslam**

(Supervisor)

# Table of Contents

# List of Tables

# List of Figures

# List of Appendices

## Acknowledgements

I would like to take this opportunity to express my deep gratitude and appreciation to all those who have supported me throughout this journey in completing my thesis.

First and foremost, I extend my sincere thanks to my thesis supervisor Dr. Naeem Aslam, whose guidance, expertise, and unwavering support have been instrumental in shaping the direction of this research. Your insights and feedback have been invaluable, and I am truly grateful for your mentorship.

My heartfelt appreciation goes to my family for their constant encouragement and belief in my abilities. Your unwavering support and understanding have been my anchor throughout this challenging journey. I am profoundly grateful to two exceptional individuals who have stood by me with unwavering love, encouragement, and understanding throughout the journey of completing this thesis.

To my dear mother Azra, your endless love, guidance, and sacrifices have shaped me into the person I am today. Your belief in my potential and your ability to provide unwavering support, even from a distance, have been a guiding light. Your wisdom and encouragement have been instrumental in keeping me motivated during times of self-doubt.

To my beloved husband Adeel, your boundless patience, unwavering support, and unending belief in me have been my constant source of strength. Your sacrifices and willingness to stand by me, even during the most challenging moments, have been a true testament to your devotion. Thank you for being my rock and for celebrating every small victory as if it were your own.

I am acutely aware that both of you have shared in the sacrifices and late nights, and your belief in me has fueled my determination to succeed. Your presence in my life has been a constant reminder of the importance of family, love, and resilience. This thesis reflects not only my hard work, but also the love and support that you have generously poured into every step of this endeavor. I am truly blessed to have both of you as pillars of strength, and I thank you from the bottom of my heart for your unwavering love and encouragement.

I am indebted to my friends and fellow researchers, who have provided me with a nurturing environment to exchange ideas, discuss challenges, and find moments of respite amidst the academic rigors. I am grateful to the National Institute of Psychology for providing the resources and facilities that have been essential for conducting my research. Finally, I extend my deepest gratitude to all the participants who generously dedicated their time and shared their insights, without whom this research would not have been possible.

In closing, this thesis has been a culmination of collective efforts, and I am humbled by the guidance, support, and encouragement I have received along the way. Thank you all for being an integral part of this academic endeavor.

With deep gratitude,

Rabia Malik

## Abstract

The present study sought to investigate the influence of parental characteristics on the development of Theory of Mind (ToM) in preschool children (3-8 years). The research encompassed two distinct phases. The initial phase involved a pre-testing procedure designed to assess the parents' comprehension of the language utilized in the measurement instruments employed in the study. Subsequently, the main study, constituting the second phase, was conducted. This primary investigation aimed to explore the contributions of Parental Involvement, Parental Empathy, and Emotion Expressiveness to the development of Theory of Mind in children. Additionally, various demographic variables such as monthly family income, mother's age, and father's age were examined as potential moderators in several subordinate studies. The main study proceeded with a cross-sectional survey of 151 parents ($M= 1.23$, $SD= .42$). The parents were approached through the diaries of the preschoolers. After getting consent from the parents, 151 preschool children ($M=1.44$, $SD=.49$) were assessed on the Theory of Mind tasks. Measures used in the study included Parental Involvement Scale (PIS) (Georgiou, 2007), Inter-personal reactivity index (Davis, 1980), a two items scale Parenting that encourages children to take the perspective of others (Farrant, 2011), Self-Expressiveness in the Family Questionnaire (SEFQ) (Mizokawa, 2013), and Theory of mind scale (Wellman, 2004). The main findings of the study revealed that parental involvement, parental empathy, and positive emotion expressiveness positively predict the development of Theory of Mind whereas negation emotion expressiveness negatively predict the development of Theory of Mind among preschool children. Furthermore, it revealed significant differences in family system, monthly income, number of siblings, and number of adults in the family These findings hold the potential to inform the practices and intervention strategies of developmental and child psychologists, particularly in their efforts to provide psychoeducation to parents. Importantly, parents themselves can derive substantial benefits from these findings, enabling them to recognize the significance of Theory of Mind in influencing diverse life outcomes for their children, and equipping them with techniques and parenting styles conducive to fostering this developmental aspect.

# INTRODUCTION

# Introduction

Children acquire an understanding of their emotions and thoughts as they develop. They gradually learn to recognize that others also possess feelings, beliefs, and thoughts distinct from their own. Distinguishing between personal perspectives and those of others emerges as they grasp the concept of Theory of Mind (ToM). This cognitive ability shapes how they perceive the world, form ideas and make assessments about both themselves and others' mental states. In essence, Theory of Mind is the foundational skill that underpins children's emotional and cognitive growth, enabling them to navigate complex social interactions and comprehend the intricacies of human relationships.

## Theory of Mind

Diverse explanations exist for the concept known as "theory of mind". It encompasses children's comprehension of cognitive realm-encompassing concepts like thoughts, beliefs, desires and intentions (Vasta et al., 2004). Despite the variation in definitions, they share several key elements: 1- an emphasis on one's own inner mental state; 2- the mental state of other individuals; 3- the practical utilization of this capacity in understanding and predicting behavior.

The term theory of mind (ToM), as outlined by Wimmer and Perner (1983), pertains to the capacity to grasp that oneself and others possess mental state such as beliefs, intentions, and desires. The expression "Theory of Mind" underscores the notion that our common psychology involves both ourselves and others through the lens of mental state compromising desires, emotions, beliefs, intentions, and inner encounters that drive and become evident in human behavior. Additionally, the conventional comprehension of individuals within this framework is believed to possess a marked consistency. This is because individuals possess particular desires, pertinent beliefs, prompting them to undertake deliberate actions, the outcomes of which trigger diverse emotional responses. Whether everyday psychology resembles a theory in any matter is a debate. Nevertheless, the term 'theory of mind' highlights two fundamental aspects of everyday psychology: its logical consistency and its emphasis on mental state.

Social cognition pertains to the notions and convictions that individuals and collectives harbor regarding the mechanisms and rationales behind human actions. A crucial aspect of social cognitions is the proficiency in comprehending ones owns action and those of others in the context of internal and cognitive states that impel human conduct. A substantial body of previous research has highlighted noteworthy advancements in young childrens' capacity, particularly during the preschool phase, to employ psychological states for the purpose of foretelling, illustrating and elucidating behavior (Wellman, 2001).

The capacity of social cognition empowers children to interpret their surroundings logically. Through this skill, they can attribute cognitive skills to not only themselves but also to others, encompassing notions like beliefs, concepts, intentions and wishes. By envisaging the inner mental landscape of other individuals, children strive to grasp and forecast the outward behavior of those around them. Typically, as children progress in the development of their theory of mind, they come to realize actions are steered by cognitive states rather than the objective reality within themselves (Wellman, 1990).

The actions taken by others and resulting consequences are visibly evident, the motivation behind those actions remain opaque. Despite numerous conceivable reasons for human behavior, the ones that are closest in proximity involve the cognitive states of the actors: their actions, beliefs, and intentions. Our conceptual grasp that these mental states lead to observable conduct denoted as the "Theory of Mind" (Wellman, 1990). This theory is often labeled as a "theory" because, although we lack direct visibility into others mental state, we theorize their existence and deduce likely assessments of their precise content grounded in an array of pertinent evidence. The mature theory of mind is also "representational" in nature, signifying that we comprehend that the mental states harbored by others are shaped by, yet not identical copies of, some veritable state of affairs (Perner, 1991). This representational theory of mind underpins our grownup like comprehension of subjectivity, allowing us to recognize that two individuals can possess distinct desires, beliefs, intentions or even interpretations of a given situation (Carpendale & Chandler, 1996).

The significance of a representational theory of mind is interwoven into every facet of social encounters where comprehending others' actions holds paramount

importance. For instance, the capacity of a jury to assess the degree of intention behind a specific crime influences their willingness to attribute responsibility to the individual for the act, and also shapes the severity of the appropriate penalty they deem fit to impose (Kaplan, 2001). In the realm of dramatic arts, the allure and suspense of both tragic and comedic narratives hinge upon the audience's proficiency in following the subjective and varying cognitive states of the distinct characters as they evolve throughout the story. Take, for instance, the penultimate scene of Romeo and Juliet. At first glance, the unfolding events seem perplexing—Romeo arrives where he was told to find Juliet, discovers her apparently asleep, and then takes his own life. Yet, our theory of mind empowers us to grasp the tragedy's essence—while the audience is privy to Juliet consuming a potion that induces slumber, Romeo remains unaware due to prior circumstances, leading him to mistakenly believe that she is deceased. Instances like this, pervasive in everyday life, gain clarity only when we engage in reasoning about the concealed inner mental states that propel.

Theory of Mind (ToM) holds tangible implications in real life due to its connection with social skills encompassing the comprehension of another person's cognitive predicament (T. L. Davis, 2001). Social interplay is notably shaped by social comprehension (McElwain & Volling, 2002). The ability to handle conflicts through arguments directed towards others, such as with a sibling, has been correlated with ToM (Foote & Holmes-Lonergan, 2003). Moreover, grasping second-order false beliefs has been linked comprehending self-presentation display rules, which involve the skill to manipulate how others perceive oneself (Banerjee & Yuill, 1999). Elevated levels of ToM have been linked with aspects like forming friendships (McGuire & Weisz, 1982), engaging in collaborative play on equal terms (McElwain & Volling, 2002), experiencing fewer conflicts with friends (Dunn & Cutting, 1999), providing care for brothers and sisters (Garner et al., 1994), and participating in cooperative social exchanges (Brown et al., 1996) human conduct.

Numerous studies have demonstrated the connection between Theory of Mind (ToM) and factors such as peer acceptance among girls (Braza et al., 2009) and the fame of preschool-aged children (Slaughter et al., 2002). ToM's ability to forecast peer status remains evident even when accounting for the language skills (Cassidy et al., 2003). In a particular study, there was a noted correlation between TOM performance and engaging conversational interactions with friends (Slomkowski &

Dunn, 1996). The previously mentioned advantages of Theory of Mind (ToM) concerning social interactions can potentially stem from its correlation with helping and altruistic behavior (Denham, 1986; Garner et al., 2008), reduced instances of hostility that involves getting physical (Werner et al., 2006), enhanced moral comprehension (Dunn et al., 1995), and improved social skill. (Watson et al., 1999).

ToM's impact is not restricted to friendships alone; it extends to other facets of communal life as well. Sutton et al. (1999) discovered that individuals who are sufferers of bullying tend to exhibit lower theory of mind scores. Moreover, an adeptness in comprehending conflicting mental representations has been associated with an increased ability to resist suggestibility (Welch-Ross et al., 1997).

**Development of Child's Theory of Mind**

While theory of mind (ToM) researchers have primarily concentrated on preschool-aged children, their focus doesn't imply that ToM suddenly emerges at the age of 3 (Vasta et al., 2004). Astonishing social comprehension is observable even within a baby's first year of life. Abilities like joint attention, involving gestures such as pointing, tracking gazes, and social referencing (Carpendale & Lewis, 2006), manifest very early on, with certain skills that require collaborative attention even emerging prior to the age of 9 months (Striano & Bertin, 2005). Infants become capable of following gazes at around 10 months of age and can learn this skill as soon as 8 months of age (Corkum & Moore, 1998).

Social referencing, which involves seeking information in unknown situations (Carpendale & Lewis, 2006), becomes evident as first year ends. Moreover, even 14-month-old infants demonstrate the capacity to refrain from touching a toy (be it a dinosaur or a robot) until they have referred to their parents (Walden & Ogan, 1988).

These skills sometimes receive a nuanced interpretation, such as infants showing comprehension of model's attention (Carpendale & Lewis, 2006). All skills that demand collaborative or joint attention are believed to illustrate an infant's comprehension of a person as an intentional and conscious entity (Legerstee & Barillas, 2003; Tomasello, 1999). Csibra and Volein (2008) proposed that as early as 8 to 12 months old, infants follow gazes with referential expectations. Meltzoff et al. (1999) also emphasized that the children comprehend others through a "like me" hypothesis, asserting that "the 'like-me-ness' of others is the essential foundation for

all later social cognition—from attributing mental states, to empathy, to moral judgments" (p. 35).

In a study when infants experienced obstructed vision through a blindfold, their tendency to adhere the stare of a blindfolded medium decreased. In contrast, eighteen-month-olds continued to follow the stare of a blindfolded medium after experiencing a trick blindfold (which didn't impede vision), highlighting the significance of self-experience in enhancing the comprehension of others (Meltzoff & Brooks, 2008). Tomasello (1999) further posited that infants perceive others as being like themselves, and the similarity to oneself lays the foundation for understanding others' intentions. Additionally, infants assign goals and attention solely to humans (Meltzoff, 1995).

Substantiation for this comprehensive explanation is derived from studies that have demonstrated how 18-month-old infants not only comprehend but also replicate an intended action when an adult medium is not able to achieve the desired outcome (Meltzoff, 1995). Additionally, even at 9 months of age, infants exhibit an understanding of a medium's behavior that is goal-oriented and respond distinctively when the actor is either hesitant or is not able to carry out the action that the infant desires (Behne et al., 2005).

Furthermore, infants at nine months are more prone to anticipate and demand accurate labeling or tagging from a human medium, particularly when the infants have visual availability to the object in question; this anticipation isn't as pronounced when the speaker is nonhuman (Koenig & Echols, 2003). Taking a more significant leap, infants at the age of 18 months exhibit the ability to assess information that is conflicting, both social and perceptual, when they are making movements that are motor. They resort to referencing to social cues when the perceptual information available is not satisfactory (Tamis-LeMonda et al., 2008).

Thanks to extensive research, we are aware that the capacity for perspective-taking begins to emerge somewhere between the third and fifth year of life (Wimmer & Perner, 1983). Although this skill requires the involvement of other cognitive mechanisms like working memory and attention, studies have revealed that children as young as three years old, and even younger under certain conditions, such as 15

months (Onishi & Baillargeon, 2005), can successfully navigate this assessment. By the age of 6, almost all typically developing individuals can pass this type of test.

At a remarkably young age, typically around 6 months, a child begins to grasp the emotions of their caregiver and responds accordingly. They initiate mimicking the caregiver's facial expressions and employ their own emotional states to capture the caregiver's attention. For instance, when a baby is hungry, they cry to elicit a response from their caregiver and fulfill their needs. At this developmental stage, the child is also capable of interpreting the emotions and expressions of their caregivers. For instance, if the child observes their caregiver feeling sad, they might exhibit cheerful expressions to uplift their caregiver's mood (Sommerville, 2010).

Research underscores that infants exhibit behaviors that lay the groundwork for the development of theory of mind (Sommerville, 2010). By the conclusion of their initial two years of life, infants have become skilled at comprehending fundamental goals, intentions, perceptions, emotional expressions, as well as basic preferences and tendencies. These socio-cognitive capabilities serve as the foundational components for more sophisticated aspects of social cognition, including theory of mind (Astington & Edward, 2010). Furthermore, these early socio-cognitive abilities contribute to learning across a spectrum of domains, such as language acquisition (Tomasello, 2001), imitation-based learning (Meltzoff, 1995), causal reasoning (Sommerville & Woodward, 2005), and understanding representations (Gelman & Bloom, 2000).

A fundamental component of social cognition involves the capacity to interpret actions as stemming from intentions and goals. As early as 6 months old, infants perceive basic actions like reaching for and grasping an object as being driven by specific objectives (Woodward, 1998). Over the subsequent 6 months, they progress in recognizing the goals of progressively intricate actions and sequences of actions (Sommerville & Woodward, 2005). By this developmental stage, infants can also differentiate between unintentional and intentional actions, discerning that only living agents (not inanimate objects) harbor intentions and goals (Woodward, 1999).

Another pivotal facet of social cognition pertains to comprehending the significance of perceptual behaviors and emotional expressions. Commencing between 9 and 12 months of age, infants seem to grasp basic perceptual experiences

and can discern the import of various emotional expressions. For instance, infants perceive that an adult gazing at a toy with their eyes open signifies a perceptual experience, while an adult doing the same with their eyes closed does not (Brooks & Meltzoff, 2005). Furthermore, infants can utilize the emotional expressions of an experimenter or parent to determine whether to approach a novel toy or engage in a new activity (Adolph et al., 2008).

Recognizing how individual traits shape behavior is another pivotal dimension of social cognition. Around the span of 12 to 15 months, infants embark on comprehending basic tendencies and inclinations. For instance, within this time frame, infants anticipate an agent to persist in a previous behavior or activity even when situated within a new context (Kuhlmeier et al., 2003).

Furthermore, infants grasp the notion that preferences and tendencies are individualistic: they grasp that distinct individuals can hold diverse likes and dislikes (Buresh & Woodward, 2007). By the age of 2, children unmistakably demonstrate an awareness of the distinction between thoughts within the mind and tangible objects in the external world. In the realm of pretend play, such as envisioning a block as a car, toddlers exhibit their capability to differentiate between the physical object, like the block, and the conceptual thoughts about the object, namely the block being a car (Kavanaugh, 2006). Additionally, they grasp that people experience happiness upon achieving their desires and sadness when their desires remain unfulfilled (Wellman & Banerjee, 1991). At this stage, children also recognize the potential divergence between their own desires and the desires of others (Meltzoff et al., 1991).

This burgeoning awareness is observable in children's language as well. Two-year-olds converse about their personal wants, preferences, and emotions, along with those of others. By the age of 3, their conversations expand to encompass discussions about people's thoughts and knowledge.

An essential developmental milestone occurs around the age of 4 when children start to grasp that thoughts residing within the mind may not necessarily align with reality. This realization is exemplified when children are presented with scenarios where familiar items, such as a candy box, actually contain unexpected objects like pencils, needles, threads, or leftover food. They are then asked to predict what their friend will believe is inside the box, without seeing its contents firsthand

(Perner et al., 1987). At the age of 3, children presume that their friend will hold the same belief they now possess, thinking the box contains pencils, needles, threads, or leftover food. However, by the age of 4, they recognize that their friend will be misled, mirroring their own experience of being misled.

Furthermore, 3-year-olds do not recollect that their own beliefs have shifted (Gopnik & Astington, 1988). If the pencils are returned to the box and they are asked about their initial thought before revealing its contents, they would state "pencils" instead of "candy." However, 4-year-olds recall that they originally believed the box contained candy. This signifies that 3-year-olds are not simply driven by egocentrism, assuming everyone shares their knowledge; rather, they simultaneously develop an understanding of their own mental processes and those of others. Around the age of 4 or 5, children come to comprehend that individuals communicate and behave based on their perceptions of the world, even when these perceptions deviate from reality. As a result, they will not be taken aback if their uninformed friend searches for candy in a box that the children themselves know contains pencils.

Research underscores that the development of theory of mind has noteworthy implications for children's social functioning and academic achievements. Children with a more advanced theory of mind exhibit enhanced communication skills and an ability to effectively resolve conflicts with their peers (Dunn, 1998). Their engagement in pretend play becomes more intricate (Astington & Jenkins, 1995), teachers rate them as possessing greater social competence, they tend to be happier in school, enjoy higher popularity among peers, and demonstrate advanced progress in certain aspects of their academic work (Astington & Pelletier, 2005).

While these findings illustrate how sophisticated infant social cognition can be, they don't bring the ongoing debate to a close. Recent research has sparked new conversations about whether infants possess the ability to attribute false beliefs. These studies have employed tasks that capture infants' spontaneous responses, such as "violation of expectation tasks" (VOE) and "anticipatory looking tasks" (AL), shedding light on hints of understanding of false belief in infants. In VOE tasks, researchers observe whether infants show surprise, indicated by prolonged gazes, when an actor's actions go against their false belief rather than aligning with it. On the other hand, AL tasks explore how well a child can predict an agent's search actions

when the agent holds a false belief about where an object is located (Baillargeon et al., 2010). These recent investigations have added new layers to the conversation.

Advancements in theory of mind have been found to forecast children's cognitive abilities, including their metacognitive strategies, acquisition of reading and mathematics skills, and their willingness to accept feedback from educators. Researchers have delved into variations in upbringing to uncover both universal and culturally distinct facets of theory-of-mind conceptions and developmental pathways. Additionally, investigations have explored the interconnectedness with the languages being acquired during development (Wellman, 2017).

At the age of two, children often exhibit an understanding of desires, perceptions, and emotions (Bartsch & Wellman, 1995; Wellman et al., 2000). By three years old, children are capable of distinguishing between the realms of the mental and the physical, and at this point, they can also recognize the subjectivity inherent in thoughts (Flavell et al., 1990; Watson et al., 1998; Wellman & Estes, 1986). Three- and four-year-olds additionally differentiate between thinking and doing (Flavell et al., 1995). Mental states encompass not just the non-physical aspect, but they also serve as explanations for people's actions and experiences (Wellman & Lagattuta, 2000).

*First Order False-Belief*

Significant transformations unfold between the ages of 2 and 5 years in how children comprehend mental states (Harris, 2006). Throughout this developmental phase, theory of mind (ToM) follows a consistent and foreseeable progression (Wellman & Liu, 2004). By the time they reach 2 years of age, children's ToM encompasses a foundational grasp of emotions, intentions, desires, and perceptions (Wellman, 2002). However, at this age, children exhibit limited understanding of knowledge and belief. They encounter challenges in recognizing that individuals can possess differing beliefs and knowledge states, and that someone might hold a belief that is not aligned with reality (Wimmer & Perner, 1983).

For instance, when 3-year-olds possess accurate information about the content of a box (e.g., crayons), they often mistakenly assume that another person would possess the same knowledge even if the box is mislabeled (e.g., labeled as Band-Aids) (Gopnik & Astington, 1988). Additionally, they struggle with comprehending that

appearances can deviate from actuality (Flavell et al., 1983) and that people can possess distinct visual perspectives of the same scene or event (Flavell et al., 1981). By around 4 or 5 years old, children gradually attain a more mature understanding of these concepts (Harris, 2006). However, as will be detailed later, novel methodologies have brought to light early instances of false-belief reasoning even during infancy. The assessment of children's theory of mind (ToM) is typically conducted using a variety of established laboratory paradigms, including the well-known false-belief task involving locations, which was pioneered by Wimmer and Perner in 1983. These paradigms have yielded a substantial body of data regarding the developmental shifts in the comprehension of mental states. Moreover, they serve as primary tools in exploring individual variations in research that seeks to establish connections with factors potentially influencing ToM development. These factors encompass executive function (Carlson & Moses, 2001), imaginative play (Taylor & Carlson, 1997), language proficiency (Milligan et al., 2007), maternal mind-mindedness and the usage of mental state language (Meins, 2013; Ruffman et al., 2002), family parenting styles (Pears & Moses, 2003), cultural influences (Callaghan et al., 2005), as well as potential consequences of ToM, like peer relationships (Dunn & Cutting, 1999) and academic attainment (Astington & Pelletier, 1996).

The Theory of Mind Scale introduced by Wellman and Liu (2004) has significantly contributed to the field by providing researchers with a comprehensive tool to assess theory of mind across the preschool years. This scale facilitates the broader evaluation of theory of mind development, spanning from the recognition of intentions to desires, knowledge, beliefs, and eventually divergent emotions.

Subsequent research on theory of mind development has predominantly focused on false belief comprehension within the age range of 3 to 5 years. This research investigates the role of false beliefs in predicting and explaining behavior, as well as in endeavors to influence behavior. Pioneering work by Wimmer and Perner (1983) demonstrated that a fully developed theory of mind doesn't fully emerge until around the ages of 3 or 4. They conducted a series of experimental assessments to determine whether children aged 3 to 5 could attribute a false belief to another person. Grasping the concept of false belief stands as a distinct indicator of understanding a crucial aspect of the mind—its subjectivity and its susceptibility to being shaped by information (Dennett, 1978; Wimmer & Perner, 1983).

A prevailing interpretation of the significant strides observed in theory of mind during the preschool phase is that children undergo a substantial shift in their conceptual understanding of the mind. This transformation, often reflected in the progression marked by the ToM Scale, entails a transition from a mechanistic-behavioral comprehension to a more comprehensive recognition of the mind as a representational mechanism prone to occasional errors (Gopnik & Wellman, 1994). This shift is believed to occur as children continuously test their emerging theories against real-world experiences and adjust them accordingly, akin to the behavior of "little scientists" (Gopnik et al., 2000).

However, there are additional developments beyond the preschool years that pose challenges for explaining solely through the lens of conceptual change. For instance, second-order false-belief tasks, which involve one person holding a false belief about another person's thoughts, are used to assess theory of mind in slightly older children. Interestingly, these tasks seem to measure not just a conceptual shift but also age-related improvements in working memory capacity (Miller, 2019). This suggests a more complex interplay of cognitive factors influencing theory of mind development.

### Second Order False Belief

Theory-of-mind researchers have primarily focused on a significant developmental milestone, which involves children's ability to comprehend doubly embedded representations. This encompasses not only the recognition that individuals possess beliefs (including false beliefs) about the world but also the realization that individuals can hold beliefs about the thoughts of others (i.e., beliefs about others' beliefs), and that these secondary beliefs can also be different or erroneous. Such beliefs about beliefs are referred to as second-order beliefs.

Perner and Wimmer (1985) conducted pivotal research demonstrating that around the age of 7, children become capable of representing and reasoning from second-order beliefs. They presented stories using dolls and toys to the children. For instance, in one scenario, characters named Azlaan, Hajra, and the ice-cream man are situated in a park. Hajra leaves to fetch money for ice cream, and while she's away, the ice-cream man informs Azlaan that he's headed to the church to sell ice cream there. Meanwhile, Hajra encounters the ice-cream man on her way and receives the

same information. However, Azlaan remains unaware of this shared information (and children participants are explicitly informed of Azlaan's lack of knowledge). Later, Azlaan visits Hajra's house, and her mother informs him that Hajra has gone out to buy ice cream. Children participants are then asked, "Where does Azlaan think Hajra has gone?" and they are prompted to justify their response. Around the age of 7, children can reason from Azlaan's false belief about Hajra's belief and correctly infer that he believes Hajra has gone to the park.

Undeniably, the stories utilized in these studies exhibit a certain level of complexity, requiring children to effectively process and retain a substantial amount of information to appropriately represent the characters' beliefs. To streamline the task introduced by Perner and Wimmer (1985), Sullivan, Zaitchik, and Tager-Flusberg (1994) implemented modifications such as including probe questions with corrective feedback and furnishing a memory aid just prior to the crucial test question. These adjustments contributed to an enhancement in children's performance; however, reliable accuracy was still not consistently achieved until around the age of 6.

It's noteworthy that in both of these investigations, children were tasked with predicting a person's belief about another individual's action, rather than someone else's belief. The question posed was structured as "What does A think B does?", not "What does A think B thinks?".

Nonetheless, the prediction demanded second-order belief reasoning, and in their justifications, some children explicitly attributed second-order beliefs, as evidenced by responses like "Azlaan thinks Hajra thinks the ice-cream man's in the park'. The capability to construct a belief about a belief in this manner enables children to delve into Azlaan's rationale for his belief, particularly his evidence behind it. They recognize that Azlaan is aware Hajra spotted the ice-cream man in the park but is unaware of her subsequent interaction with him. Consequently, Azlaan will assume Hajra has gone to the park to procure ice cream, believing it's where she thinks the ice-cream man is. This logical deduction suggests that children's proficiency in managing second-order representations could potentially foster their comprehension of evidence.

*Moral Judgement*

The acknowledgment of intentionality plays a pivotal role in shaping the foundation of moral judgments. The assessment of the ethical character of an action inherently demands a comprehensive comprehension of the underlying intentions accompanying interpersonal interactions (Turiel, 2002). For instance, a profound moral discernment emerges as children discern the virtue within an act of pushing an individual to avert severe harm, such as preventing an impending fall from an elevated structure. This recognition stems from the acknowledgment of the prevention of considerable harm inflicted upon another individual (Jambon & Smetana, 2014). Conversely, when considering an act of pushing driven by prejudiced motivations rooted in aspects like skin color or linguistic preference, a transgression of moral norms governing equitable treatment of fellow individuals becomes evident (Killen et al., 2013).

The comprehension of intentionality is not exclusive to the preschool developmental phase; its foundations can be discerned during infancy. Infants, within the inaugural and successive years of life, engage in an interpretive process that perceives human actions through the lens of agents' objectives and intentions, transcending the superficial spatial and temporal attributes of actions (Woodward, 2009). Furthermore, this early cognitive stage allows infants to discriminate between outcomes resulting from intentional actions and those arising from accidents, and to imitate actions intended by others even in instances of observed failure (Meltzoff, 1995). Additionally, the second year of life ushers in an ability to grasp the subjective nature of desires (Repacholi & Gopnik, 1997), thereby encompassing agents' epistemic states within the calculus of deducing their intended actions. Notably, a significant development arises as infants, in their second year, begin to anticipate an agent's actions predicated upon the agent's false belief, contrasting with the actual state of affairs (Baillargeon et al., 2010; Southgate et al., 2007).

What adds to the intrigue is that the depth of infants' comprehension of intentional actions not only attests to its inherent complexity but also serves as an early harbinger of subsequent explicit cognitive reasoning regarding mental states. In a comprehensive endeavor, Wellman et al. (2008) embarked on a longitudinal investigation that encompassed the trajectory from infancy to early childhood. This

longitudinal study entailed the evaluation of goal-directed action comprehension among infants aged 10 to 12 months through a habituation task. Subsequent to this initial assessment, the same cohort of children was revisited at the age of 4 years, where their theory-of-mind proficiency was gauged. The outcomes of this study unveiled an intriguing association: diminished attention during the habituation task emerged as a predictive factor for subsequent false belief understanding, a relationship that persisted even after controlling for variables such as IQ, executive function, and verbal competence. Remarkably, these findings substantiated and extended the prior findings put forth by Wellman, Phillips, Dunphy-Lelii, and LaLonde (2004) in a more confined sample size. In a closely aligned trajectory, another longitudinal exploration involving a cohort of 70 participants unearthed a compelling linkage. This study revealed that infants' proclivity for anticipatory looking during an implicit false belief task at 18 months held a significant predictive utility for verbal false belief reasoning at the juncture of 48 months, all while factoring in the influence of verbal IQ (Thoermer et al., 2012).

Furthermore, the discourse has introduced a proposition delineating intentionality knowledge and moral knowledge as two discrete realms of reasoning— psychological and moral, respectively—entwined in the early stages of development. The challenges encountered by young children in accurately deciphering intentional states within morally pertinent contexts often underscore the intricate endeavor of reconciling moral judgments with the ascription of mental states, particularly when both dimensions coalesce within a multifaceted narrative (Killen et al., 2013; Smetana et al., 2014). To elucidate, although young children exhibit an understanding that striking others is morally objectionable (Smetana, 2006), they frequently assign culpability to a peer who transgresses unintentionally. In this illustrative scenario, children apprehend the moral reprehensibility of the action but encounter impediments in extrapolating the intentions of the potential wrongdoer. This phenomenon points to an acumen for recognizing harm from the victim's perspective while concurrently grappling with the application of mental state comprehension to the contextual setting.

**Triadic Interaction**

The interaction characterized by three components, often termed the triadic interaction or three-way interaction, exerts substantial influence over a child's

progression in comprehending social dynamics. This interaction encompasses the child, the caregiver (playing the role of a social facilitator in introducing mental state concepts), and the surrounding environment. Within this dynamic interplay, the child incrementally acquires an understanding of the internal realm of thoughts, recognizing the divergence between their own beliefs and those held by others (Carpendale & Lewis, 2004).

The existing body of literature highlights a correlation between the quality of preschool attachment and children's proficiency in recognizing emotions (de Rosnay & Harris, 2002; Fonagy et al., 1997; Greig & Howe, 2001; Laible & Thompson, 1998; Repacholi & Trapolini, 2004) as well as their understanding of false beliefs (Arranz et al., 2002; Fonagy et al., 1997; Repacholi & Trapolini, 2004; Symons & Clark, 2000). In essence, preschool children who are securely attached tend to exhibit superior capabilities in deciphering others' emotions and grasping the concept of false beliefs in comparison to those with insecure attachments to their caregivers. Early investigations propose that children who establish secure attachment with their mothers within the initial year of life often demonstrate elevated scores in both false-belief tasks (McElwain & Volling, 2004; Meins et al., 1998) and emotion comprehension tasks (Steele et al., 1999) during their preschool years. (It is pertinent to note that McElwain and Volling's study also encompassed fathers; however, attachment to fathers did not emerge as a predictor of false-belief performance).

The continued significance of parental responsiveness to children's mental states during the preschool phase remains integral to the further development of theory-of-mind skills. An extensive body of research is dedicated to examining the specific influence of parental responsiveness toward children's emotional expressions on the progression of emotion comprehension. Children whose parents offer supportive responses to their negative emotions, encompassing encouragement, comfort, and instruction in coping strategies, exhibit heightened proficiency in understanding emotions (Denham et al., 1994; Fabes et al., 2002). In contrast, dismissive reactions, including the minimization or punitive handling of emotions, correlate with diminished emotional acumen (Denham et al., 1997; Perlman et al., 2008). When parents provide empathetic and supportive reactions to their children's emotional displays, it is plausible that children develop a heightened curiosity and openness to comprehending the cognitive processes, behaviors, and affective states of

others across diverse emotional scenarios. Furthermore, these children are likely to encounter more opportunities for exploring their own emotional landscape in contrast to those whose parents discourage the expression of emotions. This differential encouragement could potentially result in a more advanced grasp of emotions.

**Factors in the Development of The Theory of Mind**

When delving into the influence of familial factors on the evolution of theory-of-mind development, it becomes imperative to discern the specific dimensions of family life that contribute to the diversification of children's proficiency in this cognitive domain. Notably, family dynamics, including the composition of the family unit encompassing kin members (Lewis et al., 1996) and the presence of siblings (Jenkins & Astington, 1996; McAlister & Peterson, 2007), particularly elder siblings (Ruffman et al., 1998), have been associated with heightened false-belief understanding among preschoolers. The proposition forwarded by several scholars is that larger families, enriched by the presence of both siblings and extended family members, furnish additional platforms for dialogues that scaffold the acquisition of theory-of-mind competencies (McAlister & Peterson, 2007). These conversations are speculated to encompass frequent deliberations concerning false beliefs, elevated utilization of cognitive verbs and syntactic complements during familial disagreements, and a wider spectrum of social interactions that collectively foster the maturation of theory-of-mind aptitude (Jenkins & Astington, 1996).

Beyond the configuration of the family, specific demographic attributes within the family framework can also exert influence on the trajectory of acquiring false-belief understanding. An illustrative factor in this context is family risk exposure. The term "family risk" pertains to attributes intrinsic to the family unit, encompassing parental factors, which elevate the probability or intensity of challenges encountered by children. The existing corpus of evidence accentuates the cumulative nature of the effects stemming from risk factors, denoting that the presence of multiple such factors compounds their influence, thereby escalating the degree of disruption experienced. As exemplified by Rutter (1979), the coexistence of several risk factors substantially heightens the likelihood of behavioral disturbances in children. This cumulative effect underscores the pivotal role played by the overarching risk level in delineating unfavorable outcomes among children.

Regarding the development of theory of mind, there exist various explanations for potential developmental setbacks among children exposed to higher levels of family risk. Initially, it's noteworthy that children raised in precarious family contexts are susceptible to encountering unfavorable life events and adverse circumstances (e.g., exposure to violence), factors intrinsically linked to socioemotional hurdles (McLoyd, 1998). Furthermore, heightened levels of family risk might exert inhibitory effects on children's cognitive and linguistic growth, consequently impeding the advancement of their comprehension of theory of mind.

Socioeconomic status (SES), encompassing dimensions such as family income, parental educational attainment, and occupation, frequently serves as a prominent marker of family risk. Substantiated research consistently underscores a discernible correlation between diminished SES and the presence of developmental lags in theory-of-mind proficiency. Notably, studies have underscored that even when age is factored in, children hailing from middle-class backgrounds with mothers possessing higher levels of education exhibit a more advanced grasp of false-belief understanding in contrast to their working-class counterparts (Cutting & Dunn, 1999). This pattern resonates with the effects exerted by family income and parental educational attainment, aligning with these trends by revealing that children originating from higher SES families outperform their peers from lower SES backgrounds on tasks involving false-belief comprehension (Cole & Mitchell, 1998). Such findings collectively underscore the correlation between diminished SES and the emergence of developmental delays in the realm of theory of mind.

Several external factors within the social environment influence the typical rate of theory-of-mind development. For instance, children's early awareness of mental states is facilitated when their mothers engage in discussions about thoughts, wants, and feelings (Ruffman et al., 2002), as well as when parents provide explanations while correcting misbehavior (Ruffman et al., 1999). Children with siblings also tend to exhibit earlier awareness of mental states compared to only children (McAlister & Peterson, 2007). Other factors that influence development rates include children's involvement in pretend play (Youngblade & Dunn, 1995), experiences of storybook reading (de Rosnay & Hughes, 2006), and engaging in conversations about past experiences with others (Nelson, 2007). Internal factors within the child, such as language abilities (Milligan et al., 2007) and cognitive

control functions (referred to as executive functions) that regulate behavior (Moses & Tahiroglu, 2010), also shape the developmental trajectory.

It is important to note that cross-cultural research has also observed developmental lags, where children from different cultural backgrounds show varying levels of theory-of-mind understanding. Even after accounting for linguistic differences in false-belief tasks, children from higher SES backgrounds consistently outperformed their peers from less advantaged backgrounds (Shatz et al., 2003).

**Theoretical Perspectives**

Various theoretical perspectives on theory of mind (ToM) have provided valuable insights into its development, shaping significant research endeavors. These theories offer diverse viewpoints concerning the nature, developmental trajectory, and the reasons behind the failure of 3-year-olds on false-belief tasks. One such theoretical framework is the theory-theory perspective, which suggests that ToM is absent in infancy and is constructed by preschoolers throughout development. This theory posits three fundamental elements: coherence, causal-explanatory nature, and ontological distinction. These constituents form a preliminary outline for discussion (Wellman, 1990).

The attainment of the ontological distinction in understanding mental states involves the differentiation between physical and mental phenomena, a capability within a child's repertoire. In a study involving 3-5-year-olds, about 90% recognized the visibility and tangibility of physical objects, while 75% acknowledged the inability to perceive or touch mental phenomena. Moreover, children demonstrated the capacity to differentiate between mental and intangible physical phenomena (like smoke) and mental and physical representations (like pictures). This differentiation ability supports the child's possession of the ontological distinction. Their distinction between physical and mental entities primarily hinges on tangibility and visibility, even when dealing with intangible and invisible entities such as sound and smoke (Wellman, 1990). A study done by Wellman and Estes (1986) further substantiated preschoolers' ability to differentiate between mental and physical entities. Moreover, the functioning of children's Theory of Mind (ToM) adheres to a causal-explanatory structure, a correlation that is congruent with the criteria delineated by Wellman.

The developmental trajectory of mental state comprehension advances through iterative refinements (Wellman, 1990), aligning with its nature akin to a theoretical construct. This progression unfolds across three distinct stages: 'desire psychology,' 'desire belief psychology,' and 'belief desire psychology' (Bartsch & Wellman, 1995). To encapsulate, Wellman's (1990) cognitive developmental theory posits that preschoolers construct mental state comprehension in a manner akin to theoretical frameworks. Emerging from an initial foundation in pretense understanding (Leslie, 1987), children incorporate an appreciation of mental state terminologies linked to desires by age 2, followed by an assimilation of the concept of thinking (primarily through lexemes like 'know') in the subsequent year.

### Social Constructivism Perspective

Social constructivism, an influential social learning framework conceived by the Russian psychologist Lev Vygotsky, asserts the active agency of individuals in the construction of their own knowledge. Vygotsky's tenets emphasize that the process of learning unfolds predominantly within communal and cultural contexts, transcending the confines of individual cognition (Schreiber & Valle, 2013). The paradigm of social constructivism places particular emphasis on dyadic interactions (Johnson & Bradbury, 2015) and the dynamics of small-group configurations. Notably, the acquisition of knowledge is chiefly mediated through reciprocal engagements with peers, instructors, and caregivers, whereby educators facilitate discourse by adeptly channeling the organic cadence of dialogues within educational settings (Powell & Kalina, 2009).

This perspective emphasizes the significance of both intra and inter-individual factors (Carpendale & Lewis, 2004). This view underscores the transition from dyadic interaction (child and caregiver) to triadic interaction (child, caregiver, and object). Chapman introduced the concept of an "epistemic triangle," encompassing the child, others (real or imagined), and objects in the world. This triangle integrates Piaget's focus on subject-object interaction and Vygotsky's emphasis on social interaction, contributing to the understanding of social and physical knowledge acquisition (Carpendale & Lewis, 2006).

As indicated by the epistemic triangle, the context of social interaction plays a pivotal role in cognitive skill development. This interaction involves cooperation and

reference to mental states, fostering social understanding (Carpendale & Lewis, 2004). The progression of social understanding stems from shared experiences at a particular age rather than abrupt shifts or innate modules (Carpendale & Lewis, 2006). The phenomenon of "motherese" exemplifies the global commonality of such experiences.

However, the child is neither passively absorbing knowledge nor autonomously constructing a theory. Instead, the child constructs an understanding of the social world through interactions (Carpendale & Lewis, 2004).

Given that social understanding is grounded in everyday interactions, its development is gradual and influenced by social engagement. This gradual progression aligns with the influence of the testing context on ToM; studies conducted in home and laboratory settings have yielded inconsistent findings. Newton, Reddy, and Bull explained these inconsistencies by appealing to gradualism, suggesting that children's understanding of deceptive acts is incomplete at that developmental stage (Carpendale & Lewis, 2006).

The relationship between ToM performance and social factors must be explored in any social understanding account. The epistemic triangle provides insights into how social factors impact social understanding. Other factors, such as parenting styles (Guajardo et al., 2009) and attachment (Mcquaid et al., 2008), must also be considered. The cooperative relationship concept introduced by Piaget offers an explanation for these factors. Cooperative relationships between equally empowered partners require mutual understanding, a dynamic that differs from imbalanced relationships (Carpendale & Lewis, 2006). Accordingly, if social understanding arises from triadic interaction, cooperative relationships between children and others should facilitate ToM development.

Numerous studies corroborate the claims regarding the importance of social factors for ToM (Cutting & Dunn, 1999; LaBounty et al., 2008). Furthermore, investigations have revealed that children with siblings who are close in age perform better on ToM tasks compared to only child (McAlister & Peterson, 2006; Peterson, 2000) or children without similarly aged siblings (McAlister & Peterson, 2007). The presence of older siblings also contributes to ToM development (Ruffman et al., 1998). Siblings compensate for low language abilities in mental state understanding

(Jenkins & Astington, 1996). Similarly, children with non-twin siblings outperformed only children and twins without other siblings (Cassidy et al., 2005), further emphasizing the importance of sibling interaction.

The findings of Wellman et al. (2001), where children's performance on false-belief tasks improved through explicit exposure to the protagonist's motives, align with the principles of active participation in social interaction (Carpendale & Lewis, 2004). Adult interactions also facilitate children's pretend play (Fiese, 1990; Nielsen & Christie, 2008), reinforcing the social nature of ToM. Data from children with disabilities, particularly those with sensory impairments, provide compelling evidence of the significance of social factors for ToM development (Carpendale & Lewis, 2006).

*Ecological Systems Theory*

Bronfenbrenner's theory offers a perspective on child development that emphasizes the intricate interplay between a child's maturing biology, immediate family and community environment, and the broader societal context. This theory conceptualizes a child's environment as a complex system of interacting layers, with changes or conflicts in one layer having reverberating effects throughout others. Unlike earlier unidirectional studies, Bronfenbrenner's approach recognizes the multidirectional nature of influences, highlighting the dynamic interactions that shape a child's development within their ecological context (Bronfenbrenner, 1974).

To comprehensively study child development, one must examine not only the child and their immediate surroundings, but also the interactions between the broader environment and the child (Ryan, 2001). Bronfenbrenner's theory organizes these environments into nested structures, each nested within the next, categorized by their varying impact on a child's development. These systems are interconnected, meaning the influence of one depends on its relationship with others.

At the core of Bronfenbrenner's theory is the microsystem, representing the immediate environment with which the child has direct contact. This includes parents, siblings, teachers, and peers. These relationships are bi-directional, as the child's interactions can influence others and vice versa. The child's reactions to individuals in their microsystem can also shape how they are treated in return. Positive, nurturing

relationships within the microsystem foster healthy development, while distant or unaffectionate relationships can have adverse effects (Guy-Evans, 2020).

Bronfenbrenner emphasized the importance of examining proximal processes involving person, context, and developmental outcomes, as these processes vary and impact individuals differently (Bronfenbrenner & Evans, 2000). According to Bronfenbrenner, development and socialization are products of active interactions within various levels of the environment. This idea is founded on three assumptions: the individual influences their environment, the environment compels adaptation, and the environment comprises nested entities of different sizes, including micro-, meso-, exo-, and macrosystems (Bronfenbrenner, 1979; Saarinen et al., 1994).

In social interactions, parent-child interactions, for instance, are influenced by characteristics such as gender, family income, age, and educational level. Ecological system theory underscores the importance of these variables as contributors to social interactions and subsequently, child-related outcomes (Bronfenbrenner & Morris, 2007).

The Ecological Systems Theory offers a comprehensive approach that accounts for all the systems involving children and families, capturing the dynamic nature of real family relationships (Hayes & O'Toole, 2017).

However, a limitation of the theory is the scarce research exploring mesosystems, particularly the interactions between neighborhoods and a child's family (Leventhal & Brooks-Gunn, 2000). This lack of investigation makes it challenging to fully understand the extent to which these systems shape child development.

## Impact of Parental Involvement on the Development of Theory of Mind

Parental involvement encompasses a wide array of parenting practices, such as shared book reading and communication with teachers, that contribute to a child's development (Fan, 2001; Grolnick et al., 1997; Raffaele & Knoff, 1999). Just as a child's understanding of mind shapes their social functioning, this understanding is shaped through social interactions (Hughes, 2011). The family context holds particular significance in this process, as it is where language and socialization begin. Children acquire vital knowledge, skills, and resources for their well-being through interactions with parents, highlighting the crucial role of parental involvement

(Salmon & Shackelford, 2007). Recent research indicates a direct link between parents' and children's theory of mind, which can be attributed to both genetic factors and socialization practices (Sabbagh & Seamans, 2008; Hughes & Plomin, 2000).

The connection between quality of attachment and theory of mind becomes more complex when mediating variables are considered. Mothers' verbal references to mental states can mediate the relationship between attachment and emotion understanding, and the way mothers discuss past events predicts children's emotion understanding and false-belief performance (Mcquaid et al., 2008; Ontai & Thompson, 2008). While secure attachment in early life has been associated with higher scores in false-belief and emotion understanding tasks during the preschool years, more recent studies suggest that the link between attachment and these skills is mediated by mothers' references to emotions in conversation (Raikes & Thompson, 2006; Laranjo et al., 2010; Meins et al., 2002).

Parental involvement has been linked to numerous positive child outcomes, such as academic skills, positive attitudes, and social competence in primary and high schools (Griffith, 1996; Hill & Taylor, 2004; Zellman & Waterman, 1998). This involvement extends to school activities and encompasses a range of behaviors and practices that contribute to a child's education, motivating them to achieve better academically and develop positive attitudes toward learning (Bailey et al., 2004; Domina, 2005; Fiala & Sheridan, 2003; Flouri, 2004; Li, 2006). It is noted that parental involvement, especially for educationally and socially disadvantaged groups, acts as a form of social capital (Bourdieu, 1986; Coleman, 1988, 1992; Yan & Lin, 2005).

In terms of parenting styles, overprotective parenting can hinder the development of autonomy and independence in children, leading to adverse effects on their social functioning, coping behaviors, and mental health (Bayer et al., 2009; Edwards et al., 2010; Segrin et al., 2012). Monitoring and authoritative parenting styles are pivotal during the preschool period, with warm and authoritative parenting positively correlated with children's performance on theory of mind tasks (Hughes et al., 1999). In contrast, authoritarian parenting styles that rely on power-assertive techniques and lack warmth have been associated with lower emotion and belief understanding (Ruffman et al., 2006; Pears & Moses, 2003). The evidence suggests

that strategies such as physical punishment and unexplained consequences do not effectively promote theory of mind development (Pears & Moses, 2003).

### Involvement in School Activities

In various studies, parental involvement has been described as encompassing a range of actions and attitudes both at home and in school. This includes parents' hopes, expectations, attitudes, and beliefs about their child's education (Henderson & Mapp, 2002). It's widely recognized that when parents actively engage in their children's education, it has a positive impact on their academic performance. Kids whose parents are involved tend to do better in reading, writing, and behavior (Bailey et al., 2004; Domina, 2005; Fiala & Sheridan, 2003; Flouri, 2004; Li, 2006). Parental involvement isn't just about direct help with learning; it also encourages children to strive for success. This involvement boosts kids' self-perception of skills and independence, provides a feeling of safety and belonging, and helps them internalize the value of education (Gonzalez-DeHass et al., 2005).

When parents actively participate in their children's education, their positive influence can extend up to the high school years (Epstein, 2005). For those who face educational and social disadvantages, parental involvement acts as a type of social support (Bourdieu, 1986; Coleman, 1988, 1992; Yan & Lin, 2005). In essence, parents' active engagement plays a vital role in shaping their children's educational journey and achievements.

### Parental Anxiety and Overprotection

The development of individuality, autonomy, and self-reliance holds immense importance in child growth, with appropriate parenting playing a crucial role in nurturing these qualities throughout different life stages – from infancy through childhood and adolescence (Kins et al., 2011). However, when parents become excessively protective, it can have negative effects on children. This form of parenting is marked by intrusion, becoming overly involved, and limiting external influences. This can lead to a prolonged, and often inappropriate, dependence (Bayer et al., 2009), hindering the natural progression towards individuation, separation, and autonomy (Rubin et al., 2002; Segrin et al., 2012).

Various studies have shed light on the detrimental outcomes of overprotective parenting on children's social skills, belief in their abilities, coping mechanisms, and their capacity to regulate their emotions. This style of parenting is linked to internalizing issues such as anxiety, depression, withdrawal, and separation anxiety during a child's early middle childhood (Bayer et al., 2009; Bayer et al., 2011; Edwards et al., 2010; Segrin et al., 2012). Overprotective tendencies can limit children's exposure to necessary challenges, preventing them from gaining valuable experience in handling difficulties. This can result in reduced confidence, a lack of mastery, and an inability to tackle demanding social or academic situations, ultimately contributing to lower self-esteem, depression, and anxiety (Bayer et al., 2006; Bayer et al., 2009).

Furthermore, there's a notion that this kind of intrusive parenting can also impede children's ability to explore their independence, potentially impeding the development of self-belief, assurance, and coping strategies (Hancock, 2012). All in all, while nurturing and safeguarding are essential, excessive protective behaviors can hinder children's healthy growth, both emotionally and in terms of their self-sufficiency, which is vital for their overall development.

*Monitoring*

During a child's preschool years, the role of parenting emerges as one of the most potent influences on their self-regulation (Dennis, 2006; Calkins & Johnson, 1998). In this realm, two key parenting styles come into focus: Authoritative and Authoritarian approaches. Specifically for this study, we define Authoritative parenting as a blend of nurturing warmth and firm control over a child's conduct (Knight et al., 2000). What sets this style apart is that parents practicing it not only set expectations but also offer explanations behind their requests and actions. They even delve into how these actions might impact others in cases of missteps (Burl, 1991; Knight et al., 2000).

An intriguing discovery was made by Hughes, Deater-Deckard, and Cutting (1999) who established a positive link between the presence of warmth within Authoritative parenting and a child's performance in Theory of Mind tasks. The combined results from this study and others build a foundation for the argument that the Authoritative parenting approach, especially when it includes discussions about

emotions, fosters a child's comprehension of feelings and beliefs. Furthermore, it plays a pivotal role in promoting cognitive development (Dunn et al., 1991; Pears & Moses, 2003; Bee et al., 1982).

Conversely, Authoritarian parenting takes a more stringent stance, marked by the use of forceful tactics like physical punishment, commands, and raised voices. This style often lacks the warmth and open communication found in Authoritative parenting (Ruffman et al., 2006). Importantly, Authoritarian parenting tends to lean on punitive actions without giving adequate explanations, and it tends to avoid engaging in discussions that foster emotional understanding (Burl, 1991; Ruffman et al., 2006).

Interestingly, Pears and Moses (2003) stumbled upon a concerning link between the sole reliance on consequences as a disciplinary tool and a child's ability to understand emotions. This might be due to the fact that while consequences like removing privileges might temporarily modify behavior to evade future punishments, they often fail to impart insight into the impact of actions on others.

The same researchers also found that a power-centric, Authoritarian parenting style was significantly correlated with a lack of belief understanding. This evidence underscores the potential negative impact of power-based, Authoritarian methods on a child's development on cognitive level (Pears & Moses, 2003). In its essence, relying on methods such as physical discipline, consequences lacking explanation, raised voices, and explicit commands does not appear to yield efficacy in nurturing the development of Theory of Mind.

## Impact of Parental Empathy on the Development of Theory of Mind

Parents who adopt the Authoritative parenting style not only make requests and anticipate specific behaviors from their children but also underpin these expectations with explanations. Furthermore, they elucidate the potential ramifications of actions, particularly in situations involving transgressions (Burl, 1991; Knight et al., 2000). An array of studies has underscored that offspring of parents employing these communicative and rationale-driven methods are more inclined to manifest prosocial conduct, including assisting individuals in distress (Zahn-Waxler et al., 1979). This effect is partly ascribed to the propensity of communicative and Authoritative parenting to cultivate secure attachment bonds

between children and their caregivers (Ruffman et al., 2006). Worth noting is that children exhibiting secure attachments have historically displayed heightened performance in tasks assessing theory of mind and emotional comprehension (Meins et al., 1998; Ontai & Thompson, 2002), underscoring their adeptness in adopting alternative perspectives.

Supporting this idea, FitzGerald and White (Pears & Moses, 2003) revealed a positive association between children's performance in perspective-taking tasks and parents who emphasized the feelings of victims when addressing their child's misbehavior. Similarly, Ruffman et al. (1999) found a positive relationship between children's performance on a false-belief task and a disciplinary approach that focused on the well-being of the victim (Pears & Moses, 2003).

**Impact of Parental Emotion Expressiveness on the Development of Theory of Mind**

Infants possess an inherent sensitivity and responsiveness to the emotional expressions of others, which aids them in acquiring knowledge about both the social and internal aspects of their world, such as comprehending the reasons behind transgressions or the outcomes of various social actions (Trevarthen & Aitken, 2001). These early experiences are believed to contribute to the development of distinct categories or domains of social knowledge in preschoolers, encompassing areas like morality and social conventions (Smetana et al., 2013).

The emotional context within which children are nurtured carries substantial consequences for their cognitive and emotional maturation (Halberstadt et al., 1999). In the realm of theory-of-mind development, it is conceivable that parental manifestations of emotions function as exemplars for facial expressions and conduct linked to various emotional situations, thereby facilitating children's grasp of emotions. Significant findings emerged in the research conducted by Denham et al. (2010) as they explored the equilibrium of expressive emotions, delineated as the difference between positive and negative expressiveness scores, when analyzed separately for fathers and mothers. The expressive equilibrium exhibited by mothers exhibited a negative correlation with children's emotional understanding, whereas fathers' expressive equilibrium demonstrated a positive association with children's emotional comprehension. This differentiation could potentially emanate from the

distinctive roles customarily undertaken by fathers and mothers in the context of emotion socialization. Fathers often adopt the role of "affectionate playmates," providing a foundational emotional framework for children, whereas mothers function as "emotion moderators," introducing children to a diverse spectrum of emotions that contribute to the enrichment of their emotional adeptness.

Furthermore, the impact of parental emotional expressiveness on children's belief understanding is nuanced. Hughes et al. (1999) noted that parental emotional expressions during free play did not independently forecast 4-year-olds' comprehension of beliefs. However, a composite measure of parental warmth, encompassing positive affect expression, closeness, parental understanding of children, and enjoyment of the parental role, did predict false-belief performance, particularly for girls. On the contrary, for boys, variables connected to parental discipline exhibited significant effects. These findings emphasize that parental behaviors can hold diverse implications for boys and girls.

Exposure to heightened levels of negative expressiveness displayed by mothers could potentially yield unfavorable repercussions for the advancement of theory-of-mind in both boys and girls. For instance, Rohrer et al. (2011) observed that 5-year-olds whose mothers grappled with recurring depressive disorders or manifested negative emotions within structured interactions with their children exhibited comparatively lower performance in false belief tasks, in contrast to a cohort whose mothers did not exhibit such negative emotional tendencies. Furthermore, children of mothers clinically diagnosed with depression also displayed deficiencies in recognizing and comprehending emotions, evident from an early developmental stage. Unlike infants raised by non-depressed mothers, these children failed to differentiate between a smiling countenance and a neutral expression at just 5 months old (Bornstein et al., 2011). Moreover, during the preschool phase, they exhibited a generally less robust grasp of the origins and ramifications of emotions (Greig & Howe, 2001; Hughes & Ensor, 2009; Raikes & Thompson, 2006).

## Individual Differences in the Development of Theory of Mind

Over the past decade, there has been significant focus on the initial phases of children's developing comprehension of the mind (Wellman et al., 2001). Particularly intriguing is the age at which children start demonstrating an understanding of the

connection between others' mental states and their observable actions. A substantial portion of empirical investigation in this domain has centered around age-related disparities in performance on theory-of-mind tasks. Established tests of false belief have indicated that typically developing children can, by approximately the age of 4, deduce information about others' beliefs and desires, employ this knowledge, and decipher their behaviors (Wellman, 1990, 1991; Wellman & Bartsch, 1994). Within the broader realm of children's comprehension of mental states, researchers have delved into individual differences concerning children's capacity to predict others' behavior based on their mental states.

Research has scrutinized these individual differences by investigating the role played by early experiences, especially social interactions, in promoting the development of children's capability to conceive actions as originating from mental states like beliefs. For instance, family conversations encompassing discussions about feelings, beliefs, intentions, desires, and other mental states have been linked to enhanced performances on theory-of-mind tasks (Bartsch & Wellman, 1995; Dunn et al., 1991; Dunn & Hughes, 1998). Similarly, the presence of siblings has been shown to contribute to children's advancement in succeeding on false-belief tasks (Jenkins & Astington, 1996; Peterson, 2000). Jenkins and Astington proposed that discussions involving different perspectives and disputes related to causality among siblings might foster children's comprehension of intentionality and the link between thoughts and actions.

Researchers have begun exploring individual differences in children's theory-of-mind comprehension within the context of how they engage with others. For instance, studies evaluating early emotional comprehension and affective perspective-taking have suggested that adeptness in tasks requiring perspective-taking skills appears to correlate with cooperative play behavior as early as ages 3 to 4 (Dunn et al., 1991). The capacity to attribute mental states to others has also been associated with individual differences in early fantasy and pretense (Schwebel et al., 1999; Taylor & Carlson, 1997). Links have also been observed between theory-of-mind proficiency and the quality of children's interactions with friends, encompassing levels of conflict and effective communication (Dunn & Cutting, 1999). Additionally, the amount of time spent in explicit role assignment during pretend play and the ability to collaboratively plan pretend play with peers are related to children's

understanding of mental states (Astington & Jenkins, 1995; Jenkins & Astington, 2000). Notably, children's comprehension of mental states also plays a role in their display of prosocial behavior and positive social skills (Dennis & Slaughter, 2000; Watson et al., 1999). These studies underscore the close interrelation between competent interactive behavior and understanding of mental states.

**Theory of Mind Researches in Pakistan**

M. Abdullah in her research on 'Association between Theory of Mind and Peer Problems'. The study builds on intermediate approach of ToM development, according to which universalism and relativism are two ends of the continuum (Alivah-Naveh, 2019). It explores that the performance of a 6 years and 6 months' children and older was above chance on all false belief tasks, supporting the universality of ToM development with different age ranges in different cultures. Also, theory of mind negatively predicted peer relationship problems of this sample, revealing real life implication of mentalizing for interaction in social world. This research indicated that false belief comprehension is key to better social adjustment and the participants of this study also showed that a child's understanding of mental state terms is critical for better social adaptation (Abdullah et. al., 2021).

Another study was conducted by S. Nawaz and R. Hanif which explored the role of language interaction in the development of Theory of Mind in preschool children. Role of language interaction; especially mental state talk and more recently causal mental state talk along with quality of the language interaction for TOM development is highlighted in many previous researches. The results of the present study lend support to the role of verbal interaction for children's concurrent and subsequent TOM performance. maternal initiation of new topics was a significant correlate of the child's subsequent ability to differentiate pretense from reality. In addition, mother's disengagement was a significant negative correlate of child's concurrent ability to report the protagonist's desire and belief which are at odds with the current reality.

Two main conclusions were drawn: (1) TOM development of the Pakistani children is significantly delayed and different developmental sequence is observed (acquisition of desire and pretense before a grasp of belief is not observed) (2) there

are factors in social linguistic environment contributing towards this delayed performance (Nawaz et al., 2014).

**Figure 1**

*Conceptual Model of the Study*
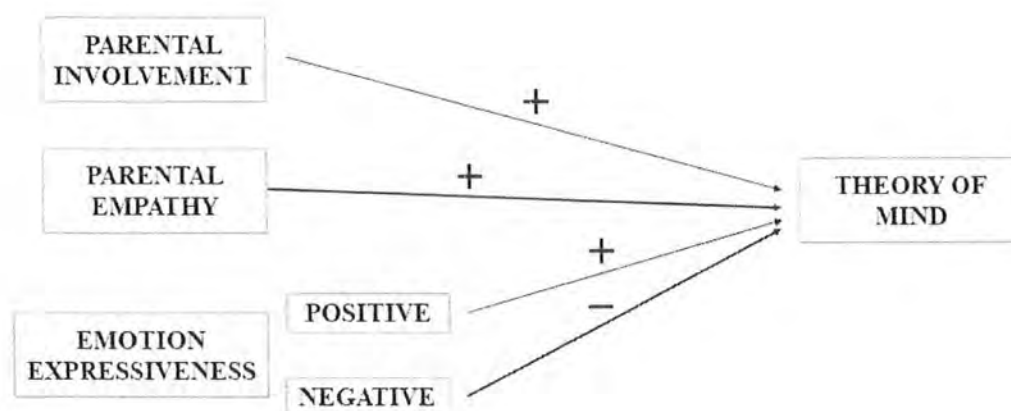


**Rationale**

Given the small number of TOM research available for non-Western cultures, the present study will be conducted with Pakistani preschool children aged between 3-8 years to test, whether the parental psychosocial correlates play a role in the theory of mind development. Keeping in view the reported importance of social factors e.g., having siblings (Peterson, 2000), and mother's education (Pears & Moses, 2003) for ToM development, these factors can be used to educate the families about its importance.

Studies reveal a significant relationship between empathy and the ToM (Taylor & Carlson, 1997, Jackson et al., 2006; Meltzoff & Decety, 2003). The current study will focus of the role of parental empathy and its influence on the development on the child's ToM.

# METHOD

# Method

This research aims to explore the relationship of Parental Involvement, Parental Empathy and Emotional Expressiveness in the development of Theory of Mind (ToM) among pre-school children.

## Objectives

Listed below are the main objectives of the study.

1. To investigate the Theory of Mind development of Pakistani preschoolers (3-8 years old).

2. To investigate the association between parental (paternal/maternal) involvement and Theory of Mind development among preschoolers.

3. To investigate the association between parental empathy (paternal/maternal) and Theory of Mind development among preschoolers.

4. To investigate the association between parenting that encourages the perspective of others and Theory of Mind development among preschoolers.

5. To investigate the association between parental expression of emotions and Theory of Mind development among preschoolers.

6. To investigate the role of demographics in the development of Theory of Mind among preschoolers.

## Hypotheses

Following are the proposed hypotheses of this study.

1. Parental Involvement is positively related to the development of the Theory of Mind among preschoolers.

2. Parental Empathy is positively related to the development of the Theory of Mind among preschoolers.

3. Parenting that encourages perspective-taking of others is positively related to the development of the Theory of Mind among preschoolers.

4. Parental Positive Emotion Expressiveness is positively related to the development of the Theory of Mind among preschoolers.

5. Parental Negative Emotion Expressiveness is negatively related to the development of the Theory of Mind among preschoolers.

6. Child's age will positively predict the development of the Theory of Mind among preschoolers.

7. Number of siblings will positively predict the development of the Theory of Mind among preschoolers.

8. Family System will moderate the relationship between Emotion Expressiveness and Theory of Mind.

**Conceptual and Operational Definitions of Variables**

The operational definitions of the variables included in the current study were as follows:

*Parental Involvement*

Parental involvement means that parents actively take part in various aspects of their children's growth – socially, emotionally, and academically. It covers a broad range of things, like what parents hope for their kids' academic future, how much they help with homework, how engaged they are in aiding their children's learning or assignments, and how often they're present at school. Some of these ideas involve actions that can be encouraged or depend on each parent's choices (Castro et al., 2015).

Different studies define parental involvement in different ways, including the things parents do at home or at school. It's not just about parents supporting their children's learning at home, but also about how they get involved in school activities and the local community. A higher score on the scale means that parents are more engaged. This Parental Involvement scale has five subscales.

**Involvement in School Activities.** It includes the participation of parents in their children's education within the family but also parental participation in schools and the local community. A higher score on involvement in school activities subscale indicates higher involvement in school activities.

**Anxiety and Over-Protection.** Helping children become their own individuals, fostering their independence and autonomy, is a vital part of their growth from infancy to adolescence. Good parenting supports these goals at the right times as kids age. On the other hand, overprotective parenting involves being overly involved, not allowing outside influences, and promoting dependency that's not suitable for their age (Bayer et. al., 2009). This happens at the cost of letting them develop their own identity and learn to be separate from their parents (Segrin et. al., 2012). A higher score in this area shows that parents might be more anxious and overly protective.

**Monitoring.** In the years before starting formal schooling, how parents interact with their children holds a lot of sway over how well kids learn to manage themselves (Dennis, 2006). This involves how closely parents keep an eye on what their child does both at home and when they're at school. If the score is higher, it means parents are keeping a closer watch on their child's activities.

**Help With Homework.** This subscale focuses on the parental activities which are directed at helping their child with school homework. Higher scores indicate parental helping attitude with school homework.

**Interest Development-Extra Curriculum Activities.** This subscale indicates all those parental activities which are directed towards the interest development of their child apart from school-based activities. A higher score on this subscale indicates a higher parental attitude towards developing interest in extra curriculum activities in their child.

*Parental Empathy*

Being able to truly understand and connect with your child's emotions, thoughts, desires, and reasons is like a superpower for parents. This ability, known as parental empathy, is incredibly important. It's not just about knowing what your child is going through, but also about how you show care and understanding towards others in general. This empathetic parenting isn't just a nice touch – it's a crucial part of helping children learn how to fit in socially and adapt well to different situations as they grow (Abraham, 2018).

Think of it as a foundation for sensitive parenting. When parents score higher on this "empathy scale," it means they're good at understanding their child's perspective and showing that they truly care about how others feel. This kind of empathetic parenting is like a guiding light that supports children throughout their lives, helping them navigate various social situations and connect with others.

### Emotion Expressiveness

It is described as the way parents express their emotions, demonstrating facial expressions and actions associated with various emotional situations. This helps children grasp and comprehend emotions more effectively. A high score on this scale indicates a higher levels of parental emotion expressiveness. It has 2 subscales.

**Positive Emotion Expressiveness.** It represents the expression of positive emotions by the parents like hugging, kissing, snuggling the child. A higher score on this subscale indicates a higher expression of positive emotions.

**Negative Emotion Expressiveness.** It represents the expression of negative emotions by the parents like frightening, scolding, shouting at the child. A higher score on this subscale indicates a higher expression of negative emotions.

### Theory of Mind (ToM)

Back in the 1970s, Premack introduced the term "Theory of Mind" or ToM. This idea revolves around the skill of attributing mental states – like thoughts, wants, knowledge, and intentions – to ourselves and others. It's kind of like understanding what's going on in someone's head to predict how they might act (Premack & Woodruff, 1978).

The theory of mind isn't just some fancy term – it's our human ability to get that other people are more than just bodies. They have their own thoughts, desires, and intentions. This ability forms the basis for how we uniquely understand and engage with others, which is super important for things like talking, teaming up, and creating a shared way of life (Rakoczy, 2022).

To measure how well kids grasp this "Theory of Mind," researchers used something called the "Theory of Mind Scale" created by Wellman in 2004. This scale had five tasks that gradually got tougher, helping us see how children develop this

skill over time. A higher score on this scale indicates a higher level of ToM development in the child.

### Sample

The data was collected using the purposive sampling technique. Sample ($N$ =151) comprised of parent-child dyads who were approached from the preschools. The sample include both mothers ($n = 116$) and fathers ($n = 35$) in parents and boys ($n=84$) and girls ($n=67$). The age range of the father's sample varied between 26 years to 53 years ($M = 37.55$, $SD = 4.87$) whereas the age range of mother's sample varied between 22 years to 46 years ($M = 33.58$, $SD = 4.39$). Similarly, the age range of children's sample varied between 3 years 1 month to 8 years ($M = 5.73$, $SD = 1.50$).

### Table 1

*Descriptive Statistics of Sample (N = 151)*

| Demographics | $N$ | % |
|---|---|---|
| **Parent's Gender** | | |
| Male | 35 | 23.2 |
| Female | 116 | 76.8 |
| **Child's Gender** | | |
| Boy | 84 | 55.6 |
| Girl | 67 | 44.4 |
| **Family System** | | |
| Nuclear | 67 | 44.4 |
| Joint | 82 | 54.3 |
| **Monthly Family Income** | | |
| 35000 and below | 28 | 18.5 |
| 35000-70000 | 41 | 27.2 |
| 70000-150000 | 30 | 19.9 |
| 150000 and above | 52 | 34.4 |
| **Number of Languages Spoken at Home** | | |
| 1 | 55 | 36.4 |
| 2 | 70 | 46.4 |
| 3 and more | 26 | 17.2 |
| **Number of Adults in the Family** | | |
| 0-2 | 47 | 31.1 |
| 3-5 | 56 | 37.1 |
| 6 and more | 48 | 31.8 |
| **Number of Children in the family** | | |
| 0-2 | 37 | 24.5 |
| 3-5 | 59 | 39.1 |
| 6 and more | 55 | 36.4 |

Table 1 shows the descriptive statistics of the sample. It shows frequencies of different demographic variables.

*Inclusion Criteria*

The inclusion criteria for the parents' sample of present study involved parents with at least 1 child aged between 3-8 years and the child must be enrolled in any kindergarten program.

The inclusion criteria for the children sample of the present study involved children aged between 3-8 years. Children must be enrolled in any public or private education sector.

*Exclusion Criteria*

Parents with all the children older than 8 years of age were excluded as well as parents with any psychopathology. Children below 3 years of age and above 8 years of age were excluded.

**Table 2**

*Descriptive Statistics of Fathers (N=151)*

| *Characteristics of Fathers* | *n* | *%* |
|---|---|---|
| **Age** | | |
| 19-40 | 111 | 73.5 |
| 40-65 | 40 | 26.5 |
| **Education** | | |
| Till Intermediate | 55 | 36.4 |
| Graduate and Post-Graduate | 96 | 63.6 |
| **Occupation** | | |
| Private | 90 | 59.6 |
| Government | 27 | 17.9 |
| Business | 34 | 22.5 |
| **Quality Time Spent with Child** | | |
| 0-2 hours | 118 | 78.1 |
| 2-4 hours | 25 | 16.6 |
| 4-6 hours and above | 8 | 5.3 |

Moreover, the frequencies of the father's characteristics were also measured. Findings showed that most of the fathers lies between the age range of 19-40 years i.e., 111 fathers. 96 of them had an education level of graduation and post-graduation. Looking at the occupation, 90 participants out of 151 participants reported having a private job and only 27 participants had a stable government job. Out of 151 participants, 118 reported spending around 0-2 hours with their child whereas, only 8 reported spending 4-6 or more hours with their child.

**Table 3**

*Descriptive Statistics of Mothers (N=151)*

| *Characteristics of Mothers* | *N* | *%* |
|---|---|---|
| **Age** | | |
| 19-40 | 109 | 72.2 |
| 40-65 | 42 | 27.8 |
| **Education** | | |
| Till Intermediate | 49 | 32.5 |
| Graduate and Post-Graduate | 102 | 67.5 |
| **Occupation** | | |
| Working | 26 | 17.3 |
| Housewife | 124 | 82.1 |
| **Quality Time Spent with Child** | | |
| 0-2 hours | 51 | 33.8 |
| 2-4 hours | 71 | 47.0 |
| 4-6 hours and above | 29 | 19.2 |

Characteristics of mothers were also measured. Findings of Table 3 showed that the majority of the mothers lie between the age range of 19-40 years i.e., 109 mothers. 102 of them had an education level of graduation and post-graduation and 49 out of 151 had an education of intermediate or below. Looking at the occupation, the maximum number of mothers were housewives i.e., 124 out of 151 and only 26 mothers were working mothers. Out of 151 participants, 51 reported spending around 0-2 hours with their child, 71 mothers reported spending 2-4 hours with their child whereas, 29 reported spending 4-6 or more hours with their child.

**Table 4**

*Descriptive Statistics of Children (N=151)*

| Characteristics of Children | n | % |
|---|---|---|
| **Gender** | | |
| Boys | 84 | 55.6 |
| Girls | 67 | 44.4 |
| **Age** | | |
| 5 and below | 38 | 25.2 |
| 5-6 years | 37 | 24.5 |
| 6-7 years | 41 | 27.2 |
| 7-8 years | 35 | 23.2 |
| **Grade** | | |
| Playgroup | 37 | 24.5 |
| Nursery | 27 | 17.9 |
| Kindergarten | 84 | 55.6 |
| **Number of Siblings** | | |
| 0-1 | 59 | 39.1 |
| 2 | 42 | 27.8 |
| 3 and more | 50 | 33.1 |
| **Birth Order** | | |
| 1 | 56 | 37.1 |
| 2 | 49 | 32.5 |
| 3 and above | 44 | 29.1 |

Table 4 illustrates that 84 out of 151 children were boys and 67 of them were girls. Most of the children were aged between 6-7 years i.e., 41 children and the least of them belonged to the 7-8 years of age group i.e., 35 children. 37 participants were enrolled in playgroup, 27 in nursery and 84 were enrolled in kindergarten. Parents of 59 children reported them having none or only 1 sibling, 42 of them having 2 siblings and 50 having 3 or more siblings. Whereas, out of 151 children, 56 were 1st born, 49 were 2nd born and 44 were 3rd born or above.

**Instruments**

The following instruments were used to assess the study constructs. A detailed description of each scale is also given.

*Parental Involvement Scale (PIS)*

It is based on a self-report inventory developed by Georgiou (2007). The scale consists of 30 items scored on a 5-point Likert scale where 1 represents not at all true and 5 represents absolutely true. The scale has 5 subscales namely involvement in school activities, anxiety and over protection, monitoring, help with homework and interest development-extra curriculum activities. The scale produces factors with reliable Cronbach alpha levels of .70–.90 (Georgiou, 2007).

*Inter-Personal Reactivity Index (IRI)*

Two subscales namely 'Empathetic Concern' and 'Perspective Taking' of Inter-personal reactivity index (Davis, 1980) were used to measure parental empathy. Both the subscales consist of 7 items each totaling to a 14 item measure. The Cronbach alpha reliability of the empathetic concern subscale is .71 for males and .75 for females whereas the Cronbach alpha reliability of the perspective taking subscale is .68 for males and .73 for females.

The scale has 5 reverse coded items. These items are item number 2, 3, 7, 8, and 9.

*Parenting that encourages children to take the perspective of others*

The extent to which parents encourage their children to take the perspective of other people was measured using two items. Mothers rated how well each statement describes them on a five-point scale ranging from 1, not like me at all, to 5, very much like me. Scores on the two items were summed to give a total score with a maximum possible of 10 (Farrant, 2011).

*Self-Expressiveness in the Family Questionnaire (SEFQ)*

The evaluation of mothers' exhibition of positive and negative emotions towards their offspring was conducted through a self-report assessment of self-expressiveness within mother-child interactions, as detailed by Mizokawa (2013). This assessment represents a modified adaptation of the Self-Expressiveness in the

Family Questionnaire (SEFQ; Halberstadt et al., 1995). Parents were tasked with rating 19 items spanning ten positive dimensions (Cronbach's $\alpha = 0.77$) and nine negative dimensions (Cronbach's $\alpha = 0.83$) on a 4-point Likert scale, ranging from 1 (indicating infrequent occurrence) to 4 (indicating very frequent occurrence). The potential score range for this assessment encompassed values between 10 and 40 for parental positive emotional expressiveness and between 9 and 36 for parental negative emotional expressiveness.

The positive subscale was used as an index of parents' positive emotional expressions towards their children (e.g., 'Praising your child for good work', 'Expressing excitement about your child's future plans', and 'Demonstrating admiration about your child to him/her'). Items include item number 3, 9, 10, 11, 12, 14, 15, 16, 18, and 19.

The negative subscale was used as an index of parents' negative emotional expression towards their children (e.g., 'Expressing dissatisfaction with your child's behavior', 'Expressing anger at your child's carelessness', and 'Showing contempt for your child's actions'). Items include item number 1, 2, 4, 5, 6, 7, 8, 13, and 17.

### Theory of Mind Scale (ToM)

Theory of mind scale (Wellman, 2004) was used to measure the ToM of children. The scale comprised of 5 tasks in increasing order of difficulty starting from diverse desire (DD), diverse belief (DB), knowledge access (KA), false belief (FB), and hidden emotion (HE). Every correct response to the tasks gets 1 score and every incorrect response gets a score of 0. A higher score on this scale indicates a higher level of ToM development in the child. The Cronbach alpha reliability of this scale is .92.

### Procedure

13 different preschools were approached for the purpose of data collection. After getting permission from the respective preschool principals, 288 forms were attached on the students' diaries to get parental consent. Out of 288 forms 182 forms were returned and out of those 182 forms, 31 forms were discarded, and 151 forms were retained for the final study analyses.

Informed consent and the parental forms were attached to the students' diaries to get permission to perform tasks. The topic, aims, objectives and significance of this research were highlighted in the informed consent so that the parents could get a better insight into the tasks which were performed with the children. Only those students were selected whose parents provided permission and who also filled and returned the parental forms through the student's diaries.

The participants were informed that they have the right to quit participation in research at any stage during data collection. They were also assured that their and their child's information would be kept confidential and would only be used for research purposes only. The participants were appreciated for their time and cooperation and were thanked for providing genuine information on their part.

# RESULTS

# Results

In the study, SPSS Version 26 was used for statistical analyses. Descriptive statistics and Cronbach alpha reliability coefficients were calculated to summarize the study variables and assess measurement scale reliability. To examine relationships among the variables, Pearson Product Moment Correlation was employed. Multiple regression analyses, including hierarchical regression, were conducted to identify significant predictors of theory of mind (ToM) from the study variables. Additionally, moderation analyses were performed to explore how certain relationships might be influenced by other variables. Furthermore, the study investigated group differences using independent sample *t*-tests and *ANOVA* to compare mean values among different groups. These analyses provided valuable insights into the study's findings and relationships between the variables.

**Theory of Mind Assessment of Preschool Children**

The Theory of Mind Scale developed by Henry Wellman was used to gauge the theory of mind abilities the preschoolers. The scale consists of five tasks presented in increasing order of difficulty. Each task is either scored as correct or 1 or as incorrect or 0 depending on the preschoolers' responses. Further details regarding the tasks are given in chapter two under the scales.

To carry out the Theory of Mind tasks, the following props were used. For task one a small figurine of a man and a printed and laminated drawing of a carrot and a cookie was used. For task two a small figurine of a girl and a printed and laminated drawing of a bush and garage was used. For task three a plain white box was used with a small elephant toy. For task four an empty bandage box along with a small toy turtle was used. For the last task a printed and laminated drawing of the back of a boy was used along with an emotion strip showing happy, sad and okay emotions.

Task one assesses the Diverse Desires (DD) of the preschoolers by presenting them with a simple situation. Task two assesses the Diverse Belief (DB) of the preschooler; how the preschooler is able to differentiate between his or her own beliefs and the beliefs of other people around them. Task three measures Knowledge Access (KA). Task four focuses on the False Belief (FB) possessed by the preschoolers whereas, task five assesses the Hidden Emotion (HE) of the preschoolers.

**Table 5**

*ToM Tasks Assessment of Preschoolers (N= 151)*

| ToM Tasks | f | % |
|-----------|-----|------|
| No Task Passed | 1 | .7 |
| Diverse Desire | 18 | 11.9 |
| Diverse Belief | 24 | 15.9 |
| Knowledge Access | 27 | 17.9 |
| False Belief | 28 | 18.5 |
| Hidden Emotion | 53 | 35.1 |

Table 5 shows that there was only 1 preschooler who was not able to answer any task correctly. 18 preschoolers were only able to answer the first task correctly, 24 were able to answer two tasks correctly. 27 preschoolers passed the first 3 tasks and 28 were able to clear the first 4 tasks. Whereas 53 preschoolers answered all five tasks correctly. A higher score on this scale indicates a higher level of ToM development in the child.

It was revealed in the data that there were 84 boys (*M*= 3.45, *S.D.*= 1.46) out of the total 151 preschoolers and 67 girls (*M*=3.49, *S.D.*=4.41). The mean value shows that there is no notable difference between both groups.

**Descriptive Statistics**

The mean scores, standard deviation, Cronbach alpha reliability, skewness and kurtosis along with range of the data were tabulated. The potential range in the Table 6 indicates the score range obtained by the sample while the actual range is the range of the scale between which scores can fall. Skewness and kurtosis were calculated for the normality assumptions.

The most widely accepted value for Cronbach's alpha is .70 and above (Hair et al., 2006). Table 6 shows the Cronbach alpha reliability of all the scales and subscales fall in an acceptable range, indicating that the scales accurately measure the constructs and are internally consistent.

The perspective-taking scale has a Cronbach alpha reliability of .66. DeVellis (2012) suggests that alpha values of .60 and above may be acceptable in some instances. So, the alpha value of .66 of the perspective-taking scale is also within the acceptable range.

**Table 6**

*Descriptive Statistics and Cronbach's Alpha of the Scales (N=151)*

| Scales | $k$ | $\alpha$ | $M$ | $SD$ | Skew | Kurt | Range Potential | Range Actual |
|--------|-----|----------|-----|------|------|------|-----------|--------|
| PIS | 30 | .95 | 114.77 | 24.11 | -1.10 | .83 | 30-150 | 43-144 |
| IRI | 14 | .91 | 47.46 | 13.58 | -.15 | -.71 | 14-70 | 14-69 |
| PPT | 2 | .66 | 7.89 | 2.15 | -.91 | .05 | 2-10 | 2-10 |
| SEFQ | 19 | | | | | | | |
|     Positive | 10 | .93 | 35.05 | 6.11 | -2.20 | 4.96 | 10-40 | 13-40 |
|     Negative | 9 | .91 | 15.98 | 6.16 | .82 | .22 | 9-36 | 9-33 |
| ToM | 5 | .71 | 3.47 | 1.44 | -.44 | -1.09 | 0-5 | 0-5 |

*Note.* PIS= Parental Involvement Scale; IRI= Interpersonal Reactivity Index; PPT= Parenting that encourages Perspective taking, SEFQ= Self-Expressiveness in the Family Questionnaire; ToM= Theory of Mind; $k$= Number of Items of the Scale; $M$= Mean; *S.D.*= Standard Deviation; Skew= Skewness; Kurt= Kurtosis

Furthermore, both skewness and kurtosis can be analyzed through descriptive statistics. Acceptable values of skewness fall between − 3 and + 3. The standard deviation of the scales indicated that the variability of the data is normally distributed. The score range of the scales and subscales falls between the actual ranges of the scales. The scores on Self-Expressiveness in the Family Questionnaire (SEFQ) were showing a high value of positive kurtosis which suggest a pointy and heavy tailed distribution in which most scores are lying close to the average (Field, 2013)

Results in Table 7 indicate the correlation pattern among the variables under investigation.

Results show that Parental Involvement is significantly positively correlated with the development of Theory of Mind among children, this means that as Parental Involvement increases in children, the development of Theory of Mind among children also increases. Hence, H1 is confirmed. Parental Empathy is significantly positively related to the development of the Theory of Mind among children. So, H2 is also proven. Perspective Taking in parents has a significant positive correlation with the development of the Theory of Mind among children. This confirms our 3rd hypothesis H3. Positive Emotion Expressiveness of parents is positively correlated with the Theory of Mind among children and Negative Emotion Expressiveness of

parents is negatively associated with the Theory of Mind among children. Hence, H4 and H5 are supported by the data.

**Table 7**

*Pearson Product Moment Correlation Among Study Variables and Demographic Variables (N = 151)*

| Sr. No. | Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------|----------|---|---|---|---|---|---|---|---|
| 1 | PI | - | .77** | .70** | .76** | -.62** | .54** | .24** | .24** |
| 2 | PE | | - | .73** | .63** | -.61** | .64** | .34** | .14 |
| 3 | PT | | | - | .65** | -.64** | .57** | .21** | .25** |
| 4 | EEPos | | | | - | -.59** | .47** | .20* | .29** |
| 5 | EENeg | | | | | - | -.55** | -.21** | -.29** |
| 6 | ToM | | | | | | - | .38** | .27** |
| 7 | CA | | | | | | | - | -.03 |
| 8 | MI | | | | | | | | - |

*Note:* PI= Parental Involvement; PE= Parental Empathy; PT= Perspective-Taking; EEPos= Positive Emotion Expressiveness; EENeg= Negative Emotion Expressiveness; ToM= Theory of Mind; CA= Child's Age; MI= Monthly income
$*p<.05 **p<.01$

Results in Table 7 indicate the correlation pattern among the study variables and the demographic variables. The results reveal that the child's age is positively correlated with the development of the ToM among children. Similarly, monthly income is also positively correlated with the development of the ToM among children.

**Regression Model Predicting the Development of Theory of Mind**

Multiple hierarchical regression was performed to assess the variance caused by the variables in predicting the development of the theory of mind of preschool children. In the first model, the effect of the demographic variables was controlled.

Table 8 presents the impact of Parental Involvement, Parental Empathy and Emotion Expressiveness on children's development of the theory of mind.

In step 1, predictors that are the child's age, monthly income, number of siblings and mother's age account for 26% variance in the Theory of Mind. In step 2, the value of $R^2$ revealed that predictors i.e., parental involvement, parental empathy,

perspective-taking, positive emotional expressiveness and negative emotion expressiveness along with the demographic variables explain 53% variance in predicting the ToM.

**Table 8**

*Multiple Hierarchical Regression Analysis Predicting Theory of Mind (N = 151)*

| Variable | Step 1 | Step 2 | Theory of Mind 95% CI | |
|---|---|---|---|---|
| | B | B | LL | UL |
| Constant | 1.85** | 1.21 | -.65 | 3.08 |
| Child's Age | .55*** | .31*** | .13 | .48 |
| Monthly Income | .37*** | .21** | .05 | .38 |
| No. of Siblings | -.29** | -.21* | -.42 | -.00 |
| Mother's Education | -.13 | -.06 | -.47 | .35 |
| Parental Involvement | | -.002 | -.01 | .01 |
| Parental Empathy | | .04*** | .02 | .06 |
| Perspective taking | | .07 | -.04 | .20 |
| Emotion Expressiveness | | | | |
| Positive | | -.01 | -.05 | .03 |
| Negative | | -.04* | -.07 | -.00 |
| $R^2$ | .26 | .53 | | |
| $\Delta R^2$ | | .26 | | |
| F | 12.99*** | 17.68*** | | |
| $\Delta F$ | 12.99 | 16.07 | | |

*Note: CI*= Confidence Interval; *LL*= Lower Limit; *UL* = Upper Limit

*\*p< .05 \*\*p< .01 \*\*\*p< .001*

## Moderation Analyses

SPSS (PROCESS macro) was used to perform the moderation analysis among various demographic variables and predictors and outcome variable.

## Moderating Role of Family System for Predicting Theory of Mind from Negative Emotion Expressiveness

The family system significantly moderates the relationship between the negative emotion expressiveness of the parent and the development of theory of mind among children. Table 9 shows the moderating role of the family system. Table 9 illustrates noteworthy primary impacts of Negative Emotion Expressiveness, along with non-significant primary effects of the Family System, in relation to the development of Theory of Mind in preschool-aged children. The major effect of negative emotion expressiveness is significant ($\beta$ = -.24, $p$ < .00), indicating that high negative emotion expressiveness predicts low development of the ToM among children. Major effect of family system is not related with the development of the ToM in children ($\beta$ = -.20, $p$ > .05).

**Table 9**

*Moderating Role of Family System for Predicting Theory of Mind from Negative Emotion Expressiveness (N=151)*

| Variables | $\beta$ | 95% CI | |
|---|---|---|---|
| | | *LL* | *UL* |
| Constant | 3.75*** | 3.11 | 4.39 |
| Negative Emotion Expressiveness | -.24*** | -.35 | -.13 |
| Family System | -.20 | -.60 | .18 |
| Negative Emotion Expressiveness X Family System | .07* | .01 | .14 |
| $R^2$ | .34 | | |
| $\Delta R^2$ | .02 | | |
| $F$ | 25.12 | | |

*Note.* $B$ = Unstandardized Beta; *CI*= Confidence Interval; *LL*= Lower Limit; *UL* = Upper Limit
*$p$. < .05. ***$p$ < .001.

The findings presented in Figure 1 shed light on the role of family system in predicting the development of ToM among preschoolers. The graph reveals a negative relationship between negative emotion expressiveness and theory of mind development in preschoolers. This suggests that when parents display more negative emotions, it may hinder the children's capacity to comprehend and interpret the mental attributes of other people.

However, the graph also indicates that this negative relationship is influenced by the type of family system: joint family system versus nuclear family system. In joint families where multiple generations and extended family members live together, the negative relationship between negative emotion expressiveness and ToM development is more pronounced.

Moreover, the interaction of negative emotion expressiveness and family system is significant $(\beta = .07, p < .05)$, which indicates moderation is significant. The interaction effect of these two variables is significantly positive and has added 34% variance. Therefore, it can be inferred that the family system has a significant role in predicting the development of ToM in children in the context of family system. Thus, the eighth hypothesis (i.e., the family system will moderate the relationship between Emotion Expressiveness and Theory of Mind) has been supported in case of the family system.

**Figure 2**

*Interaction Effect of Negative Emotion Expressiveness with Family System on the Development of Theory of Mind.*
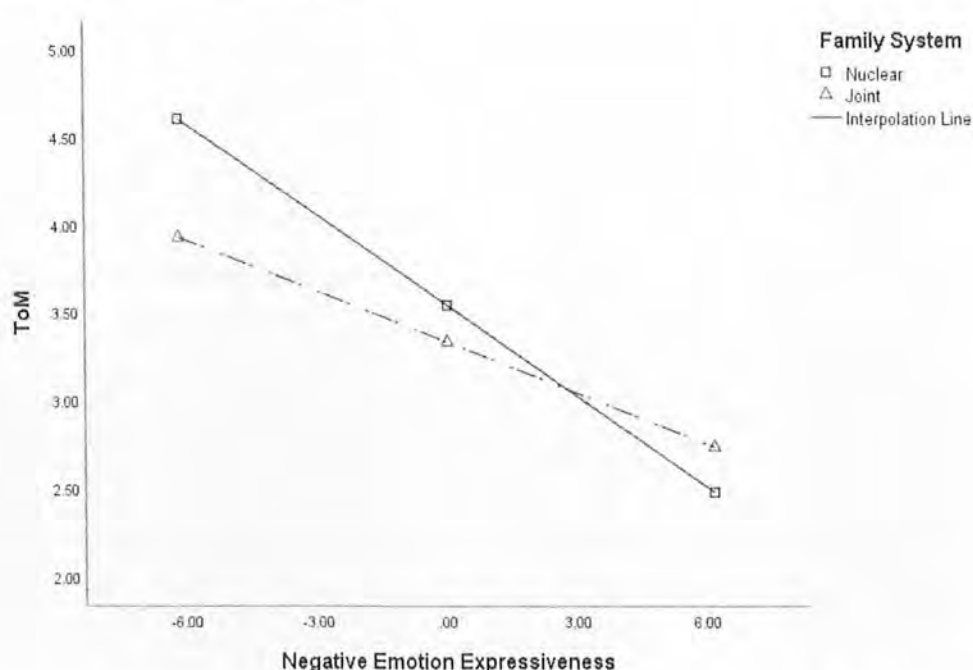


Figure 2 shows the moderating effect of the family system for the relationship between negative emotion expressiveness and the development of ToM among preschoolers. X-axis represents negative emotion expressiveness and Y-axis

represents the development of ToM. The mod graph demonstrates that the steeper line represents the nuclear family system. The more negative emotion expressed in this family system, the lower will be the development of ToM of the child.

Whereas the less steep line represents the joint family system. Here the more negative emotion expressed in this family system, the ToM development of the children will be better as compared to the other family system.

Hence the family system acts as a moderator between the relationship of the predictor variable i.e., negative emotion expressiveness and the outcome variable i.e., Theory of Mind.

**Moderating Role of Number of Languages Spoken at Home for Predicting Theory of Mind from Positive Emotion Expressiveness**

Number of languages spoken at home significantly moderates the relationship between the positive emotional expressiveness of the parent and the development of theory of mind among children. Table 10 shows the moderating role of the number of languages spoken at home.

**Table 10**

*Moderating Role of Number of languages Spoken at Home for Predicting Theory of Mind from Positive Emotion Expressiveness*

| Variables | $\beta$ | 95% CI | |
|---|---|---|---|
| | | LL | UL |
| Constant | 3.49*** | 3.28 | 3.69 |
| Positive Emotion Expressiveness | .10*** | .06 | .13 |
| Number of Languages | .01 | -.27 | .29 |
| Positive Emotion Expressiveness X Number of Languages | -.05* | -.11 | -.00 |
| $R^2$ | .24 | | |
| $\Delta R^2$ | .02 | | |
| $F$ | 15.87 | | |

*Note.* B = Unstandardized Beta; *CI*= Confidence Interval; *LL*= Lower Limit; *UL* = Upper Limit
*$p. < .05$. ***$p < .001$.

Table 10 depicts significant main effects of Positive Emotion Expressiveness and non-significant main effect of Number of Languages Spoken at Home on preschoolers' Theory of Mind development. The major effect of positive emotion expressiveness is significant ($\beta = .10, p < .00$), indicating that high positive emotion

expressiveness predicts high development of the ToM among children. The major effect of number of languages spoken at home is not related with the development of the ToM in children ($\beta = .01$, $p > .05$).     Moreover, the interaction of positive emotion expressiveness and the number of languages spoken at home is significant ($\beta = -.05$, $p < .05$), which indicate moderation is significant. The interaction effect of these two variables is significantly positive and has added 24% variance.  Therefore, it can be inferred that the number of languages spoken at home has a significant role in predicting the development of ToM in children in the context of positive emotion expressiveness.

Figure 3 shows the moderating effect of the number of languages spoken at home for the relationship between positive emotion expressiveness and the development of ToM among preschoolers. X-axis represents positive emotion expressiveness and Y-axis represents the development of ToM. The mod graph demonstrates that the steeper line represents only 1 language spoken at home. The less the number of languages spoken at home, the more it will influence the development of theory of mind among preschoolers.

**Figure 3**

*Interaction Effect of Positive Emotion Expressiveness with the Number of Languages Spoken at Home on the Development of Theory of Mind.*
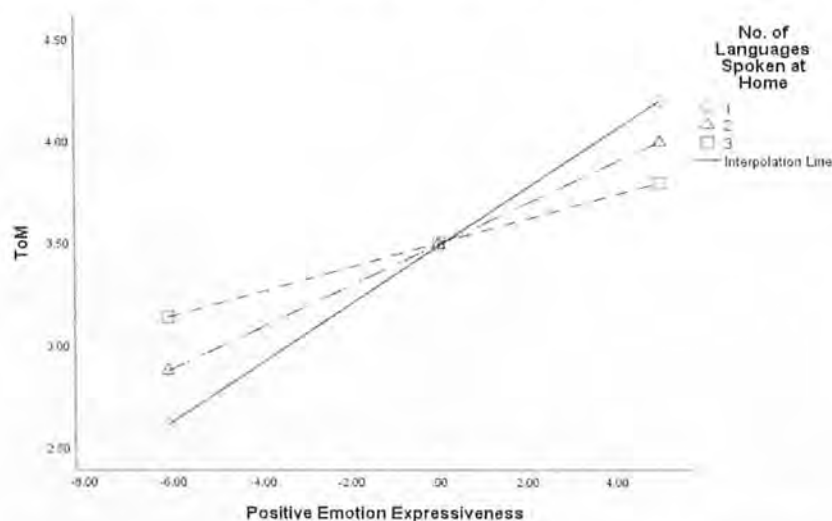


Figure 3 demonstrates the significant moderating role of number of languages spoken at home in predicting the theory of mind among preschoolers. The graph reveals the positive relationship between the number of languages spoken at home and the development of ToM among preschoolers. Preschoolers living in families where 1

language is spoken show a greater development of ToM as compared to preschoolers who were living in families where 2 or more languages were spoken. Therefore, moderation analysis interaction term suggests that after interaction preschoolers living in families where only 1 language is spoken show remarkably more development in their theory of mind.

## Moderating Role of Father's Education for Predicting Theory of Mind from Parental Involvement

Father's education significantly moderates the relationship between parental involvement and the development of the theory of mind among children. Table 12 shows the significant moderating role of the father's education.

Table 11 depicts the significant main effects of Parental Involvement and the non-significant main effect of father's education on the development of the Theory of Mind among preschoolers. The major effect of father's education is not significant ($\beta$ = .17, $p > .05$). The major effect of parental involvement is significant and is related with the development of the ToM in children ($\beta = .06$, $p < .00$).

**Table 11**

*Moderating Role of Father's Education for Predicting Theory of Mind from Parental Involvement*

| Variables | $\beta$ | 95% CI | |
|---|---|---|---|
| | | *LL* | *UL* |
| Constant | 3.18*** | 2.50 | 3.86 |
| Parental Involvement | .06*** | .03 | .09 |
| Father's Education | .17 | -.22 | .57 |
| Parental Involvement X Father's education | -.01* | -.03 | -.00 |
| $R^2$ | .32 | | |
| $\Delta R^2$ | .01 | | |
| $F$ | 23.26 | | |

*Note.* $B$ = Unstandardized Beta; *CI*= Confidence Interval; *LL*= Lower Limit; *UL* = Upper Limit
*$p. < .05$. ***$p < .001$.

Moreover, the interaction of parental involvement and father's education is significant ($\beta = -.01$, $p < .05$), which indicates moderation is significant. The variance caused in the outcome variable i.e., ToM due to the interaction effect of the predictor variable i.e., parental involvement and the moderator variable i.e., father's education is 32%. Therefore, it can be inferred that father's education has a significant impact

in predicting the development of ToM in preschool children in context of parental involvement.

Figure 4 demonstrates the significant moderating role of father's education in predicting the theory of mind among preschoolers. The graph reveals the positive relationship between father's education and the development of ToM among preschoolers.

**Figure 4**

*Interaction Effect of Parental Involvement with Father's Education on the Development of Theory of Mind.*
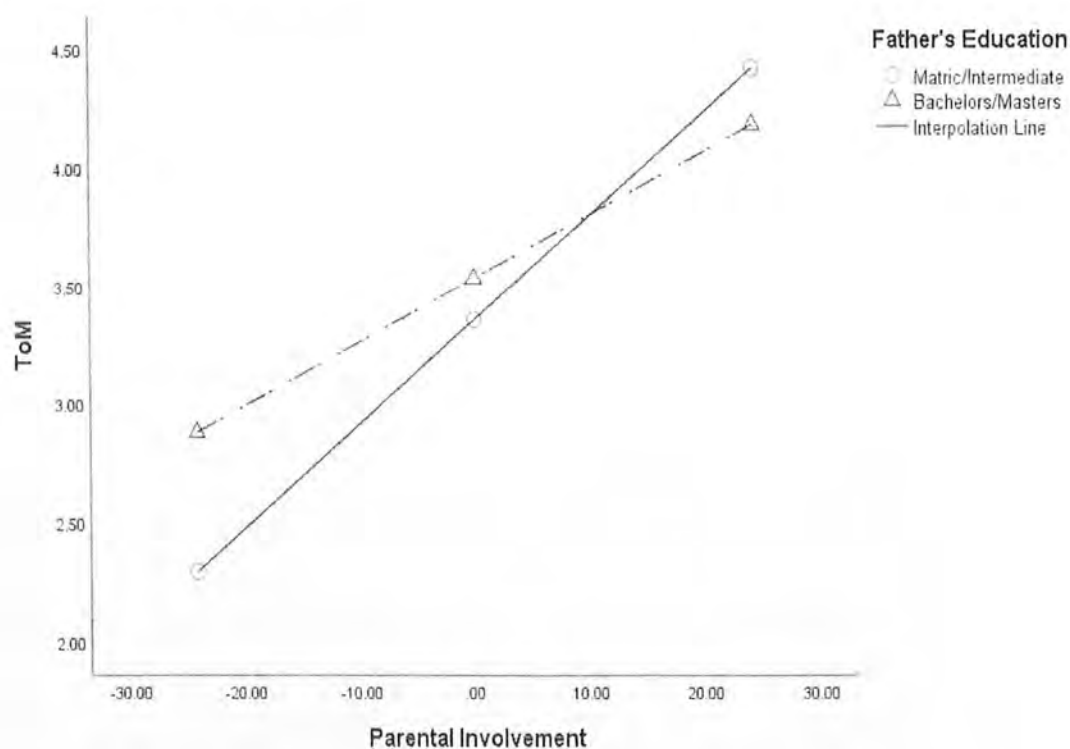


This positive relationship is more pronounced in the fathers with matric/intermediate education as compared to the fathers with bachelors/masters level of education.

**Moderating Role of Mother's Age for Predicting Theory of Mind from Perspective Taking**

Mother's age significantly moderates the relationship between parental perspective taking and the development of the theory of mind among children. Table 13 shows the significant moderating role of the father's education.

Table 12 depicts the significant main effects of Perspective Taking and the non-significant main effect of Mother's age on the Theory of Mind development among preschooler children. The major effect of mother's age is not significant ($\beta$ = -.17, $p$ > .05). The major effect of perspective-taking is significant and is related with the development of the ToM in children ($\beta$ = .73, $p$ < .00). Moreover, the interaction of mother's age and perspective-taking is significant ($\beta$ = -.01, $p$ < .05), which indicate moderation is significant. The variance caused in the outcome variable i.e., ToM due to the interaction effect of the predictor variable i.e., perspective taking and the moderator variable i.e., mother's age is 36%.

**Table 12**

*Moderating Role of Mother's Age for Predicting Theory of Mind from Perspective Taking*

| Variables | $\beta$ | 95% CI | |
|---|---|---|---|
| | | *LL* | *UL* |
| Constant | 3.69*** | 3.13 | 4.26 |
| Perspective Taking | .73*** | .46 | 1.01 |
| Mother's Age | -.17 | -.59 | .24 |
| Perspective Taking X Mother's age | -.29*** | -.50 | -.08 |
| $R^2$ | .36 | | |
| $\Delta R^2$ | .03 | | |
| $F$ | 27.62 | | |

*Note.* $B$ = Unstandardized Beta; $CI$ = Confidence Interval; $LL$ = Lower Limit; $UL$ = Upper Limit
*$p$. < .05. ***$p$ < .001.

Therefore, it can be inferred that mother's age has a significant role in predicting the development of ToM in children in the context of perspective taking.

**Figure 5**

*Interaction Effect of Perspective-Taking with Mother's Age on the Development of Theory of Mind.*
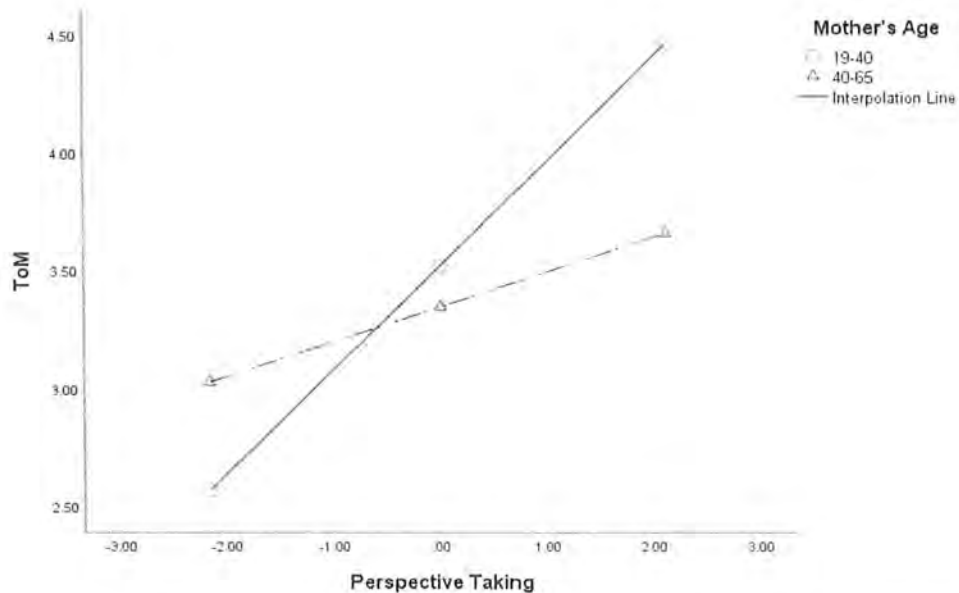


In Figure 5, a discernible pattern emerges, underscoring the substantial moderating influence of a mother's age on the prediction of Theory of Mind (ToM) development among preschool-aged children. The graph conspicuously portrays a negative correlation between maternal age and the progression of ToM acumen within the preschooler cohort.

Specifically, the data reveals that offspring born to mothers aged between 19 and 40 years exhibit a more pronounced advancement in ToM capabilities in comparison to those with mothers aged between 40 and 65 years.

Elaborating on the interaction dynamics, it becomes evident that an intricate interplay exists between the age of the child and the age of the mother. This interaction is crucial in influencing the trajectory of ToM competence in these children. Notably, the interaction term analysis signifies that within this intricate interplay, the cohort of children whose mothers fall within the age range of 19 to 40 years exhibits a notably augmented progression in ToM proficiency.

In summary, the interaction dynamics between the age of the child and the age of the mother intricately shape the developmental trajectory of Theory of Mind competence in preschool children. This interplay is characterized by a notable augmentation in ToM proficiency among children whose mothers are aged 19 to 40

years. Understanding these dynamics helps shed light on the complex factors influencing cognitive and socio-emotional development in children.

## Moderating Role of Number of Adults in the Family for Predicting Theory of Mind from Parental Involvement

The quantity of adults within the family unit serves as a significant moderator in influencing the association between parental engagement and the advancement of Theory of Mind in children. This significant moderating function of the number of adults in the family is presented in Table 13.

**Table 13**

*Moderating Role of Number of Adults in the Family for Predicting Theory of Mind from Parental Involvement*

| Variables | $\beta$ | 95% CI | |
| --- | --- | --- | --- |
| | | *LL* | *UL* |
| Constant | 3.42*** | 3.22 | 3.61 |
| No. of Adults in the Family | -.07 | -.32 | .17 |
| Parental Involvement | .03*** | .02 | .04 |
| No. of Adults in the Family X Parental Involvement | -.01** | -.02 | -.00 |
| $R^2$ | .33 | | |
| $\Delta R^2$ | .02 | | |
| $F$ | 24.29 | | |

*Note.* $B$ = Unstandardized Beta; *CI*= Confidence Interval; *LL*= Lower Limit; *UL* = Upper Limit
*$p$ < .05. **p <.01 ***$p$ < .001.

Table 13 depicts the significant main effects of Parental Involvement and the non-significant main effect of Number of Adults in the Family on the development of the Theory of Mind among preschoolers. The major effect of the number of adults in the family is not significant ($\beta$ = -.07, $p$ > .05). The major effect of parental involvement is significant and is related to the development of the ToM in children ($\beta$ = .03, $p$ < .00).

Moreover, the interaction of number of adults in the family and parental involvement is significant ($\beta = -.01$, $p < .01$), which indicate moderation is significant. The variance caused in the outcome variable i.e., ToM is due to the interaction effect of the predictor variable i.e., parental involvement and the moderator variable i.e., number of adults in the family is 33%. Therefore, it can be inferred that the number of adults in the family has a significant role in predicting the development of ToM in children in the context of parental involvement.

**Figure 6**

*Interaction Effect of Parental Involvement with Number of Adults in the Family on the Development of Theory of Mind.*



Figure 6 demonstrates the significant moderating role of the number of adults in the family in predicting the theory of mind among preschoolers. The graph reveals the positive relationship between the number of adults in the family and the development of ToM among preschoolers. Preschoolers living in families with 1-2 adults show a greater development of ToM as compared to preschoolers who were living with 3 or more adults in the family. Therefore, moderation analysis interaction term suggests that after interaction preschoolers living in families with only 1 to 2 adults in the family show remarkably more development in their theory of mind.

**Moderating Role of Number of Father's Age for Predicting Theory of Mind from Perspective Taking**

Father's age significantly moderates the relationship between perspective-taking and the development of the theory of mind among children. Table 14 shows the significant moderating role of the father's age.

**Table 14**

*Moderating Role of Father's Age for Predicting Theory of Mind from Perspective-Taking*

| Variables | $\beta$ | 95% CI | |
|---|---|---|---|
| | | LL | UL |
| Constant | 3.75*** | 3.18 | 4.31 |
| Father's age | -.21 | -.63 | .20 |
| Perspective-taking | .82*** | .53 | 1.10 |
| Father's age X Perspective-taking | -.37*** | -.61 | -.14 |
| $R^2$ | .37 | | |
| $\Delta R^2$ | .04 | | |
| $F$ | 29.27 | | |

*Note.* $B$ = Unstandardized Beta; $CI$= Confidence Interval; $LL$= Lower Limit; $UL$ = Upper Limit
*$p. < .05.$ ***$p < .001.$

Table 14 depicts the significant main effects of Perspective Taking and the non-significant main effect of Father's age on the Theory of Mind development among preschoolers. The major effect of father's age is not significant ($\beta$ = -.21, $p$ > .05). The major effect of perspective-taking is significant and is related with the development of the ToM in children ($\beta$ = .82, $p$ < .001).

Moreover, the interaction of father's age and perspective-taking is significant ($\beta$ = -.37, $p$ < .001), which indicate moderation is significant. The variance caused in the outcome variable i.e., ToM due to the interaction effect of the predictor variable i.e., perspective taking and the moderator variable i.e., father's age is 37%. Therefore, it can be inferred that father's age has a significant role in predicting the development of ToM in children in context of perspective taking.

**Figure 7**

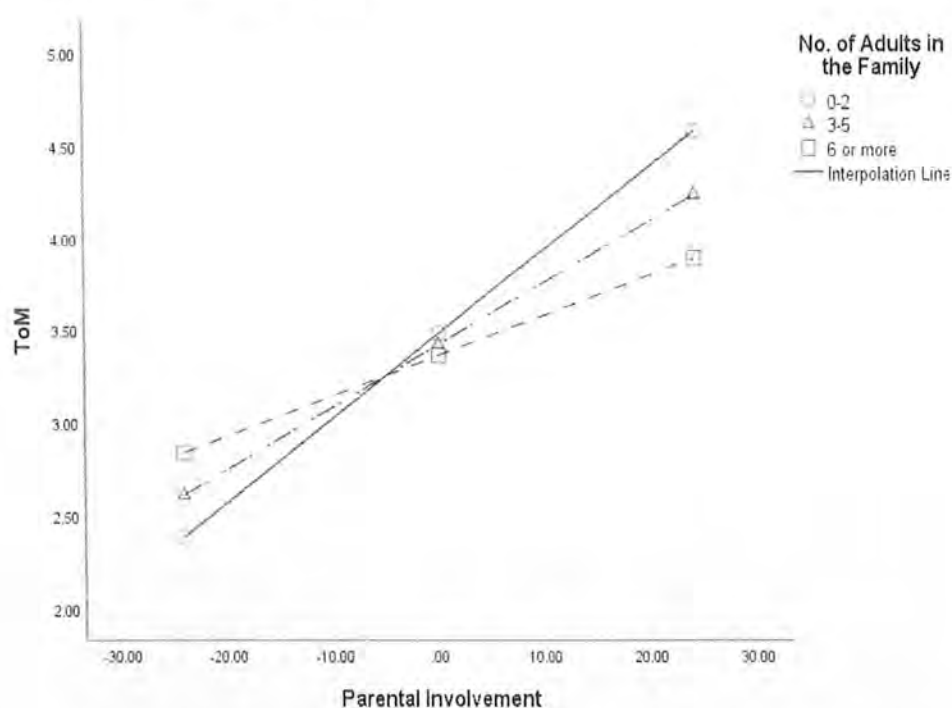*Interaction Effect of Perspective-Taking with Father's Age on the Development of Theory of Mind.*
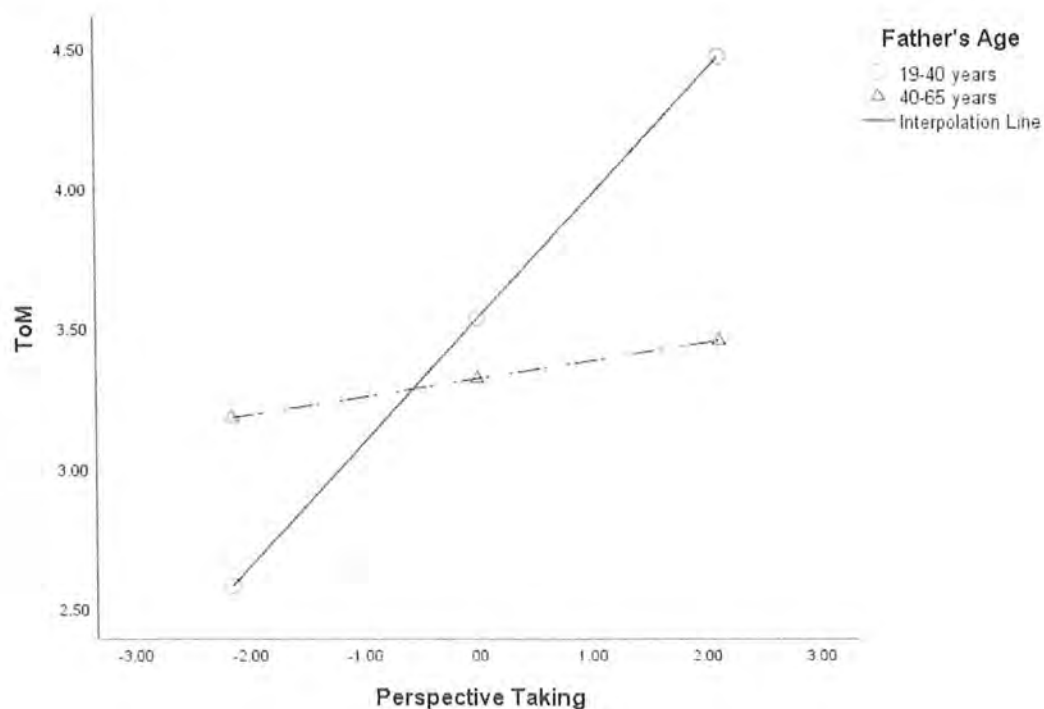


Figure 7 demonstrates the significant moderating role of father's age in predicting the theory of mind among preschoolers. The graph reveals the negative relationship between father's age and the development of ToM among preschoolers. Children with fathers aged between 19-40 years of age show a greater development of ToM as compared to the children whose mothers aged between 40-65 years. Therefore, moderation analysis interaction term suggests that after interaction children with fathers aged between 19-40 years of age showed a greater development of ToM with respect to perspective-taking.

**Differences Across Family System on Study Variables**

Table 15 shows significant mean differences across family system on parental involvement, parental empathy, perspective-taking, positive emotion expressiveness, negative emotion expressiveness, and theory of mind. Nuclear family system exhibits high scores on parental involvement ($M$ = 119.2, $SD$ = 23.38), parental empathy ($M$ =

51.19, *SD* =13.88), perspective-taking (*M* = 8.18, *SD* = 2.20), positive emotion expressiveness (*M*= 35.99, *SD*= 5.29), and theory of mind (*M*= 3.76, *SD*= 1.43).

On the other hand, in comparison to the nuclear family system, joint family system scored high on negative emotion expressiveness (*M* = 16.94, *SD* =6.34).

**Table 15**

*Differences Across Family System on Study Variables (N=151)*

| Variables | Nuclear (*n*=67) | | Joint (*n*=82) | | | | 95% *CI* | | Cohen's *d* |
|---|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *t* | *p* | *LL* | *UL* | |
| PI | 119.2 | 22.38 | 110.55 | 25.14 | 2.24 | .02 | 1.06 | 16.65 | 0.35 |
| PE | 51.19 | 13.88 | 44.44 | 12.78 | 3.08 | .00 | 2.42 | 11.08 | 0.50 |
| PT | 8.18 | 2.20 | 7.68 | 2.12 | 1.39 | .16 | -.20 | 1.19 | |
| EE | | | | | | | | | |
| EEPos | 35.99 | 5.28 | 34.22 | 6.70 | 1.75 | .08 | -.22 | 3.75 | |
| EENeg | 14.63 | 5.71 | 16.94 | 6.34 | 2.31 | .02 | -4.28 | -.33 | 0.38 |
| ToM | 3.76 | 1.43 | 3.23 | 1.40 | 2.26 | .02 | .06 | .99 | 0.37 |

*Note.* PI= Parental Involvement; PE= Parental Empathy; PT= Perspective-Taking; EEPos= Positive Emotion Expressiveness; EENeg= Negative Emotion Expressiveness; ToM= Theory of Mind; *M*= Mean; *SD*= Standard Deviation; *CI*= Confidence Interval; *LL*= Lower Limit; *UL*= Upper Limit
*p* < .05. **p <.01 ***p* < .001.

**Differences along Monthly Income in Study Variables**

Monthly income consisting of four categories: 35,000 and below, 35,000 to 70,000, 70,000 to 150,000, and 150,000 and above was assessed by means of a one-way *ANOVA*.

It is evident from Table 16 that mean differences among different categories of monthly income in most study variables are significant. The only non-significant between-group difference can be observed in parental empathy.

The post hoc analysis presented in Table 17 reveals that preschool-aged children residing in households with a monthly income of 35000 or below tend to experience comparatively lower levels of parental involvement as compared to preschoolers who are residing in households with a monthly income between 35,000 to 700,000. Similarly, preschoolers residing in families with monthly income more

than 150,000 get more parental involvement as compared to those settled in families with monthly income of 35,000 or below.

It can also be observed that preschoolers residing in families with monthly income 35000 and below get less perspective taking from their parents as compared to preschoolers who are residing in households with a monthly income between 35,000 to 70,000. Similarly, preschoolers settled in families with monthly income between 70,000 and 150,000 get more perspective taking from their parents as compared to those living in families with monthly income of 35,000 or below. The preschoolers living in families with monthly income more than 150,000 get more parental positive emotion expressiveness as compared to those living with families with monthly income of 35,000 or below.

**Table 16**

*Differences Along Monthly Income in Parental Involvement, Parental Empathy, Perspective-Taking, Positive Emotional Expressiveness, and Negative Emotional Expressiveness (N= 151)*

| Variables | 35,000 and below (n = 28) | | 35,000-70,000 (n = 41) | | 70,000-150,000 (n = 30) | | 150,000 and above (n = 52) | | F | p | $\eta2$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | SD | M | SD | M | SD | M | SD | | | |
| PI | 100.50 | 28.49 | 117.59 | 20.33 | 113.7 | 24.76 | 120.87 | 21.23 | 4.94 | .00 | 0.09 |
| PE | 42.18 | 15.39 | 49.29 | 12.20 | 46.47 | 13.16 | 49.42 | 13.38 | 2.12 | .10 | 0.04 |
| PT | 6.68 | 2.37 | 8.07 | 1.95 | 7.73 | 2.43 | 8.50 | 1.75 | 4.83 | .00 | 0.08 |
| EE | | | | | | | | | | | |
| EEPos | 31.07 | 9.55 | 35.07 | 3.60 | 35.77 | 5.36 | 36.75 | 4.80 | 5.96 | .00 | 0.10 |
| EENeg | 20.29 | 7.63 | 15.41 | 5.09 | 15.60 | 5.32 | 14.33 | 5.57 | 6.62 | .00 | 0.11 |
| ToM | 2.36 | 1.47 | 3.78 | 1.37 | 3.47 | 1.43 | 3.83 | 1.20 | 8.32 | .00 | 0.14 |

*Note.* PI= Parental Involvement; PE= Parental Empathy; PT= Perspective-Taking; EEPos= Positive Emotion Expressiveness; EENeg= Negative Emotion Expressiveness; ToM= Theory of Mind; *M*= Mean; *SD*= Standard Deviation.

Preschoolers living in families with monthly income 35000 and below receives less positive emotion expressiveness form their parents as compared to those preschoolers living in families with monthly income between 35,000 and 70,000.

**Table 17**

*Post Hoc Analysis of the Difference Among Monthly Income*

| Variables | I Category | J Categories | Post hoc i>j | D (i-j) | 95% CI LL | UL |
|---|---|---|---|---|---|---|
| PI | 35,000 and below | 35,000-70,000 | 1<2 | -17.08* | -31.88 | -2.29 |
| | | 150,000 and above | 1<4 | -20.37* | -34.51 | -6.22 |
| PE | | | | | | |
| PT | 35,000 and below | 35,000-70,000 | 1<2 | -1.39* | -2.72 | -.07 |
| | | 150,000 and above | 1<4 | -1.82* | -3.09 | -.56 |
| EE | | | | | | |
| EEPos | 35,000 and below | 35,000-70,000 | 1<2 | -4.02* | -7.72 | -.29 |
| | | 70,000-150,000 | 1<3 | -4.69* | -8.68 | -.71 |
| | | 150,000 and above | 1<4 | -5.68* | -9.23 | -2.13 |
| EENeg | 35,000 and below | 35,000-70,000 | 1>2 | 4.871* | 1.15 | 8.59 |
| | | 70,000-150,000 | 1>3 | 4.68* | .70 | 8.68 |
| | | 150,000 and above | 1>4 | 5.95* | 2.40 | 9.52 |
| ToM | 35,000 and below | 35,000-70,000 | 1<2 | -1.42* | -2.28 | -.57 |
| | | 70,000-150,000 | 1<3 | -1.11* | -2.03 | -.19 |
| | | 150,000 and above | 1<4 | -1.47* | -2.29 | -.65 |

*Note.* PI= Parental Involvement; PE= Parental Empathy; PT= Perspective-Taking; EEPos= Positive Emotion Expressiveness; EENeg= Negative Emotion Expressiveness; ToM= Theory of Mind; *CI*= Confidence Interval; *LL*= Lower Limit; *UL*= Upper Limit

*p < .05

Preschoolers living in families with monthly income 35000 and below receives less positive emotion expressiveness form their parents as compared to those preschoolers living in families with monthly income between 70,000 and 150,000. Same is the case with preschoolers who are living in families with monthly income 35000 and below receives less positive emotion expressiveness form their parents as compared to those preschoolers living in families with monthly income of 150,000 and above.

Preschoolers living in families with a monthly income of 35000 and below receives more negative emotion expressiveness from their parents as compared to those preschoolers living in families with a monthly income between 35,000 and 70,000. Preschoolers living in families with a monthly income 35000 and below receives more negative emotion expressiveness form their parents as compared to those preschoolers living in families with a monthly income between 70,000 and 150,000. Same is the case with preschoolers who are living in families with a monthly income 35000 and below receives more negative emotion expressiveness form their parents as compared to those preschoolers living in families with a monthly income of 150,000 and above.

**Differences Along Number of Siblings in Study Variables**

The number of siblings consisting of three categories: 0-1, 2, and 3 and more was assessed by means of a one-way ANOVA.

It is evident from Table 18 that mean differences among different categories of number of siblings in most study variables are non-significant. The only significant between-group difference can be observed in parental empathy and perspective-taking.

Post hoc analysis in Table 19 shows that preschoolers living in families with 2 siblings get less parental empathy as compared to preschoolers who are living in families with 3 or more number of siblings. Similarly, preschoolers living in families with no or 1 sibling get less perspective-taking from their parents as compared to those living in families with 2 siblings.

Table 19 suggest that there are significant differences in the levels of parental empathy and perspective-taking experienced by preschoolers depending on the number of siblings in their families. Specifically, it appears that the number of siblings in a family can have an impact on the quality of parent-child interactions, particularly in terms of empathy and perspective-taking.

**Table 18**

*Differences Along Number of Siblings in Parental Involvement, Parental Empathy, Perspective-Taking, Positive Emotional Expressiveness, and Negative Emotional Expressiveness (N= 151)*

| Variables | 0-1 (*n* = 59) | | 2 (*n* = 42) | | 3 and more (*n* = 50) | | *F* | *p* | $\eta 2$ |
|---|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *M* | *SD* | | | |
| PI | 119.54 | 22.15 | 109.55 | 22.55 | 113.54 | 26.85 | 2.24 | .11 | 0.02 |
| PE | 48.73 | 14.19 | 42.45 | 10.13 | 50.16 | 14.47 | 4.28 | .01 | 0.05 |
| PT | 8.27 | 2.10 | 7.21 | 2.05 | 8.02 | 2.20 | 3.16 | .04 | 0.04 |
| EE | | | | | | | | | |
| EEPos | 36.00 | 5.47 | 33.55 | 5.40 | 35.18 | 7.17 | 2.01 | .13 | 0.02 |
| EENeg | 15.17 | 6.05 | 17.38 | 4.57 | 15.76 | 7.27 | 1.64 | .19 | 0.02 |
| ToM | 3.46 | 1.50 | 3.26 | 1.23 | 3.44 | 1.52 | .87 | .41 | 0.01 |

*Note.* PI= Parental Involvement; PE= Parental Empathy; PT= Perspective-Taking; EEPos= Positive Emotion Expressiveness; EENeg= Negative Emotion Expressiveness; ToM= Theory of Mind; *M*= Mean; *SD*= Standard Deviation.

Table 19 highlights the potential impact of family size on parental empathy and perspective-taking among preschoolers. It suggests that family dynamics, resource allocation, and social interactions within the family context are factors that may contribute to these differences. Further research and exploration of these dynamics can provide valuable insights into the development of empathy and perspective-taking skills in early childhood and help parents and educators better understand how to support these critical aspects of social and emotional development.

**Table 19**

*Post Hoc Analysis of the Difference along Number of Siblings*

| Variables | I Category | J Categories | Post hoc $i>j$ | $D$ $(i-j)$ | 95% CI LL | UL |
|---|---|---|---|---|---|---|
| PI | | | | | | |
| PE | 2 | 3 and more | 2<3 | -7.70* | -14.29 | -1.12 |
| PT | 0-1 | 2 | 1<2 | 1.05* | .04 | 2.07 |
| EE | | | | | | |
| EEPos | | | | | | |
| EENeg | | | | | | |
| ToM | | | | | | |

*Note.* PI= Parental Involvement; PE= Parental Empathy; PT= Perspective-Taking; EEPos= Positive Emotion Expressiveness; EENeg= Negative Emotion Expressiveness; ToM= Theory of Mind; *CI*= Confidence Interval; *LL*= Lower Limit; *UL*= Upper Limit
*$p < .05$

**Differences Along Number of Adults in the Family in Study Variables**

The number of adults in the family consisting of three categories: 0-2, 3-5, and 6 and more was assessed by means of a one-way ANOVA.

It is evident from Table 20 that mean differences among different categories of number of adults in the family in most study variables are not significant. The only significant between-group difference can be observed in parental empathy and positive emotion expressiveness.

Post hoc analysis in Table 21 shows that preschoolers living in families with no or 2 adults in the family get more parental empathy as compared to preschoolers who are living in families with 3-5 adults. Similarly, preschoolers living in families with no or 2 adults in the family get more parental empathy as compared to those living in families with 6 or more adults present.

**Table 20**

*Differences Along Number of Adults in the Family in Parental Involvement, Parental Empathy, Perspective-Taking, Positive Emotional Expressiveness, and Negative Emotional Expressiveness (N= 151)*

| Variables | 0-2 (*n* = 47) | | 3-5 (*n* = 56) | | 6 and more (*n* = 48) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *M* | *SD* | *F* | *p* | $\eta^2$ |
| PI | 121.66 | 17.69 | 111.50 | 28.71 | 111.85 | 22.70 | 2.85 | .06 | 0.03 |
| PE | 52.51 | 11.72 | 45.04 | 15.71 | 45.33 | 11.30 | 4.98 | .00 | 0.06 |
| PT | 8.53 | 1.67 | 7.59 | 2.53 | 7.63 | 1.98 | 3.07 | .04 | 0.03 |
| EE | | | | | | | | | |
| EEPos | 37.19 | 2.68 | 34.04 | 7.68 | 34.13 | 6.04 | 4.39 | .01 | 0.05 |
| EENeg | 14.68 | 5.26 | 16.86 | 7.18 | 16.23 | 5.57 | 1.66 | .19 | 0.02 |
| ToM | 3.81 | 1.31 | 3.36 | 1.61 | 3.27 | 1.31 | 1.95 | .14 | 0.02 |

*Note.* PI= Parental Involvement; PE= Parental Empathy; PT= Perspective-Taking; EEPos= Positive Emotion Expressiveness; EENeg= Negative Emotion Expressiveness; ToM= Theory of Mind; *M*= Mean; *SD*= Standard Deviation.

It is evident from Table 21 that preschoolers living in families with no or 2 adults in the family get more positive emotion expressiveness as compared to preschoolers who are living in families with 3-5 adults. Similarly, preschoolers living in families with no or 2 adults in the family get more positive emotion expressiveness as compared to those living in families with 6 or more adults present.

Table 21 provides clear evidence that preschoolers who reside in families with either no adults or only two adults tend to exhibit greater levels of positive emotion expressiveness when compared to their counterparts living in larger households with 3-5 adults or 6 or more adults. This finding underscores the influence of family size and adult composition on the emotional development of preschool-aged children. The findings from Table 21 underscore the significance of family size and adult composition in shaping the emotional development of preschoolers. Smaller families with fewer adults appear to create an environment where children feel more comfortable and expressive of positive emotions.

**Table 21**

*Post Hoc Analysis of the Difference Along Number of Adults in the Family*

| Variables | I Category | J Categories | Post hoc $i>j$ | $D$ $(i-j)$ | 95% C.I. L.L. | U.L. |
|---|---|---|---|---|---|---|
| PI |  |  |  |  |  |  |
| PE | 0-2 | 3-5 | 1>2 | 7.47* | 1.28 | 13.67 |
|  |  | 6 and more | 1>3 | 7.17* | .75 | 13.61 |
| PT |  |  |  |  |  |  |
| EE |  |  |  |  |  |  |
| EEPos | 0-2 | 3-5 | 1>2 | 3.15* | .35 | 5.96 |
|  |  | 6 and more | 1>3 | 3.06* | .16 | 5.97 |
| EENeg |  |  |  |  |  |  |
| ToM |  |  |  |  |  |  |

*Note.* PI= Parental Involvement; PE= Parental Empathy; PT= Perspective-Taking; EEPos= Positive Emotion Expressiveness; EENeg= Negative Emotion Expressiveness; ToM= Theory of Mind; *CI*= Confidence Interval; *LL*= Lower Limit; *UL*= Upper Limit

*p < .05

# DISCUSSION

# Discussion

The present research is aimed to find out the influence of Parental Involvement, Parental Empathy and Emotional expressiveness in the development of Theory of Mind (ToM) among pre-school children. Basing understanding on the social constructivist and ecological approach, research hypotheses were formulated on the assumption that home environment and social interaction with parents play a role in developing a preschooler's ToM. After a thorough review of the literature, following predictors were selected: Parental involvement, parental empathy, emotional expressiveness, encouragement of perspective taking of others by parents. Additionally, demographic variables like the age of the child, number of siblings, and family system have been explored as well in terms of their influence on ToM.

The research proceeded with a correlational survey design involving the administration of a questionnaire booklet to test the hypotheses. The sample comprised of 151 parent-child dyads solicited through preschools. Parents were handed over questionnaire forms containing scales measuring predictors and demographic sheet. The children were orally asked to perform five sets of tasks in order to measure their ToM. Results indicated that majority of the children were able to accomplish all five tasks or skills associated with the theory of mind: diverse desires, diverse beliefs, knowledge access, false beliefs, and hidden emotions (Etel & Yagmurlu, 2015). Since these five skills develop sequentially (Wellman & Liu, 2004) so it can be inferred that majority of the sample had passed the final stage of ToM development.

Scores on ToM tasks and responses from parents on other measures were scored and analyzed with the help of SPSS Version 26. The discussion of these findings are presented below:

**Descriptive Statistics**

Majority of the instruments used in the research possessed sufficient alpha reliability estimates with the exception of the measure assessing parenting that encourages perspective taking (see Table 6). However, this measure only consisted of

two items and there is evidence suggesting that Cronbach alphas are dependent on number of items in a scale.

Normality indicators for the data distribution were tested as well (see Table 6) and while most of the kurtosis and skewness values were within the prescribed range of -2 to +2 (George & Mallery, 2010), the scores on Self-Expressiveness in the Family Questionnaire (SEFQ) were showing a high value of positive kurtosis which suggest a pointy and heavy tailed distribution in which most scores are lying close to the average (Field, 2013). Since the average score on the positive subscale of SEFQ is high, it is thus evident most parents in the sample engage in high positive expressiveness of emotions towards their children. Negative skew values of all other scales apart from negative subscale of SEFQ indicate the same trend of high scores thereby indicating that parents were more involved, empathic, expressive and encouraged perspective taking.

### Relationships among Study Variables

The various significant relationships were in line with the proposed hypotheses (see Table 7). High Parental involvement along with its various facets, such as school activities, anxiety and over protection, monitoring, help with homework, and interest development-extra curriculum activities, was associated with high scores on ToM. Parental involvement in such activities not only influences children's educational success but it also nurtures their social and emotional skills (El Nokali et al., 2010; Goleman, 1998). Sabagh and Seamans (2008) have already linked parents and children's theory of mind.

As for the significantly positive link between parental empathy and children's ToM, it must be understood empathy and ToM are psychologically and neurologically associated phenomenon (Wang, & Wang, 2015). Numerous research endeavors have illuminated the pivotal role played by parents who actively engage in sharing their child's feelings, thoughts, motives, and desires. This active parental involvement has demonstrated a pronounced positive impact on multiple dimensions of a child's psychological, social, and cognitive development. Through this engagement, children's abilities in socialization, regulating emotions, grasping symbolic concepts, cognitive processing, and even their capacity to internalize moral values and empathize with others experience notable enhancement.

The insights from research studies by Feldman (2007), Strayer and Roberts (2004), Feshbach (1990), Landry et al. (2006), Psychogiou et al. (2008), and Eisenberg and McNally (1993) collectively underscore this phenomenon. By sharing in their child's inner world, parents foster an environment conducive to the refinement of the child's social skills, which is pivotal for effective interaction within their social sphere. Additionally, this active involvement aids children in learning to manage their emotions, a foundational skill that contributes to their emotional well-being and overall development.

Furthermore, this parental engagement is shown to enhance a child's symbolic competence - their capacity to understand and use symbols, paving the way for more sophisticated communication and cognitive growth. Cognitive functioning, too, receives a boost, leading to an enriched ability to process information, think critically, and problem-solve.

Perhaps most intriguingly, this practice of shared emotional experiences is linked to the child's gradual internalization of a moral compass and their capacity to empathize with others. These studies collectively unveil the profound impact that parents' active participation in their child's emotional world has on the development of their ethical and interpersonal dimensions.

Similarly, scores on two items assessing parents who encouraged their children to take perspectives of others were positively related with development of ToM among children. Perspective taking is the main hallmark of ToM (Birch et al., 2017). There is evidence linking the role of parents with this phenomenon. In the study conducted by FitzGerald and White (Pears & Moses, 2003), it was found that children's performance in tasks related to perspective-taking exhibited a positive correlation with parents who prioritized the emotions of the victim in situations where their own child had engaged in misbehavior. Furthermore, it has been observed that parents' use of elaborative discourse, which entails offering detailed and contextually rich information, posing open-ended inquiries, and affording children opportunities to finish their sentences, holds a notably favorable influence on the development of Theory of Mind (ToM) in children. This phenomenon has been extensively examined in studies like those conducted by Pavarini et al. (2012).

Elaborative discourse, as a communication style employed by parents, goes beyond mere conversation and delves into a more intricate and comprehensive sharing of ideas and information. By furnishing children with a wealth of contextual details and information, parents effectively create an environment that encourages their children to explore, question, and understand concepts on a deeper level. The habit of asking open-ended questions, rather than closed ones that elicit simple answers, stimulates children's critical thinking, imagination, and their ability to contemplate diverse viewpoints.

The investigations led by Pavarini et al. (2012) resonate with these observations, demonstrating that parents who embrace elaborative discourse in their interactions with their children significantly contribute to the development of their Theory of Mind. This communication style serves as a catalyst for honing children's capacity to comprehend others' perspectives, discern intentions, and ultimately enhance their social cognition.

In essence, the nuanced practice of elaborative discourse within parent-child interactions emerges as a potent facilitator in nurturing the cognitive and socio-cognitive growth of children, with a particularly positive resonance in the realm of Theory of Mind development.

Positive emotional expressiveness of parents has also been shown to be linked with various facets of ToM. For instance, aspects of positive emotional expressiveness, positive remarks and high quality of relationship are associated with a child's emotional development and trust judgment (Woolfolk, 2019; Tang et al., 2018). Furthermore, parental discourse characterized by elaboration, including the provision of comprehensive and contextually nuanced information, posing open-ended inquiries, and affording children the chance to finish their mothers' sentences, exerts a beneficial influence on the development of theory-of-mind.

In contrast, negative parental emotional expression was observed to have a negative association with the development of theory of mind in both boys and girls. This finding aligns with the research conducted by Rohrer et al. (2011), which highlighted that 5-year-old children with mothers suffering from recurrent depressive disorders or displaying negative emotional expressions during structured child-mother interactions tended to exhibit lower performance in tasks involving false beliefs

compared to children whose mothers did not exhibit such negative emotional tendencies. Additionally, children of mothers diagnosed with clinical depression often demonstrate deficits in recognizing and understanding emotions, which become apparent at a remarkably early stage. Unlike infants raised by non-depressed mothers, these children, as early as 5 months of age, struggle to differentiate between a smiling expression and a neutral countenance (Bornstein et al., 2011). Furthermore, during their preschool years, they tend to exhibit a generally diminished understanding of the factors contributing to and consequences arising from emotions (Greig & Howe, 2001; Hughes & Ensor, 2009; Raikes & Thompson, 2006). Among demographic variables, age was shown to be positively linked with a child's ToM. This is simply because ToM skills develop in stages which are assessed by Wellman and Liu's (2004), Theory of Mind Scale, the measure used in this study. It is assumed that older children received higher scores because they are in the more advanced developmental stages of ToM.

Another demographic variable tested was monthly income which was not only positively associated with children's ToM but also with all the parental factors studied including parental involvement, parental empathy, emotional expressiveness, and encouragement of perspective taking of others by parents. Monthly income is an indicator of the socioeconomic status of a family. Research conducted thus far has consistently revealed a steadfast correlation between lower socioeconomic status and the lagging progression of theory-of-mind development. In a comprehensive study encompassing a substantial and diverse socioeconomic spectrum, even after controlling for the influence of age, it was observed that socioeconomic status, as assessed through maternal education and occupational class, emerged as a predictive factor for children's performance in false-belief assessments (Cutting & Dunn, 1999). Specifically, children from middle-class backgrounds with highly educated mothers demonstrated a more advanced understanding of false beliefs compared to their counterparts from working-class families. Notably, when examining the impact of family income and parental educational attainment, similar patterns of associations were revealed. In essence, children from families with higher income and higher parental education exhibited significantly better performance in false-belief tasks in contrast to their less privileged peers (Cole & Mitchell, 1998). The cumulative findings of these studies emphasize the connection between lower socioeconomic

status and developmental delays in children's theory-of-mind comprehension. Evidence links also parental empathy with socioeconomic status. For instance, high parental socioeconomic status results in mothers forwarding more compassionate messages to their children (Wray-Lake et al., 2012)

**Predictors of Theory of Mind**

Results of regression analysis (see Table 8) revealed that various demographic factors and study variables of parental empathy and negative parental emotional expressiveness were significant predictors of children's ToM.

Child's age was the strongest predictor out of all variables tested. Increase in age increased the scores on ToM. As discussed before, theory of mind is a skill that is acquired over time in five developmental stages with the ability to understand diverse desire occurring early and the ability to grasp false emotions being the last task to master (Wellman & Liu, 2004). Therefore, older children are more likely to be in the advanced stages of ToM.

Similarly, monthly income, an indicator of socioeconomic status, is another positive predictor of ToM as evidence already links performance of three to four year old children on cognitive tasks with their socioeconomic background (Shatz et al., 2003). There are multiple studies providing evidence for the association between high socioeconomic indicators and children's ToM development (Babu, 2011; Ruffman et al., 2006; Shatz et al., 2003; Weimer & Guajardo, 2005). Evidence for the link between monthly income and ToM of children also exists (Guajardo et al., 2009).

This positive relationship between socioeconomic status and theory of mind can be elucidated by language ability (Pluck et al., 2021. Researches show that the probability of children experiencing opportunities to exchange language and ideas about other people with their family members affects their ToM development (de Rosnay & Hughes, 2006, Slaughter & Peterson, 2012). These opportunities experienced by children vary by their family's socioeconomic status (Bradley & Corwyn, 2002, Huttenlocher et al., 2010; Rowe, 2008; Vasilyeva & Waterfall, 2011).

Recent research consistently demonstrates a clear correlation between lower socioeconomic status and the delayed progression of theory-of-mind development. In a comprehensive study encompassing a substantial and diverse socioeconomic spectrum, even after controlling for the influence of age, it was observed that

socioeconomic status, as assessed through maternal education and occupational class, emerged as a predictive factor for children's performance in false-belief assessments (Cutting & Dunn, 1999). Specifically, children from middle-class backgrounds with highly educated mothers demonstrated a more advanced understanding of false beliefs compared to their counterparts from working-class families. Notably, when examining the impact of family income and parental educational attainment, similar patterns of associations were revealed. In essence, children from families with higher income and higher parental education exhibited significantly better performance in false-belief tasks in contrast to their less privileged peers (Cole & Mitchell, 1998). The cumulative findings of these studies emphasize the connection between lower socioeconomic status and developmental delays in children's theory-of-mind comprehension. These collective findings indisputably highlight the interconnectedness between reduced socioeconomic status and the emergence of developmental lags in children's theory-of-mind understanding.

However, there is convincing evidence that might explain the finding that high number of siblings negatively influence ToM. As delineated by the confluence model formulated by Zajonc and Markus (1975), a noteworthy proposition arises in the context of family dynamics and its potential influence on cognitive development. The model posits that an augmenting number of siblings within the familial framework leads to a gradual diminishment in the depth and complexity of stimuli afforded for cognitive maturation during familial interactions. This diminution is attributed to the inherent nature of siblings, who, in comparison to adult parents, are perceived as less efficacious and intricate role models in engendering cognitive enrichment.

The crux of this model lies in its postulation of an inversely proportional relationship between the quantity of siblings and the trajectory of cognitive development. In simpler terms, an increase in the number of siblings corresponds to a decline in the cognitive stimuli that a child is exposed to within the family milieu.

Zajonc's assertion (2001) substantiates this theory with empirical validation derived from an extensive corpus of over 50 empirical studies. The collective findings of these investigations underscore the alignment of empirical evidence with the confluence model's propositions. This concurrence between theory and empirical research reaffirms the premise that the presence of siblings, as opposed to adult

parental figures, in the family context may indeed contribute to a nuanced modulation of cognitive developmental trajectories.

In conclusion, the confluence model designed by Zajonc and Markus (1975) introduces a salient perspective that encapsulates the interplay between sibling composition within the family and its potential impact on cognitive development. The underpinning tenet of this model finds resonance in empirical investigations, lending credence to the notion of an inverse relationship between the number of siblings and the depth of cognitive enrichment experienced during family interactions.

Another explanatory framework that merits consideration is the resource dilution theory, which has garnered recent attention from scholars and elicited some corroborative findings. This theoretical construct finds its roots in the seminal work of Blake (1981), wherein he posited that parents' material, educational, and interactive resources are inherently finite. Consequently, an augmentation in the number of siblings within a family context precipitates a gradual diminution, or dilution, of these parental resources. Of noteworthy pertinence is the concurrent spotlight on the confluence model and the resource dilution theory. The confluence model, as earlier elucidated, underscores the premise that an increase in the number of siblings potentially compromises the richness of cognitive stimuli within family interactions. This dovetails into the resource dilution theory's framework, which proffers a complementary perspective. This theory asserts that the purported impoverishment of the cognitive stimulus environment, as proposed by the confluence model, is predicated on the gradual dilution of parental resources, a conceptually symbiotic relationship. Freijo et al. (2008) navigate this theoretical terrain by harnessing the resource dilution theory to expound the potentially deleterious ramifications of expanding family size on children's cognitive prowess. By invoking this framework, the researchers allude to the notion that the proliferating number of siblings could indeed wield a negative impact on the cognitive acumen of the offspring.

It is imperative to underscore that these theoretical constructs collectively propel an in-depth exploration into the interplay between family composition, parental resources, and cognitive development. While the confluence model implicates the family's cognitive stimulus environment, the resource dilution theory nuances this understanding by attributing the observed impoverishment to the dilution of parental

resources. These frameworks, when analyzed conjointly, illuminate the multifaceted dynamics underpinning the relationship between family structure and cognitive outcomes, inviting nuanced scholarly inquiries into this intriguing intersection.

Among study variables, parental empathy was one of the only two significant predictor and it was positively influencing ToM, thereby, supporting the findings of previous studies which state that parental empathy encourages parental attention and acknowledgement of their children's needs and desires, thereby leading to high quality of caregiving and higher engagement, which in turn impacts social and emotional functioning in children (e.g., Pastorelli et al., 2016; Zhou, Eisenberg, & Fabes, 2002).

The connection between socioeconomic status and children's development can be elucidated through the lens of authoritative parenting and the resulting establishment of secure child-parent attachments. Authoritative parenting involves parents providing rationales for their requests and expectations from their children, as well as elucidating how their actions might impact others in cases of transgressions (Burl, 1991; Knight et al., 2000). Several studies suggest that children whose parents engage in discussions with them about the consequences of their actions on others are more likely to exhibit prosocial behavior, particularly when assisting individuals in distress (Zahn-Waxler et al., 1979). These observations are partially attributed to the propensity of communicative and authoritative parenting styles to foster secure attachments between children and their parents (Ruffman et al., 2006). Furthermore, historically, securely attached children have demonstrated superior performance in Theory of Mind (ToM) and emotion-related tasks (Meins et al., 1998; Ontai & Thompson, 2002).

Another noteworthy predictor of Theory of Mind (ToM) that warrants attention is negative parental emotional expressiveness. This variable has been found to wield a substantial influence on the development of ToM, a phenomenon previously discussed. The research conducted by Rohrer et al. (2011) corroborates this perspective. Notably, their study highlights that children at the age of 5, whose mothers grapple with depressive disorder that is recurrent or exhibit negative emotional expressions during child-mother interactions, exhibit comparatively lower performance in tasks assessing false belief comprehension.

The implications of these findings are profound, shedding light on the intricate interplay between maternal emotional well-being and a child's cognitive development. Specifically, the presence of negative emotional expressiveness in mothers appears to significantly influence their children's capacity to grasp the nuanced dynamics of false beliefs.

A striking parallel emerges when examining the work of Bornstein et al. (2011), which underscores that children of mothers experiencing clinical depression showcase notable deficits in recognizing and comprehending emotions from a tender age. This deficiency is apparent as early as 5 months of age when these infants struggle to distinguish between facial expressions, such as a smiling visage and a neutral countenance. Such outcomes underscore the potential repercussions of maternal depression on the cognitive and emotional development of offspring in their earliest stages of life.

As children transition into their preschool years, the consequences of negative maternal emotional expressiveness appear to persist. Multiple studies (Greig & Howe, 2001; Hughes & Ensor, 2009; Raikes & Thompson, 2006) underscore that children of depressed mothers continue to display a diminished understanding of the causal underpinnings and consequences of emotions. This prolonged impact during the formative years of childhood implies a broader influence of maternal emotional dynamics on the child's socio-cognitive development.

Collectively, these insights illuminate the intricate threads that bind parental emotional expressions, maternal depression, and the developmental trajectory of ToM in children. This nexus underscores the significance of early emotional experiences in the family context and its lasting implications for cognitive and emotional growth.

**Moderation Relationships**

Moderation analyses were done to assess the moderating role of various demographic variables and study variables in the relationships being examined in the study. These moderators are discussed below.

*Family System*

It was discovered that increasing negative emotional expressiveness of parents decreases the ToM development of children. This decreasing effect is more

pronounced in nuclear families than joint families. Even though children in nuclear families start out with higher ToM scores than children from joint families, increasing negative emotional expressiveness of parents in nuclear family system decreases their ToM to a level lower than the decrease observed in joint families due to the same effect.

The predictive relationship displaying the significantly negative effect of negative parental emotional expressiveness on ToM has already been discussed. There is varying evidence about the effect of family size on children's ToM. Most studies support the notion that larger family size can positively influence ToM (e.g., Jenkins & Astington, 1996; McAlister & Peterson, 2007; Perner et al., 1994). Within the South Asian context, research outcomes indicate that children raised in joint family setups exhibit superior levels of social cognitive and language development compared to their counterparts from nuclear family environments. (Gurav & Vageriya, 2019). However, the initial lower ToM scores for joint families could be due to the fact that, the increasing size of family decrease the richness of stimuli required for cognitive development as postulated by the confluence model (Zajonc & Markus, 1975).

As for the moderation effect, it is possible that the larger family size in joint families, with higher number of adults, by providing children with more opportunities to develop their ToM (Jenkins & Astington, 1996; McAlister & Peterson, 2007) buffers the negative impact of negative parental emotional expressiveness.

### Number of Languages Spoken at Home

Findings revealed that preschoolers living in families where only 1 language is spoken show remarkably more development in their theory of mind when positive emotion expressiveness increases. Even though ToM scores are initially higher in multilingual families than monolingual families.

Language is not only an important tool by which cultures convey a particular theory of mind to children but it also enables complex reasoning required in ToM (Villiers & de Villiers, 2014). Moreover, language allows an individual to express their emotions by means of words that describe various feelings (Bloom, 1998). Consequently, more languages spoken at home are thus likely to positively influence ToM. Evident impacts, primarily beneficial, manifest on a child's cognitive and socio-

emotional advancement when they acquire a second language during their early years (Dewaele & Wei, 2012; Kroll et al., 2012; Kwon et al., 2021; Morales et al., 2013). Bilingual speakers have been known to outperform unilingual peers when it comes to processing of emotional information (Barker & Bialystok, 2019). Even in context of ToM, bilingual children possess an advantage (Goetz, 2003).

Nonetheless, certain evidence introduces the prospect of multilingualism potentially exerting adverse effects on socio-emotional development or, conversely, yielding no discernible impact at all. It is imperative to acknowledge that, at the very least, the acquisition of multiple languages during early stages does not appear to impede socio-emotional growth; rather, it remains neutral in its influence (McLeod et al., 2015). Research findings also unveil that some scholars have unearthed that the integration of supplementary languages does not correspond to alterations in developmental trajectories.

Dewaele's investigation in 2019, delving into the intersection of multilingualism and emotional intelligence, intriguingly reveals that the proficiency in multiple languages does not correlate with heightened levels of emotional intelligence. This finding underscores the complexity of the interplay between language acquisition and emotional acumen, hinting at the potential disconnect between multilingualism and emotional intelligence enhancement.

Prior studies have consistently shown that multilingualism itself does not engender delays in socio-emotional development. However, it's noteworthy that the influence of multilingualism on emotional development could be contingent upon the child's immediate environment. Depending on the prevailing circumstances and surroundings, children who are exposed to multiple languages may encounter varied experiences in terms of their emotional growth.

In essence, the panorama of multilingualism's influence on socio-emotional development appears multifaceted. While the available evidence underscores the absence of delay in socio-emotional progress due to multilingualism, the potential ramifications on emotional intelligence and emotional development warrant further exploration, acknowledging the contextual nuances that may mediate these effects.

Turning our attention to the moderating effect identified within the scope of this study., it would be understandable if the effect of parental expression of emotions

on ToM development was more pronounced in multilingual or bilingual households, based on the evidence mentioned above. However, the opposite result points towards an underlying factor in monolingual households that is causing such a noticeable positive impact. Parental emotional expressiveness might be having a more positive impact on children's ToM in monolingual households because factors like language consistency, lack of language complexity, and decreased burden of code switching might allow for easier processing of positive emotional information. Overall there is less cognitive overload on such children.

Another aspect deserving consideration revolves around the influence of cultural norms and practices on emotional expression. This influence is particularly pertinent in bilingual and multilingual households, where parents may hail from distinct cultural backgrounds. This divergence in cultural origins can give rise to a spectrum of emotional expression styles that might pose challenges for children in deciphering and comprehending. This challenge is compounded when contrasted with the relatively uniform emotional expression style prevalent in monolingual households.

In bilingual and multilingual settings, the amalgamation of diverse cultural norms and practices can culminate in a mosaic of emotional cues, rendering the process of interpreting and understanding emotions more intricate for children. Unlike the comparatively consistent emotional expression styles found in monolingual households, the variation stemming from multicultural influences in bilingual and multilingual environments may require children to navigate a broader spectrum of emotional cues. For instance, a child growing up in a bilingual household where one parent exhibits emotional expression in a manner aligned with their cultural background, while the other parent adheres to distinct cultural practices, may encounter challenges in reconciling these divergent emotional displays. This complex interplay necessitates heightened cognitive efforts on the child's part to decode emotions and discern their meanings within differing cultural contexts.

In essence, the influence of cultural diversity on emotional expression styles in bilingual and multilingual households underscores the intricate tapestry of emotions that children are exposed to. This diversity, while enriching in many ways, can potentially pose challenges to children's emotional understanding due to the inherent

complexity arising from the convergence of multiple cultural norms within a single familial setting.

### Father's Education

Findings revealed that parental involvement was more strongly associated with children's development of ToM for fathers with matriculation level of education than fathers having a bachelor's degree. This finding suggests that quality of parental interaction overrides the impact of father's education on ToM development. Parental education, an indicator of socioeconomic status, is known to be associated with children's ToM in the following way: children from higher income families with higher parental education performed significantly better on false-belief tasks when compared with their less advantaged peers (Cole & Mitchell, 1998). It is likely that low parental education negatively impacts ToM development by hampering parent-child interactions as such parents maybe overburdened by their jobs. However, increased parental involvement buffers this effect by positively influencing ToM of children.

### Mother's and Father's Age

Children with mothers aged between 19-40 years of age showed a greater development of ToM as compared to the children whose mothers aged between 40-65 years when their mothers engaged in perspective taking (see Table 13). It is possible that younger mothers are more likely to employ interaction strategies that stimulate ToM, like perspective taking. Similar results were obtained for younger fathers (see Table 15). It should be noted that modern parents are likely to employ authoritative parenting style than older parents (Kashahu et al., 2014).

### Number of Adults in the Family

Findings revealed that parental involvement strongly improved preschoolers' ToM when they were living in families with 1-2 adults as compared to preschoolers who were living with 3 or more adults in the family. Confluence model (Zajonc & Markus, 1975) can help explain this finding because it postulates that increasing family size decreases the opportunities of interaction and richness of stimuli required for cognitive development. Therefore, the opposite must hold true for families with fewer adults.

**Limitations, Suggestions, and Implications**

Although the present study has revealed the significant effects of parental involvement, parental perspective taking, parental empathy, and parental emotional expressiveness on preschoolers' theory-of-mind development, there are quite a few limitations.

Firstly, present research has focused on children at the preschool stage using cross-sectional research so conclusions of ToM development lack temporal evidence. Hence, in terms of forthcoming research directions, it holds notable importance to focus on children in middle childhood, employing a longitudinal approach. This approach is aimed at investigating whether parenting practices can serve as predictive indicators of subsequent Theory of Mind development.

Secondly, cultural factors were not considered in the study. Factors like parenting styles are heavily influenced by cultural context (Liang, 2021). Therefore, future studies must consider the role of indigenous parenting styles by employing a qualitative approach. Furthermore, comparisons across various ethnic groups in Pakistan can generate richer perspectives.

Lastly the parental sample consisted of mothers majorly. It heavily contributed to gaining insight regarding the maternal predictors playing a role in the development of child's ToM. For future prospects, paternal predicting variables can be explored.

Despite these shortcomings, the present study is the first of its kind to empirically test parental factors that influence preschoolers' ToM in Pakistan. Understanding gained by this study further cements the importance of parental and family factors on cognitive, social, and emotional development of children. Insight gleamed by this study can aid developmental and child psychologists inform their practices and intervention plans. However, the chief beneficiaries of these findings are parents who can evaluate the importance of ToM on various life outcomes of children and learn techniques and parenting styles that can further this development.

**Conclusion**

The current research has made significant strides in unraveling the intricate web of influences that shape preschoolers' Theory of Mind (ToM) development. Notably, the study has meticulously examined the impact of parental involvement, parental empathy, emotional expressiveness, and perspective taking on the

progression of ToM skills in young children. One key revelation is the substantial role of parental empathy as a robust positive predictor of ToM. When parents exhibit empathy, they create an emotionally attuned environment that encourages children to comprehend and connect with the emotions and perspectives of others. This emotional resonance not only nurtures children's empathetic capacities but also provides a foundation for the intricate dance of understanding diverse mental states—essential components of ToM. Conversely, the study underscores the potentially detrimental influence of parental negative emotional expressiveness as a negative predictor of ToM. Children exposed to frequent negative emotional displays without proper context might struggle to grasp the nuances of emotions and their relevance in social interactions. Intriguingly, the research brings to light the crucial role of moderating variables in this context. Variables such as father's education levels, family system, parental age, and the number of adults residing in the family serve as pivotal moderators that can sway the impact of the aforementioned factors. These variables highlight the multifaceted nature of ToM development, indicating that family dynamics, parental characteristics, and diverse social structures play pivotal roles in shaping children's cognitive and emotional growth. In essence, this research illuminates the significance of fostering empathetic interactions, managing emotional expressiveness, and considering the broader familial context as pivotal factors in cultivating preschoolers' ToM skills—skills that lay a foundation for their adept navigation of the intricate tapestry of human social cognition.

# REFERENCES

Abdullah, M., Rehman, S., Nawaz, S., Asad, S., & Khalid, S. (2021). Association between Theory of Mind and Peer Problems. *Journal of Professional & Applied Psychology, 2*(2), 120-133.

Abraham, E., Raz, G., Zagoory-Sharon, O., & Feldman, R. (2018). Empathy networks in the parental brain and their long-term effects on children's stress reactivity and behavior adaptation. *Neuropsychologia, 116*, 75-85.

Adolph, K. E., Robinson, S. R., Young, J. W., & Gill-Alvarez, F. (2008). What is the shape of developmental change? *Psychological review, 115*(3), 527.

Alival-Naveh, E., Rothschild-Yakar, L., & Kurman, J. (2019). Keeping culture in mind: A systematic review and initial conceptualization of mentalizing from a cross-cultural perspective. *Clinical Psychology: Science and Practice, 26*(4), e12300.

Arranz, E., Artamedi, J., Olabarrieta, F., & Martı´n, J. (2002). Family context and theory of mind development. *Early Child Development and Care, 172*, 9–22

Astington JW, Edward MJ. (2010). The Development of Theory of Mind in Early Childhood. In: Tremblay RE, Boivin M, Peters RDeV, eds. Zelazo PD, topic ed. *Encyclopedia on Early Childhood Development* [online]. https://www.child-encyclopedia.com/social-cognition/according-experts/development-theory-mind-early-childhood.

Astington, J. W., & Jenkins, J. M. (1995). Theory of mind development and social understanding. *Cognition & Emotion, 9*(2-3), 151-165.

Astington, J. W., & Pelletier, J. (2005). Theory of mind, language, and learning in the early years: Developmental origins of school readiness. *The development of social cognition and communication*, 205-230.

Astington, J., & Pelletier, J. (1996). The language of the mind: Its role in teaching and learning.[In:] DR Olson & N. Torrance (Eds.), The handbook of education and human development: New models of learning, teaching, and schooling (pp. 593–619).

Atzaba-Poria, N., Pike, A., & Deater-Deckard, K. (2004). Do risk factors for problem behaviour act in a cumulative manner? An examination of ethnic minority and

majority children through an ecological perspective. *Journal of Child Psychology and Psychiatry, 45,* 707-718.

Babu, N. (2011). Theory of mind understanding in narration: A study among children from different socioeconomic backgrounds in India. In F. Deutsch, M. Boehnke, U. Kühnen, & K. Boehnke (Eds.). *Rendering borders obsolete: Cross-cultural and cultural psychology as an interdisciplinary, multi-method endeavor* (pp. 171–193). International Association for Cross-Cultural Psychology.

Bailey, L. B., Silvern, S. B., Brabham, E., & Ross, M. (2004). The effects of interactive reading homework and parent involvement on children's inference responses. *Early Childhood Education Journal, 32*(3), 173-178.

Baillargeon, R., Scott, R. M., & He, Z. (2010). False belief understanding in infants. *Trends in Cognitive Sciences, 14,* 110-118. doi: 10.1016/j.tics.2009.12.006

Banerjee, R., & Yuill, N. (1999). Children's understanding of self presentational display rules: Associations with mental state understanding. *British Journal of Developmental Psychology, 17,* 111-124. doi: 10.1348/026151099165186

Barker, R. M., & Bialystok, E. (2019). Processing differences between monolingual and bilingual young adults on an emotion n-back task. *Brain and cognition, 134,* 29-43.

Bartsch, K., & Wellman, H. (1995). Children talk about the mind. New York: Oxford University Press.

Bayer, J. K., Sanson, A. V., & Hemphill, S. A. (2009). Early childhood aetiology of internalising difficulties: a longitudinal community study. *International Journal of Mental Health Promotion, 11*(1), 4-14.

Bayer, J. K., Sanson, A. V., & Hemphill, S. A. (2006). Parent influences on early childhood internalizing difficulties. *Journal of Applied Developmental Psychology, 27*(6), 542-559.

Bayer, J. K., Ukoumunne, O. C., Lucas, N., Wake, M., Scalzo, K., & Nicholson, J. M. (2011). Risk factors for childhood mental health symptoms: national longitudinal study of Australian children. *Pediatrics, 128*(4), e865-e879.

Bee, H.L., Barnard, K.E., Eyres, S.J., Gray, C.A., Hammond, M.A, Spietz, A.L., Snyder, C., & Clark, B. (1982). Prediction of IQ and language skill from perinatal status, child performance, family characteristics, and mother-infant interaction. *Child Development, 53*, 1134-1156.

Birch, S. A. J., Li, V., Haddock, T., Ghrear, S. E., Brosseau-Liard, P., Baimel, A., & Whyte, M. (2017). Perspectives on perspective taking: how children think about the minds of others. *Advances in Child Development and Behavior, 52*, 185-226.

Blake, J. (1981). Family size and the quality of children. *Demography, 18*, 421–442.4

Bloom, L. (1998). Language development and emotional expression. *Pediatrics, 102*(Supplement_E1), 1272-1277.

Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology, 53*, 371–399.

Braza, F., Azurmendi, A., Munoz, J. M., Carreras, M. R., Braza, P., Garcia, A., Sorozabal, A., & Sanchez-Martin, J. R. (2009). Social cognitive predictors of peer acceptance at age 5 and the moderating effects of gender. *British Journal of Developmental Psychology, 27*, 703-716. doi: 10.1348/026151008X360666

Behne, T., Carpenter, M., Call, J., & Tomasello, M. (2005). Unwilling versus unable: Infants' understanding of intentional action. *Developmental Psychology, 41*, 328-337. doi: 10.1037/0012-1649.41.2.328

Brooks, R., & Meltzoff, A. N. (2005). The development of gaze following and its relation to language. *Developmental science, 8*(6), 535-543.

Bronfenbrenner, U., & Evans, G. W. (2000). Developmental science in the 21st century: Emerging questions, theoretical models, research designs and empirical findings. *Social development, 9*(1), 115-125.

Bronfenbrenner, U., & Morris, P. A. (2007). The bioecological model of human development. *Handbook of child psychology, 1*.

Bronfenbrenner, U. (1979). The ecology of human development: Experiments by nature and design. Cambridge, MA: Harvard University Press.

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American psychologist, 32*(7), 513.

Bornstein, M. H., Arterberry, M. E., Mash, C., & Manian, N. (2011). Discrimination of facial expression by 5-month-old infants of non-depressed and clinically depressed mothers. *Infant Behavior and Development, 34*(1), 100-106.

Bourdieu, P., & Richardson, J. G. (1986). Handbook of Theory and Research for the Sociology of Education. *The forms of capital, 241*, 258.

Brown, J. R., Donelan-McCall, N., & Dunn, J. (1996). Why talk about mental states? The significance of children's conversations with friends, siblings and mothers. *Child Development, 67*, 836-849. doi: 10.1111/j.1467-8624.1996.tb01767.

Buresh, J. S., & Woodward, A. L. (2007). Infants track action goals within and across agents. *Cognition, 104*(2), 287-314.7

Buri, J. R. (1991). Parental authority questionnaire. *Journal of personality assessment, 57*(1), 110-119.

Calkins, S.D. & Johnson, M.C. (1998). Toddler self-regulation of distress to frustrating events: Temperamental and maternal correlates. *Infant Behavior and Development, 21*, 379-395

Callaghan, T., Rochat, P., Lillard, A., Claux, M. L., Odden, H., Itakura, S., ... & Singh, S. (2005). Synchrony in the onset of mental-state reasoning: Evidence from five cultures. *Psychological Science, 16*(5), 378-384.

Carlson SM, Moses LJ. (2001) Individual differences in inhibitory control and children's theory of mind. *Child Dev.* Jul-Aug;72(4):1032-53. doi: 10.1111/1467-8624.00333. PMID: 11480933.

Carpendale, J. I., & Chandler, M. J. (1996). On the distinction between false belief understanding and subscribing to an interpretive theory of mind. *Child Development, 67*, 1686-1706

Carpendale, J. I., & Lewis, C. (2004). Constructing an understanding of mind: The development of children's social understanding within social interaction. *Behavioral and brain sciences, 27*(1), 79-96.

Carpendale, J. I. M., & Lewis, C. (2006). How children develop social understanding. Malden, USA: Blackwell Publishing.

Cassidy, K. W., Fineberg, D. S., Brown, K., & Perkins, A. (2005). Theory of mind may be contagious, but you don't catch it from your twin. *Child Development, 76*, 97-106. doi: 10.1111/j.1467-8624.2005.00832.x

Cassidy, K. W., Werner, R. S., Rourke, M., Zubernis, L. S., & Balaraman, G. (2003). The relationship between psychological understanding and positive social behaviors. *Social Development, 12*, 198-221. doi: 10.1111/1467-9507.00229

Castro, M., Expósito-Casas, E., López-Martín, E., Lizasoain, L., Navarro-Asencio, E., & Gaviria, J. L. (2015). Parental involvement on student academic achievement: A meta-analysis. *Educational research review, 14*, 33-46.

Cole, K. & Mitchell, P. (1998). Family background in relation to deceptive ability and understanding of the mind. *Social Development, 7*, 181-197.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American journal of sociology, 94*, S95-S120.

Coleman, J. S. (1992). Some points on choice in education. *Sociology of Education, 65(4)*, 260-262.

Corkum, V., & Moore, C. (1998). The origin of joint visual attention in infants. *Developmental Psychology, 34*, 28-38. doi: 10.1037/0012-1649.34.1.28

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16(3)*, 297-334.

Csibra, G., & Volein, A. (2008). Infants can infer the presence of hidden objects from referential gaze information. *British Journal of Developmental psychology, 26*, 1-11. doi: 10.1348/026151007X18598

Cutting, A. L., & Dunn, J. (1999). Theory of mind, emotion understanding, language, and family background: Individual differences and interrelations. *Child Development, 70*, 853-865.

Davis, T. L. (2001). Children's understanding of false beliefs in different domains: Affective vs. physical. *British Journal of Developmental Psychology, 19*, 47-58. doi: 10.1348/026151001165958

Denham, S. A. (1986). Social cognition, pro-social behavior, and emotion in preschooler: Contextual validation. *Child Development, 57*, 194-201. Retrieved from http://www.jstor.org/stable/1130651

Denham, S. A., Zoller, D., & Couchoud, E. A. (1994). Socialization of preschoolers' emotion understanding. *Developmental Psychology, 30*, 928–936

Dennis, T. (2006). Emotional self-regulation in preschoolers: The interplay of child approach reactivity, parenting, and control capacities. *Developmental psychology, 42*(1), 84.

Dennett, D. C. (1978). Beliefs about beliefs. The Behaviour and Brain Sciences, 4, 568-570.

de Rosnay, M., & Harris, P. (2002). Individual differences in children's understanding of emotion: The roles of attachment and language. Attachment & Human Development, 4, 39–54.

de Rosnay, M., & Hughes, C. (2006). Conversation and theory of mind: Do children talk their way to socio-cognitive understanding?. *British journal of developmental psychology, 24*(1), 7-37.

De Villiers, J. G., & de Villiers, P. A. (2014). The role of language in theory of mind development. *Topics in Language Disorders, 34*(4), 313-328.

Dewaele, J. & Wei, L. (2012). Multilingualism, empathy and multicompetence. *International Journal of Multilingualism, 9*(4), 352-366. DOI: 10.1080/14790718.2012.714380

Domina, T. (2005). Leveling the home advantage: Assessing the effectiveness of parental involvement in elementary school. *Sociology of education, 78*(3), 233-249.

Dunn, J., Brown, J., & Beardsall, L. (1991). Family talk about feeling states and children's later understanding of others' emotions. *Developmental psychology, 27*(3), 448.

Dunn, J., Brown, J. R., & Maguire, M. (1995). The development of children's moral sensibility: Individual differences and emotion understanding. Developmental Psychology, 31, 649-659. doi: 10.1037/0012-1649.31.4.649

Dunn, J., Brown, J., Slomkowski, C., Tesla, C., & Youngblade, L. (1991). Young children's understanding of other people's feelings and beliefs: Individual differences and their antecedents. *Child development, 62*(6), 1352-1366.

Dunn, J. (1998). Children's Relationships: Bridging the Divide. *Annual Progress in Child Psychiatry and Child Development 1997*, 45.

Dunn, J., & Cutting, A. L. (1999). Understanding others, and individual differences in friendship interaction in young children. Social Development, 8, 201-219. doi: 10.1111/1467-9507.00091.

Edwards, S. L., Rapee, R. M., & Kennedy, S. (2010). Prediction of anxiety symptoms in preschool-aged children: examination of maternal and paternal perspectives. *Journal of Child Psychology and Psychiatry, 51*(3), 313-321.

Eisenberg, N. & McNally, S. (1993). Socialization and mothers' and adolescents' empathyrelated characteristics. *J. Res. Adolesc. 3* (2), 171–1.

El Nokali, N. E., Bachman, H. J., & Votruba-Drzal, E. (2010). Parent involvement and children's academic and social development in elementary school. *Child Development, 81*(3), 988–1005

Epstein, J. L. (2005). A case study of the partnership schools comprehensive school reform (CSR) model. *The Elementary School Journal, 106*(2), 151-170.

Etel, E., & Yagmurlu, B. (2015). Social competence, theory of mind, and executive function in institution-reared Turkish children. *International Journal of Behavioral Development, 39*(6), 519-529.

Fan, X. (2001). Parental involvement and students' academic achievement: A growth modeling analysis. *The Journal of Experimental Education, 70*(1), 27-61.

Farrant, B. M., Devine, T. A., Maybery, M. T., & Fletcher, J. (2012). Empathy, perspective taking and prosocial behaviour: The importance of parenting practices. *Infant and Child Development, 21*(2), 175-188.

Feldman, R. (2007). Parent-infant synchrony and the construction of shared timing; Physiological precursors, developmental outcomes, and risk conditions. *J. Child Psychol. Psychiatry 48*, 329–354.

Feshbach, N.D. (1990). Parental empathy and child adjustment/maladjustment. *Empathy and its Development*, 271.

Fiala, C. L., & Sheridan, S. M. (2003). Parent involvement and reading: Using curriculum-based measurement to assess the effects of paired reading. *Psychology in the Schools, 40*(6), 613-626.

Fiese, B. H. (1990). Playful relationships: A contextual analysis of mother toddler interaction and symbolic play. Child Development, 61, 1648-1656. doi: 10.1111/j.1467-8624.1990.tb02891.x

Flavell, J. H., Everett, B. A., Croft, K., & Flavell, E. R. (1981). Young children's knowledge about visual perception: Further evidence for the Level 1–Level 2 distinction. *Developmental psychology, 17*(1), 99.

Flavell, J. H., Flavell, E. R., & Green, F. L. (1983). Development of the appearance-reality distinction. *Cognitive psychology, 15*(1), 95-120.

Flavell, J. H., Flavell, E. R., Green, F. L., & Moses, L. J. (1990). Young children's understanding of fact beliefs versus value beliefs. *Child Development, 61*, 915-928.

Flavell, J. H., Green, F. L., & Flavell, E. R. (1995). Young children's knowledge of thinking. Monographs of the Society for Research in Child Development, 60 (1, Serial No. 243), 1-95.

Flouri, E. (2004). Correlates of parents' involvement with their adolescent children in restructured and biological two-parent families: The role of child characteristics. *International Journal of Behavioral Development, 28*(2), 148-156.

Fonagy, P., Redfern, S., & Charman, T. (1997). The relationship between belief-desire reasoning and a projective measure of attachment security (SAT). *British Journal of Developmental Psychology, 15*, 51–61

Foote, R. C., & Holmes-Lonergan, H. A. (2003). Sibling conflict and theory of mind. *British Journal of Developmental Psychology, 21*, 45-58. doi: 10.1348/026151003321164618

Freijo, E. B. A., Oliva, A., Olabarrieta, F., Martín, J. L., Manzano, A., & Richards, M. P. (2008). Quality of family context or sibling status? Influences on cognitive development. *Early Child Development and Care, 178*(2), 153-164.

Garner, P. W., Dunsmore, J. C., & Southam-Gerrow, M. (2008). Mother child conversations about emotions: Linkages to child aggression and prosocial behavior. Social Development, 17, 259-277. doi: 10.1111/j.1467-9507.2007.00424.x

Gelman, S. A., & Bloom, P. (2000). Young children are sensitive to how an object was created when deciding what to name it. *Cognition, 76*(2), 91-103.

Georgiou, S. N., & Tourva, A. (2007). Parental attributions and parental involvement. *Social Psychology of Education, 10*, 473-482.

Goetz PJ (2003). The effects of bilingualism on theory of mind development. *Bilingualism: Language and Cognition*, 6, 1–15.

Goleman, D. (1998). *Working with emotional intelligence.* Bantam Books.

Gonzalez-DeHass, A. R., Willems, P. P., & Holbein, M. F. D. (2005). Examining the relationship between parental involvement and student motivation. *Educational psychology review, 17*(2), 99-123.

Gopnik, A., & Astington, J. W. (1988). Children's understanding of representational change and its relation to the understanding of false belief and the appearance-reality distinction. *Child development*, 26-37.

Gopnik, A., Meltzoff, A. N., & Kuhl, P. K. (2000). *The scientist in the crib: What early learning tells us about the mind.* William Morrow Paperbacks.

Gopnik, A., & Wellman, H. M. (1994). The theory theory. In *An earlier version of this chapter was presented at the Society for Research in Child Development Meeting, 1991.* Cambridge University Press.

Greig, A., & Howe, D. (2001). Social understanding, attachment security of preschool children and maternal mental health. British Journal of Developmental Psychology, 19, 381–393.

Griffith, J. (1996). Relation of parental involvement, empowerment, and school traits to student academic performance. *The Journal of educational research, 90*(1), 33-41.

Grolnick, W. S., Benjet, C., Kurowski, C. O., & Apostoleris, N. H. (1997). Predictors of parent involvement in children's schooling. *Journal of educational psychology, 89*(3), 538.

Guajardo, N. R., Snyder, G., & Petersen, R. (2009). Relationships among parenting practices, parental stress, child behaviour, and children's social cognitive development. Infant and Child Development, 18, 37-60. doi: 10.1002/icd.578

Guy-Evans, O. (2020, Nov 09). *Bronfenbrenner's ecological systems theory.* Simply Psychology. www.simplypsychology.org/Bronfenbrenner.html

Halberstadt, A. G., Cassidy, J., Stifter, C. A., Parke, R. D., & Fox, N. A. (1995). Self-expressiveness within the family context: Psychometric support for a new measure. *Psychological assessment, 7*(1), 93.

Halberstadt, A. G., Crisp, V. W., & Eaton, K. L. (1999). Family expressiveness: A retrospective and new directions for research.

Hancock, K. (2012). A longitudinal analysis of the association between maternal overprotection and children's physical health.

Harris PL. (2006) Social cognition. In: Kuhn D, Siegler R, eds. Handbook of Child Psychology: Vol. 2: Cognition, Perception, and Language. New York: John Wiley & Sons, 811–858.

Hayes, N., O'Toole, L., & Halpenny, A. M. (2017). *Introducing Bronfenbrenner: A guide for practitioners and students in early years education.* Taylor & Francis.

Henderson, A. T., & Mapp, K. L. (2002). A New Wave of Evidence: The Impact of School, Family, and Community Connections on Student Achievement. Annual Synthesis, 2002.

Hill, N. E., & Taylor, L. C. (2004). Parental school involvement and children's academic achievement: Pragmatics and issues. *Current directions in psychological science, 13*(4), 161-164.

Hitti, A., Mulvey, K. L., & Killen, M. (2011). Social exclusion and culture: The role of group norms, group identity and fairness. *Anales de psicologia, 27*(3), 587-599.

Hughes, C., Deater-Deckard, K., & Cutting, A. L. (1999). 'Speak roughly to your little boy'? Sex differences in the relations between parenting and preschoolers' understanding of mind. *Social Development, 8*(2), 143-160.

Hughes, C., & Ensor, R. (2009). Independence and interplay between maternal and child risk factors for preschool problem behaviors?. *International Journal of Behavioral Development, 33*(4), 312-322.

Hughes, C., & Plomin, R. (2000). of mind: genes, non-shared environment and modularity. *Evolution and the human mind: Modularity, language and meta-cognition,* 47.

Hughes, C. (2011). *Social understanding and social lives: From toddlerhood through to the transition to school.* Psychology Press.

Hughes, J. D. C. (1998). Young children's understanding of emotions within close relationships. *Cognition & Emotion, 12*(2), 171-190.

Huttenlocher, J., Waterfall, H., Vasilyeva, M., Vevea, J., & Hedges, L. V. (2010). Sources of variability in children's language growth. *Cognitive Psychology, 61*(4), 343–365. http://dx.doi.org/10.1016/j.cogpsych.2010.08.002

Jambon, M., & Smetana, J. G. (2014). Moral complexity in middle childhood: Children's evaluations of necessary harm. *Developmental Psychology, 50*(1), 22.

Jenkins, J. M. & Astington, J. W. (1996). Cognitive factors and family structure associated with theory-of-mind development in young children. Developmental Psychology, 32, 70-78.

Jenkins, J. M., & Astington, J. W. (2000). Theory of mind and social behavior: Causal models tested in a longitudinal study. *Merrill-Palmer Quarterly (1982-)*, 203-220.

Johnson, M. D., & Bradbury, T. N. (2015). Contributions of social learning theory to the promotion of healthy relationships: Asset or liability?. *Journal of Family Theory & Review*, 7(1), 13-27.

Kalina, C., & Powell, K. C. (2009). Cognitive and social constructivism: Developing tools for an effective classroom. *Education*, *130*(2), 241-250.

Kaplan, L. V. (2001). Intentional agency, responsibility, and justice. In B. F. Malle, L. J. Moses, & D. A. Baldwin (Eds.) Intentions and Intentionality (pp. 367-379). Cambridge, MA: MIT Press.

Kashahu, L., Dibra, G., Osmanaga, F., & Bushati, J. (2014). The relationship between parental demographics, parenting styles and student academic achievement. *European scientific journal*, *10*(13).

Kavanaugh, R. D. (2006). Pretend play and theory of mind. *Child psychology: A handbook of contemporary issues*, *2*, 153-166.

Killen, M., Smetana, J. G., & Smetana, J. (2006). Social–cognitive domain theory: Consistencies and variations in children's moral and social judgments. In *Handbook of moral development* (pp. 137-172). Psychology Press.

Knight, K. H., Elfenbein, M. H., Capozzi, L., Eason, H. A., Bernardo, M. F., & Ferus, K. S. (2000). Relationship of connected and separate knowing to parental style and birth order. *Sex Roles*, *43*(3), 229-240.

Koenig, M. A., & Echols, C. H. (2003). Infants' understanding of false labeling events: The referential roles of words and the speakers who use them. Cognition, 87, 179-208. doi: 10.1016/S0010-0277(03)00002.

Kroll, J.F., Dussias, P.E., Bogulski, C.A., & Kroff, J. R. V. (2012). Juggling two languages in one mind. What bilinguals tell us about language processing and its consequences for cognition. *Psychology of Learning and Motivation, 56*.

Kuhlmeier, V., Wynn, K., & Bloom, P. (2003). Attribution of dispositional states by 12-month-olds. *Psychological science*, *14*(5), 402-408.

Kwon, Y., Yoo, K., Nguyen, H., Chun, M. (2021). Predicting multilingual effects on executive function and individual connectomes in children: An ABCD study. *PNAS, 118*(49). https://doi.org/10.1073/pnas.2110811118

LaBounty, J., Wellman, H. M., Olson, S., Lagattuta, K., & Liu, D. (2008). Mother's and father's use of internal state talk with their young children. *Social Development, 17*, 757-775. doi:10.1111/j.1467-9507.2007.00450.x

Laible, D. J., & Thompson, R. A. (1998). Attachment and emotional understanding in preschool children. *Developmental Psychology, 34*, 1038–1045

Landry, S.H., Smith, K.E., & Swank, P.R. (2006). Responsive parenting: establishing early foundations for social, communication, and independent problem-solving skills. Dev. Psychol. 42, 627.onal expressiveness, and empathy: relations with parents' empathy, emotional expressiveness, and parenting practices. *Soc. Dev. 13* (2), 229–254.

Laranjo, J., Bernier, A., Meins, E., & Carlson, S. M. (2010). Early manifestations of children's theory of mind: The roles of maternal mind-mindedness and infant security of attachment. *Infancy, 15*(3), 300-323.

Legerstee, M., & Barillas,Y. (2003). Sharing attention and pointing to objects at 12 months: Is the intentional stance implied? *Cognitive development, 18*, 91-110. doi: 10.1016/S0885-2014(02)00165-X

Leslie, A. M. (1987). Pretense and representation: The origins of "theory of mind." *Psychological Review, 94*, 412-426.

Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: the effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin, 126*(2), 309.

Lewis, C., Freeman, N. H., Kyriakidou, C., Maridaki-Kassotaki, K. & Berridge, D. M. (1996). Social influences on false belief access: Specific sibling influences or general apprentice? *Child Development, 67*, 2930-2947.

Liang, J. (2021, December). The Impact of Parenting Style on Preschoolers' Theory of Mind Development: A Cross-cultural Perspective. In *2021 4th International*

*Conference on Humanities Education and Social Sciences (ICHESS 2021)* (pp. 2231-2237). Atlantis Press.

Li, G. (2006). What Do Parents Think? Middle-Class Chinese Immigrant Parents' Perspectives on Literacy Learning, Homework, and School-Home Communication. *School Community Journal, 16*(2), 27-46.

Maltby, J., Macaskill, A., & Gillett, R. (2007). The cognitive nature of forgiveness: Using cognitive strategies of primary appraisal and coping to describe the process of forgiving. *Journal of clinical psychology, 63*(6), 555-566.

McAlister, A., & Peterson, C. C. (2006). Mental playmates: Siblings, executive functioning and theory of mind. *British Journal of Developmental Psychology, 24*, 733-751. doi: 10.1348/026151005X70094

McAlister, A., & Peterson, C. (2007). A longitudinal study of child siblings and theory of mind development. *Cognitive Development, 22*(2), 258-270.

McElwain, N. L., & Volling, B. L. (2004). Attachment security and parental sensitivity during infancy: Associations with friendship quality and false-belief understanding at age 4. *Journal of Social and Personal Relationships, 21*, 639–667.

McElwain, N. L., & Volling, B. L. (2002). Relating individual control, social understanding, and gender to child-friend interaction: A relationships perspective. *Social Development, 11*, 362-385. doi: 10.1111/1467-9507.00205

McElwain, N. L., & Volling, B. L. (2004). Attachment security and parental sensitivity during infancy: Associations with friendship quality and false-belief understanding at age 4. *Journal of Social and Personal Relationships, 21*(5), 639-667.

McGuire, K. D., & Weisz, J. R. (1982). Social cognition and behavior correlates of preadolescent chumship. *Child Development, 53*, 1478-1484. Retrieved from http://www.jstor.org/stable/1130074

McLoyd, V. C. (1998). Socioeconomic disadvantage and child development. *American Psychologist, 53*, 185 – 204.

Mcquaid, N., Bigelow, A. E., McLaughlin, J., & MacLean, K. (2008). Maternal mental state language and preschool children's attachment security: Relation to children's mental state language and expressions of emotional understanding. *Social Development, 17*, 61-83. doi: 10.1111/j.1467-9507.2007.00415.x

Meins, E., Fernyhough, C., Russell, J., & Clark-Carter, D. (1998). Security of attachment as a predictor of symbolic and metalising abilities: A longitudinal study. *Social Development, 7,* 1–24

Meins, E., Fernyhough, C., Wainwright, R., Das Gupta, M., Fradley, E., & Tuckey, M. (2002). Maternal mind–mindedness and attachment security as predictors of theory of mind understanding. *Child development, 73*(6), 1715-1726.

Meins, E. (2013). *Security of attachment and the social development of cognition.* Psychology press.

Meltzoff, A. N., & Brooks, R. (2008). Self experience as a mechanism for learning about others: A training study in social cognition. *Developmental Psychology, 44*, 1257-1265. doi: 10.1037/a0012888

Meltzoff, A. N., Gopnik, A., & Repacholi, B. M. (1999). Toddlers' understanding of intentions, desires and emotions: Explorations of the dark ages. *Developing theories of intention: Social understanding and self-control,* 17-41.

Meltzoff, A. N. (1995). Understanding the intentions of others: re-enactment of intended acts by 18-month-old children. *Developmental psychology, 31*(5), 838.

Miller SA. Social-Cognitive Development in Early Childhood. In: Tremblay RE, Boivin M, Peters RDeV, eds. Zelazo PD, topic ed. *Encyclopedia on Early Childhood Development* [online]. https://www.child-encyclopedia.com/social-cognition/according-experts/social-cognitive-development-early-childhood. Updated: December 2019. Accessed January 4, 2023.

Milligan, K., Astington, J. W., & Dack, L. A. (2007). Language and theory of mind: Meta-analysis of the relation between language ability and false-belief understanding. *Child development, 78*(2), 622-646.

Mizokawa, A., & Hamana, M. (2020). The relationship of theory of mind and maternal emotional expressiveness with aggressive behaviours in young Japanese children: A gender-differentiated effect. *Infant and Child Development, 29*(6), e2196.

Morales, J., Calvo, A., Bialystok, E. (2013). Working memory development in monolingual and bilingual children. *J. Exp. Child Psychol, 114,* 187–202.

Moses, L. J., & Tahiroglu, D. E. N. I. Z. (2010). Clarifying the relation between executive function and children's theories of mind. *Self and social regulation: Social interaction and the development of social understanding and executive functions,* 218-233.

Nawaz, S., Hanif, R., & Lewis, C. (2014). "Theory of mind" development of Pakistani children: Do preschoolers acquire an understanding of desire, pretence and belief in a universal sequence?. *European Journal of Developmental Psychology, 12*(2), 177–188. https://doi.org/10.1080/17405629.2014.973843

Nielsen, M., & Christie, T. (2008). Adult modeling facilitates young children's generation of novel pretend acts. *Infant and Child Development, 17,* 151-162. doi: 10.1002.icd.538

Nelson, K. (2007). *Young minds in social worlds: Experience, meaning, and memory.* Harvard University Press.

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). McGraw-Hill.

Onishi, K. H., & Baillargeon, R. (2005). Do 15-month-old infants understand false beliefs? *Science, 308*(5719), 255-258.

Ontai, L. L., & Thompson, R. A. (2008). Attachment, parent–child discourse and theory-of-mind development. *Social Development, 17*(1), 47-60.

Ontai, L. L., & Thompson, R. A. (2002). Patterns of attachment and maternal discourse effects on children's emotion understanding from 3 to 5 years of age. *Social Development, 11*(4), 433-450.

Pastorelli, C., Lansford, J. E., Luengo Kanacri, B. P., Malone, P. S., Di Giunta, L., Bacchini, D., ... & Sorbring, E. (2016). Positive parenting and children's prosocial behavior in eight countries. *Journal of Child Psychology and Psychiatry, 57*(7), 824-834. doi: 10.1111/jcpp.12477

Pears, K. C., & Moses, L. J. (2003). Demographics, parenting, and theory of mind in preschool children. *Social development, 12*(1), 1-20.

Perlman, S., Camras, L. A., & Pelphrey, K. (2008). A. Physiology and functioning: Parents' vagal tone, emotion socialization, and children's emotion knowledge. *Journal of Experimental Child Psychology, 100*, 308–315.

Perner, J., Leekam, S. R., & Wimmer, H. (1987). Three-year-olds' difficulty with false belief: The case for a conceptual deficit. *British journal of developmental psychology, 5*(2), 125-137.

Perner, J., Ruffman, T., & Leekam, S. R. (1994). Theory of mind is contagious: You catch it from your sibs. *Child development, 65*(4), 1228-1238.

Perner, J. (1991). Understanding the Representational Mind. Cambridge, MA: MIT Press

Perner, J., & Wimmer, H. (1985). "John thinks that Mary thinks that…" attribution of second-order beliefs by 5-to 10-year-old children. *Journal of experimental child psychology, 39*(3), 437-471.

Peterson, C. C. (2000). Kindred spirits influences of sibling's perspectives on theory of mind. *Cognitive Development, 15*, 435-455. doi: 10.1016/S0885-2014(01)00040-5

Pluck, G., Córdova, M. A., Bock, C., Chalen, I., & Trueba, A. F. (2021). Socio-economic status, executive functions, and theory of mind ability in adolescents: Relationships with language ability and cortisol. *British Journal of Developmental Psychology, 39*(1), 19-38.

Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? *Behavioral and brain sciences, 1*(4), 515-526.

Psychogiou, L., Daley, D., Thompson, M.J., & Sonuga-Barke, E.J. (2008). Parenting empathy: associations with dimensions of parent and child psychopathology. *Br. J. Dev. Psychol. 26*(2), 221–232.

Raffaele, L. M., & Knoff, H. M. (1999). Improving home-school collaboration with disadvantaged families: Organizational principles, perspectives, and approaches. *School Psychology Review, 28*(3), 448-466.

Raikes, H. A., & Thompson, R. A. (2006). Family emotional climate, attachment security and young children's emotion knowledge in a high risk sample. *British Journal of Developmental Psychology, 24*(1), 89-104.

Rakoczy, H. (2022). Foundations of theory of mind and its development in early childhood. *Nature Reviews Psychology, 1*(4), 223-235.

Repacholi, B. M., & Gopnik, A. (1997). Early reasoning about desires: evidence from 14-and 18-month-olds. *Developmental psychology, 33*(1), 12.

Repacholi, B., & Trapolini, T. (2004). Attachment and preschool children's understanding of maternal versus non-maternal psychological states. British Journal of Developmental Psychology, 22, 395–415.

Rohrer, L. M., Cicchetti, D., Rogosch, F. A., Toth, S. L., & Maughan, A. (2011). Effects of maternal negativity and of early and recent recurrent depressive disorder on children's false belief understanding. *Developmental psychology, 47*(1), 170.

Rowe, M. L. (2008). Child-directed speech: Relation to socioeconomic status, knowledge of child development and child vocabulary skill. *Journal of Child Language, 35*(1), 185–205. http://dx.doi.org/10.1017/s0305000907008343.

Rubin, K. H., Burgess, K. B., & Hastings, P. D. (2002). Stability and social–behavioral consequences of toddlers' inhibited temperament and parenting behaviors. *Child development, 73*(2), 483-495.

Ruffman, T., Perner, J., Naito, M., Parkin, L., & Clements, W. A. (1998). Older (but not younger) siblings facilitate false-belief understanding. Developmental Psychology, 34, 161-174.

Ruffman, T., Perner, J., & Parkin, L. (1999). How parenting style affects false belief understanding. *Social development*, *8*(3), 395-411.

Ruffman, T., Slade, L., & Crowe, E. (2002). The relation between children's and mothers' mental state language and theory-of-mind understanding. *Child development*, *73*(3), 734-751.

Ruffman, T., Slade, L., Devitt, K., & Crowe, E. (2006). What mothers say and what they do: The relation between parenting, theory of mind, language and conflict/cooperation. *British journal OF Developmental psychology*, *24*(1), 105-124.

Rutter, M. (1979). Protective factors in children's responses to stress and disadvantage. In M. W. Kent & J. E. Rolf (Eds.), Primary prevention in psychopathology, Vol. 3: Social competence in children (pp. 49-74). Hanover, NH: University Press of New England.

Ryan, D. P. J. (2001). Bronfenbrenner's ecological systems theory. *Retrieved January*, *9*, 2012.

Saarinen, P., Ruoppila, I. & Korkiakangas, M. 1994. Kasvatuspsykologian kysymyksiä. Helsingin yliopisto: Lahden koulutus- ja tutkimuskeskus. [Problems in Educational Psychology. University of Helsinki: Lahti's Centrum of Education and Research]

Sabbagh, M. A., & Seamans, E. L. (2008). Intergenerational transmission of theory-of-mind. *Developmental Science*, *11*(3), 354-360.

Salmon, C. A., & Shackelford, T. K. (Eds.). (2007). *Family relationships: An evolutionary perspective*. Oxford University Press.

Schreiber, L. M., & Valle, B. E. (2013). Social constructivist teaching strategies in the small group classroom. *Small Group Research*, *44*(4), 395-411.

Schwebel, D. C., Rosen, C. S., & Singer, J. L. (1999). Preschoolers' pretend play and theory of mind: The role of jointly constructed pretence. *British journal of developmental psychology*, *17*(3), 333-348.

Scott, R. M., & Baillargeon, R. (2017). Early false-belief understanding. *Trends in Cognitive Sciences*, *21*(4), 237-249.

Segrin, C., Woszidlo, A., Givertz, M., Bauer, A., & Taylor Murphy, M. (2012). The association between overparenting, parent-child communication. and entitlement and adaptive traits in adult children. *Family Relations, 61*(2), 237-252.

Shatz, M., Diesendruck, G., Martinez-Beck, I., & Akar, D. (2003). The influence of language and socioeconomic status on children's understanding of false belief. *Developmental Psychology, 39*(4), 717–729. http://dx.doi.org/10.1037/0012-1649.39.4.717.

Smetana, J. G., Jambon, M., & Ball, C. (2013). The social domain approach to children's moral and social judgments. In *Handbook of moral development* (pp. 23-45). Psychology Press.

Southgate, V., Senju, A., & Csibra, G. (2007). Action attribution through anticipation of false beliefs by two-year-olds. *Psychological Science, 18*, 587-592.

Slaughter, V., Dennis, M. J., & Pritchard, M. (2002). Theory of mind and peer acceptance in preschool children. *British Journal of Developmental Psychology, 20*, 545-564. doi: 10.1348/026151002760390945

Slaughter, V., & Peterson, C. (2012). How conversational input shapes theory of mind development in infancy and early childhood. In M. Siegal, & L. Surian (Eds.). *Access to language and cognitive development* (pp. 3–22). New York, NY: Oxford University Press.

Slomkowski, C., & Dunn, J. (1996). Young children's understanding of other people's beliefs and feelings and their connected communication with friends. *Developmental Psychology, 32*, 442-447. doi: 10.1037/0012-1649.32.3.442

Sommerville, J. A. (2010). Infants' social cognitive knowledge. *Encyclopedia on Early Childhood Development*, 1-6.

Sommerville, J. A., & Woodward, A. L. (2005). Infants' sensitivity to the causal features of means-end support sequences in action and perception. *Infancy, 8*(2), 119-145.

Sommerville, J. A., & Woodward, A. L. (2005). Pulling out the intentional structure of action: the relation between action processing and action production in infancy. *Cognition*, *95*(1), 1-30.

Steele, M., Steele, H., Croft, C., & Fonagy, P. (1999). Infant mother attachment at one year predicts children's understanding of mixed emotions at 6 years. *Social Development, 8,* 161–178.

Striano, T., & Bertin, E. (2005). Social cognitive skills between 5 and 10 months of age. *British Journal of Developmental Psychology, 23,* 559-568. doi: 10.1348/026151005X26282

Sullivan, K., Zaitchik, D., & Tager-Flusberg, H. (1994). Preschoolers can attribute second-order beliefs. *Developmental psychology*, *30*(3), 395.

Sutton, J., Smith, P. K., & Swettenham, J. (1999). Social cognition and bulling: Social inadequacy or skilled manipulation? *British Journal of Developmental Psychology, 17,* 435-450. doi: 10.1348/026151099165384

Symons, D. K., & Clark, S. E. (2000). A longitudinal study of mother–child relationships and theory of mind in the preschool period. *Social Development, 9,* 3–23

Tamis-LeMonda, C. S., Adolph, K. E., Lobo, S. A., Karasik, L. B., Ishak, S., & Dimitropoulou, K. A., (2008). When infants take mother's advice: 18 months olds integrate perceptual and social information to guide motor action. *Developmental Psychology, 44,* 734-746. doi: 10.1037/0012-1649.44.3.734

Taylor, M., & Carlson, S. M. (1997). The relation between individual differences in fantasy and theory of mind. *Child development*, *68*(3), 436-455.

Thoermer, C., Sodian, B., Vuori, M., Perst, H., & Kristen, S. (2012). Continuity from an implicit to an explicit understanding of false belief from infancy to preschool age. *British Journal of Developmental Psychology*, *30*(1), 172-187.

Tomasello, M. (1999). Having intentions, understanding intentions, and understanding communicative intentions. In P. D. Zelazo, J. W. Astington, & D. R. Olson (Eds.), Developing theories of intention: Social understanding and Self Control (pp. 63-75). Mahwah, NJ: Erlbaum.

Tomasello, M. (2001). Perceiving intentions and learning words in the second year of life.

Trevarthen, C. (2017). The function of emotions in early infant communication and development. In *New perspectives in early communicative development* (pp. 48-81). Routledge.

Turiel, E. (2002). *The culture of morality: Social development, context, and conflict.* Cambridge University Press.

Vasilyeva, M., & Waterfall, H. (2011). Variability in language development: Relation to socioeconomic status and environmental input. *Handbook of early literacy research, 3*, 358-372.

Vasta, R., Miller, S. A., & Ellis, S. (2004). Child psychology (4th ed.). NJ: Wiley.

Walden, T. A., & Ogan, T. A. (1988). The development of social referencing. *Child Development, 59*, 1230-1240. Retrieved from http://www.jstor.org/stable/1130486

Wang, Z., & Wang, L. (2015). The mind and heart of the social child: Developing the empathy and theory of mind scale. *Child Development Research, 2015.*

Watson, J. K., Gelman, S. A., & Wellman, H. M. (1998). Young children's understanding of the non-physical nature of thoughts and the physical nature of the brain. *British Journal of Developmental Psychology, 16*, 321-335.

Watson, A. C., Nixon, C. L., Wilson, A., & Capage, L. (1999). Social interaction skills and theory of mind in young children. Developmental Psychology, 35, 386-391. doi: 10.1037/0012-1649.35.2.386

Weimer, A. A., & Guajardo, N. R. (2005). False belief, emotion understanding, and social skills among Head Start and Non-Head Start children. *Early Education and Development, 16*(3), 341–366. http://dx.doi.org/10.1207/s15566935eed1603_3.

Welch-Ross, M. K., Diecidue, K., & Miller, S. A. (1997). Young children's understanding of conflicting mental representation predicts suggestibility. *Developmental Psychology, 33*, 43-53. doi:10.1037/0012-1649.33.1.43

Wellman, H. M., & Banerjee, M. (1991). Mind and emotion: Children's understanding of the emotional consequences of beliefs and desires. *British Journal of Developmental Psychology, 9*(2), 191-214.

Wellman, H. M., & Bartsch, K. (1994). Before belief: Children's early psychological theory. *Children's early understanding of mind: Origins and development, 1994*, 331-354.

Wellman, H. M., Cross, D., & Watson, J. (2001). Meta-analysis of theory-of-mind development: The truth about false belief. *Child development, 72*(3), 655-684.

Wellman, H. M., & Estes, D. (1986). Early understanding of mental entities: a reexamination of childhood realism. Child Development, 57, 910-923.

Wellman, H. M., & Lagattuta, K. H. (2000). Developing understandings of mind. In S. Baron-Cohen, H. Tager-Flusberg, & D. J. Cohen (Eds.), Understanding other minds: Perspectives from autism (2nd ed., pp. 21-49). New York: Oxford University Press.

Wellman, H. M., & Liu, D. (2004). Scaling of theory-of-mind tasks. *Child development, 75*(2), 523-541.

Wellman, H. M., Lopez-Duran, S., LaBounty, J., & Hamilton, B. (2008). Infant attention to intentional action predicts preschool theory of mind. *Developmental psychology, 44*(2), 618.

Wellman, H. M., Phillips, A. T., Dunphy-Lelii, S., & LaLonde, N. (2004). Infant social attention predicts preschool social cognition. *Developmental Science*, 7, 283– 288. doi:10.1111/j.1467-

Wellman, H. M. (1990). The Child's Theory of Mind. Cambridge, MA: MIT Press

Wellman, H. M. (2017). The development of theory of mind: Historical reflections. *Child Development Perspectives, 11*(3), 207-214.

Wellman, H. M., Philips, A. T., & Rodriguez, T. (2000). Young children's understanding of perception, desire, and emotion. *Child Development, 71* (4), 895-912.

Wellman, H. M. (2002). Understanding the psychological world: Developing a theory of mind. *Blackwell handbook of childhood cognitive development*, 167-187.

Wellman, H.M., & Woolley, J.D. (1990). From simple desires to ordinary beliefs: the early development of everyday psychology. *Cognition, 35*, 245-275.

Werner, R. S., Cassidy, K.W., & Juliano, M. (2006). The role of social-cognitive abilities in preschoolers' aggressive behaviour. *British Journal of Developmental Psychology, 24*, 775-799. doi: 10.1348/026151005X78799

Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition, 13*(1), 103-128.

Woodward, A. L. (1999). Infants' ability to distinguish between purposeful and non-purposeful behaviors. *Infant behavior and development, 22*(2), 145-160.

Woodward, A. L. (2009). Infants' grasp of others' intentions. *Current directions in psychological science, 18*(1), 53-57.

Woodward, A. L. (1998). Infants selectively encode the goal object of an actor's reach. *Cognition, 69*(1), 1-34.

Wray-Lake, L., Flanagan, C. A., & Maggs, J. L. (2012). Socialization in context: Exploring longitudinal correlates of mothers' value messages of compassion and caution. *Developmental psychology, 48*(1), 250.

Yan, W., & Lin, Q. (2005). Parent involvement and mathematics achievement: Contrast across racial and ethnic groups. *The Journal of Educational Research, 99*(2), 116-127.

Youngblade, L. M., & Dunn, J. (1995). Individual differences in young children's pretend play with mother and sibling: Links to relationships and understanding of other people's feelings and beliefs. *Child Development, 66*(5), 1472-1492.

Zahn-Waxler, C., Radke-Yarrow, M., & King, R. A. (1979). Child rearing and children's prosocial initiations toward victims of distress. *Child development*, 319-330.

Zhou, Q., Eisenberg, N., Losoya, S. H., Fabes, R. A., Reiser, M., Guthrie, I. K., ... & Shepard, S. A. (2002). The relations of parental warmth and positive expressiveness to children's empathy related responding and social functioning: A longitudinal study. *Child Development, 73*(3), 893- 915. doi: 10.1111/1467-8624.00446.

Zellman, G. L., & Waterman, J. M. (1998). Understanding the impact of parent school involvement on children's educational outcomes. *The Journal of Educational Research, 91*(6), 370-380.

# APPENDICES

**Appendix A1**

## Informed Consent

**For Parents**

Respected Parents,

I am M.Phil. scholar at National Institute of Psychology, Quaid-i-Azam University, Islamabad. As a researcher, I am interested to explore the role of parental characteristics on the development of your child's ability to comprehend other people's as well as their own perspectives. In this regard your valuable collaboration is highly appreciated.

It is ensured that data provided by the esteemed respondent will be exclusively used for research purposes. The information you would provide would be kept anonymous and will never be used for any purpose other than research. Any personal information shared by you will be kept confidential and will not be disclosed in any forum or publication.

There is no time limit for the completion of questionnaires. However, while filling out the questionnaire, if it's inconvenient for any reason you have the right to quit and may discontinue at any stage.

Please return this page with the survey. This page will be removed from the questionnaire booklet immediately after it is received by the researcher and will not be associated with your responses in this survey. If you like to share any feedback, suggestions, or comment, please feel free to correspond through the email address given below.

If you are willing to provide the relevant information, kindly provide your consent with your initials in the specified area given below.

Thanking you in anticipation!

Participant's Signature_____

Regards,

Rabia Malik

National Institute of Psychology

Quaid-i-Azam University, Islamabad

Email: rabiamalik.f21@nip.edu.pk

## Informed Consent

### For Children

Respected Parents,

I am M.Phil. scholar at National Institute of Psychology, Quaid-i-Azam University, Islamabad. As a researcher, I am interested to explore the role of parental characteristics on the development of your child's ability to comprehend other people's as well as their own perspectives. In this regard your valuable collaboration is highly appreciated.

Children will be shown some pictures along with a story and at the end they will be asked questions regarding the story. No children will be harmed physically or emotionally during the process.

The information collected will be kept confidential and in no way will be used to bully or stigmatize your child. You hold the right to withdraw the information at any time of the research.

Kindly allow your child to take part in this research. Any suggestions, opinions or complaints are welcomed on the email address given below.

Thanking you in anticipation!

Parent's Signature: _____

Regards,

Rabia Malik

National Institute of Psychology

Quaid-i-Azam University, Islamabad

Email: rabiamalik.f21@nip.edu.pk

**Appendix A2**

## Demographic Sheet

You are child's:  Mother ☐

                     Father ☐

Child's age: _____ years _____ months

Father's age: _____            Mother's age: _____

Father's education: _____      Mother's            education:

_____

Marital status: Married ☐

                 Divorced ☐

                 Widow ☐

                 Widower ☐

                 Single parent ☐

Family System:  Nuclear ☐

                 Joint ☐

                 Extended family ☐

Father's Occupation/ Working status: _____

Mother's Occupation/ Working status: _____

Monthly Family Income in PKR: _____

Father's Ethnicity:  Punjabi ☐          Mother's Ethnicity:  Punjabi ☐

                 Sindhi ☐                             Sindhi ☐

                 Balochi ☐                         Balochi ☐

                 Pashtoon ☐                     Pashtoon ☐

                 Kashmiri ☐                     Kashmiri☐

                 Gilgiti ☐                          Gilgiti ☐

                 Other: _____                   Other:_____

Number of siblings (excluding the child): _____

Age of siblings: _____

_____

_____

_____

_____

Number of adults in the family (including grandparents, aunts e.t.c.): _____

Number of children in the family (including cousins): _____

Is the child an only child? Yes/No

Birth order of the child (child's place among the siblings e.g. 1st born or 3rd born): _____

Grade in which the child is enrolled: _____

Mother tongue of the child: _____

Number of languages spoken at home (specify which ones): _____

_____

Does the child has any interaction with the screen: _____

Number of minutes/hours spent in front of the screen: \_\_\_\_\_ hrs \_\_\_\_\_ mins

What kind of content does he/she watch: _____

Do you or any other adult watches with the child (co-view): _____

If someone watches with the child, specify who: _____

How much time (approximately) does the mother spends actively with the child (time spent playing games, talking or doing any other activity):

\_\_\_\_\_ hrs \_\_\_\_ mins

How much time (approximately) does the father spends actively with the child (time spent playing games, talking or doing any other activity):

\_\_\_\_\_ hrs \_\_\_\_\_ mins

## Parental Involvement Scale (PIS)

Please mark what you do and not what you think you should do.

| S no. | | Not at all true | Slightly true | True | Very true | Absolute ly true |
|---|---|---|---|---|---|---|
| 1. | I visit my child's school to talk to teachers. | | | | | |
| 2. | I attend events organized by my child's school. | | | | | |
| 3. | I volunteer for school activities. | | | | | |
| 4. | I often get invitations to go see my child's teachers. | | | | | |
| 5. | Every time I am called at my child's school I make an effort to respond. | | | | | |
| 6. | I am in close contact with my child's school. | | | | | |
| 7. | I worry when my child is not with me. | | | | | |
| 8. | I worry that something bad may happen to my child. | | | | | |
| 9. | I am reluctant to let my child play with other children because I am afraid (s)he may be hurt. | | | | | |
| 10. | I call many times when my child is on a trip with the school. | | | | | |
| 11. | I am concerned about my child's health and wellbeing. | | | | | |
| 12. | People think that I am over-protective. | | | | | |
| 13. | I monitor my child's outings. | | | | | |
| 14. | I check what my child watches on TV. | | | | | |
| 15. | I set boundaries for my child's behavior. | | | | | |
| 16. | I want to know who my child's friends are. | | | | | |
| 17. | I want to know my child's secrets. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 18. | I allow time to talk to my child on a daily basis. | | | | | |
| 19. | I help my child with homework. | | | | | |
| 20. | I sit with my child for many hours in the evening while he/she does his/her homework. | | | | | |
| 21. | I examine my child after he/she finishes his/her homework. | | | | | |
| 22. | I keep track of the time my child devotes for studying at home. | | | | | |
| 23. | I go over the corrected tests or papers he/she brings home from school. | | | | | |
| 24. | I follow my child's school-work systematically. | | | | | |
| 25. | I send my child to special classes for interest development (music, dance etc). | | | | | |
| 26. | I encourage my child to develop new hobbies. | | | | | |
| 27. | I offer books and educational toys/activities to my child for presents. | | | | | |
| 28. | I encourage my child to read for pleasure. | | | | | |
| 29. | I offer to my child opportunities for personal development. | | | | | |
| 30. | Extracurricular activities are important for me as a parent. | | | | | |

**Appendix A4**

## Inter-Personal Reactivity Index (IRI)

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by choosing the appropriate number on the scale at the top. When you have decided on your answer, tick mark the box on the answer sheet next to the item number. READ EACH ITEM CAREFULLY BEFORE RESPONDING. Answer as honestly as you can. There are no right or wrong answers.

| S no. | | Does not describe me | Somewhat describe me | Describe me | Describe me well | Describe me very well |
|---|---|---|---|---|---|---|
| 1. | I often have tender, concerned feelings for people less fortunate than me. | | | | | |
| 2. | I sometimes find it difficult to see things from the "other guy's" point of view. | | | | | |
| 3. | Sometimes I don't feel very sorry for other people when they are having problems. | | | | | |
| 4. | I try to look at everybody's side of a disagreement before I make a decision. | | | | | |
| 5. | When I see someone being taken advantage of, I feel kind of protective towards them. | | | | | |
| 6. | I sometimes try to understand my friends better by imagining how things look from their perspective. | | | | | |
| 7. | Other people's misfortunes do not usually disturb me a great deal. | | | | | |
| 8. | If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. | | | | | |
| 9. | When I see someone being treated unfairly, I sometimes don't feel very much pity for them. | | | | | |
| 10. | I am often quite touched by things that I see happen | | | | | |
| 11. | I believe that there are two sides to every question and try to look at them both. | | | | | |
| 12. | I would describe myself as a pretty soft-hearted person. | | | | | |
| 13. | When I'm upset at someone, I usually try to "put myself in his shoes" (try to understand what he feels/empathize with him) for a while. | | | | | |

| 14. | Before criticizing somebody, I try to imagine how I would feel if I were in their place. | | | | | |
|-----|------------------------------------------------------------------------------------------|--|--|--|--|--|

**Appendix A5**

## Parenting that encourages children to take the perspective of others

Read the following statements and mark the most appropriate option which suits you.

| S no. | | Not at all like me | Slightly like me | Neutral | Somewhat like me | Very much like me |
|---|---|---|---|---|---|---|
| 1. | When my child has a disagreement with another child, I encourage her/him to try and 'see things' from the other child's perspective. | | | | | |
| 2. | If my child is 'picked on' by another child, I encourage my child to try and work out why the other child is 'picking on' her/him. | | | | | |

## Self-Expressiveness in the Family Questionnaire (SEFQ)

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you by choosing the appropriate number on the scale at the top. Answer as honestly as you can. There are no right or wrong answers.

| S no. | | Not at all | Rarely | Frequently | Very frequently |
|---|---|---|---|---|---|
| 1. | Showing contempt (disrespect/hate) for your child's actions. | | | | |
| 2. | Expressing dissatisfaction with your child's behavior. | | | | |
| 3. | Praising your child for good work. | | | | |
| 4. | Expressing anger at your child's carelessness. | | | | |
| 5. | Sulking (to be in a bad mood) over unfair treatment by your child. | | | | |
| 6. | Blaming your child for family troubles. | | | | |
| 7. | Putting down your child's interests. | | | | |
| 8. | Showing dislike for your child. | | | | |
| 9. | Expressing excitement about your child's future plans. | | | | |
| 10. | Demonstrating admiration about your child to him/her. | | | | |
| 11. | Expressing deep affection or love for your child. | | | | |
| 12. | Spontaneously hugging your child. | | | | |
| 13. | Expressing momentary anger to your child over trivial (minor) irritation. | | | | |
| 14. | Snuggling (to hug) up to your child. | | | | |
| 15. | Trying to cheer up your child when he/she is sad. | | | | |
| 16. | Telling your child how happy you are. | | | | |
| 17. | Threatening your child. | | | | |
| 18. | Expressing gratitude (respect) for a favour from your child. | | | | |
| 19. | Surprising your child with a little gift or favour. | | | | |

**Appendix A7**

## Theory of Mind Scale

These tasks are presented in order of least to most difficult (for preschoolers). Those five tasks constitute the standard 5-item scale, typically used with children 3 to 6 or 7 years of age.

### Diverse Desire (DD)
Props: Small figurine of man. Plus 8.5x11 piece paper (laminated) with colored realistic drawing of carrot on one half and cookie on the other.

*Story*: Here's Mr. Ali (place figurenext to picture, midway between two items) . It is his snack time. So, Mr. Ali wants a snack to eat. Here are two different snacks: a carrot (point) and a cookie (point).

*Own Desire*: Which snack would **YOU like** best? Would you like a **carrot** (point) **or**…a **cookie** (point) best?

| | |
|---|---|
| ___ If carrot: | Well, that's a good choice, **BUT**…Mr. Ali **REALLY LIKES cookies** (don't point). He doesn't like carrots. What he **likes best** are cookies. |
| ___ If cookie: | Well, that's a good choice, **BUT**…Mr. Ali **REALLY LIKES carrots** (don't point). He doesn't like cookies. What he **likes best** are carrots. |

*Question*: So, now it's time to eat. Mr. Ali can only choose **one** snack, **just one**. Which snack will Mr. Ali (point to Mr. Ali) **choose**?…A carrot or…a cookie?

___ carrot    ___ cookie

### Diverse Belief (DB)

Props: Small figurine of girl. Plus 8.5x11 piece paper (laminated) with colored realistic drawing of bushes on one half and garage on the other.

*Story*: Here's Sara (place figure on table next to picture midway between two items). Sara wants to find her cat. Her cat might be hiding in the bushes (point) or…it might be hiding in the garage (point).

*Own Belief*: Where do **YOU think** the cat is? **In the bushes** (point) **or**…**in the garage** (point)?

| | |
|---|---|
| ___ If bushes: | Well, that's a good idea, **BUT**…Sara **THINKS** her cat is **in the garage** (don't point). She **thinks** her cat is in the garage. |

___ If garage: Well, that's a good idea, **BUT**…Sara **THINKS** her cat is **in the bushes** (don't point). She **thinks** her cat is in the bushes.

*Question*: So…where will Sara (point to Linda) **look** for her cat?…In the bushes or…in the garage?

___ bushes    ___ garage

## Knowledge Access (KA)

Props: Small nondescript rectangular box. Toy elephant to fit in the box. Small figurine of girl.

*Experimenter*: Here's a box (keep finger over box).

*Question to child*: What do you think is inside the box (point to box)?
(If child gives an answer): _____

*Experimenter*: (With drama) Let's see…it's really **an Elephant** inside!
(open the box to show the elephant)
(Close the box to restrict view again after a pause)

*Post-view Question*: Okay…what is in the box? _____
(If child makes an error here, show contents inside again until child gets this question correct)

*Experimenter*: Sara has **never ever seen** inside this box. (Take Sara out) Now here comes Sara.

*Question*: So…does Sara **KNOW** what is in the box?

___ yes    ___ no

Did Polly **see** inside this box?

___ yes    ___ no

## Contents False-Belief (CFB)

Props: standard Band-aid box with picture of band-aid prominently on front. Toy turtle to fit in box. Small figure of a boy.

*Experimenter*: Here is a Band-Aid box.

*Question to child*: What do you think is inside the Band-Aid box?

_____
(Prompt child to say Band-Aids if necessary: for example, first prompt, "Does it look like there would be Band-Aids inside?" second prompt, "What kind of box is this? What should be in here?" third prompt, "Should there be Band-Aids in here or books in here?")

*Experimenter*: (With drama) Let's see…it's really **a Turtle** inside!

<div align="right">(Pour the turtle out)</div>

<div align="center">(Close the lid to restrict view again after a pause)</div>

*Post-view Question*: Okay…what is in the box? _____
(If child makes an error here, show contents inside again until child gets this question correct)

*Experimenter*: Hamza has **never ever seen** inside this Band-Aid box. (Take Hamza out) Now here comes Hamza.

*Question*: So…what does Hamza **THINK** is in the box? Band-Aids or a Turtle? (Reiterate choice again if child still does not answer)

____ Band-Aids     ____ Turtle

Did Hamza **see** inside this box?

____ yes     ____ no

## Hidden-Emotion (HE)

### Pre-training
Props: Picture (about 3x3) showing drawing of back of a boy' s head (not face or expression). Emotion scale: a strip (about 3x10) of three simple "faces" (bare-bones "smiley"-type black-and-white faces of just circular outline plus simple eyes and line-like mouths): one happy, one sad, and (in middle of strip) one neutral.

*Experimenter*: Now, I'm going to tell you a story about a boy. (**Take out emotion scale**) In this story, the boy might feel happy (**point**). He might feel sad (**point**). Or He might be not feel happy or sad, just OK (**point**).

**Can you point to the face that is:**
      ____ Sad?
      ____ OK?
      ____ Happy?

(Train child again if child makes a mistake)

*Experimenter*: Okay, now about the story: After I've finished the story, I'm going to ask you about how the boy really feels, inside (pat own chest), **AND** how he looks on his face (pat own cheek). How he **really feels inside** (pat own chest) may be the same as how he **looks on his face** (pat own cheek), or they may be different.

(At this point the emotion scale is pushed to one side. The child does not have to answer the target questions by pointing at the scale. The scale remains in sight but out of the way just to provide a visual reminder of the warm up, unless child is unusually nonverbal.)

**Hidden-Emotion (HE)** (Negative) (X)

*Experimenter*: This story is about Ali (show picture). Ali's aunt just got back from a trip. She promised that she would buy Ali a toy car. **But**, she got Ali a book instead. Ali **doesn't like books** (slow pace). What Ali really wants is a toy car. **But**…Ali has to **hide how he feels**, because if his aunt knows his real feelings, she'll never buy him anything again.

*Memory Check*:      What did Ali's aunt buy for him?

                    (Correct answer: a book…if the child gets the answer wrong, tell the story again)

                    What will Ali's aunt do, if she knows how Ali really feels?

                    (Correct answer: she will never buy anything for Ali anymore…if the child gets the answer wrong, tell the story again)

*Question*:      So…how did Ali **really feel** (pat own chest), when his aunt gave him the book—Happy, Sad, or Okay? (Note: the examiner should not show any feelings)
(Reiterate choice again if child still does not answer)

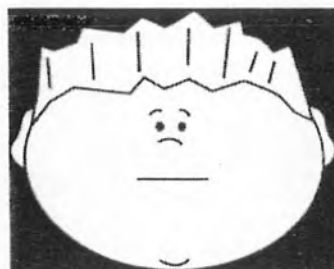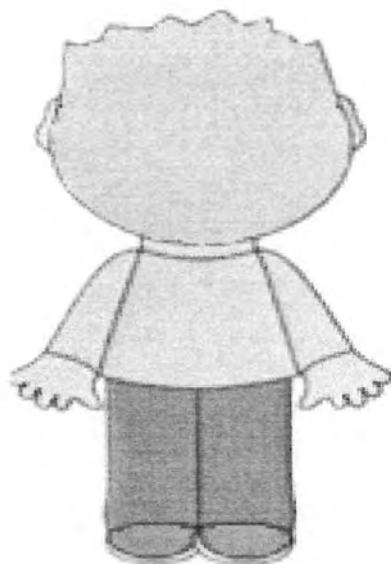        ___ Happy   ___ Sad   ___ Okay

        How did Ali **try to look** on his face (pat own face), when his aunt gave him the book—Happy, Sad, or Okay? (Note: the examiner should not show any feelings)
(Reiterate choice again if child still does not answer)
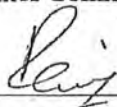
        ___ Happy   ___ Sad   ___ Okay
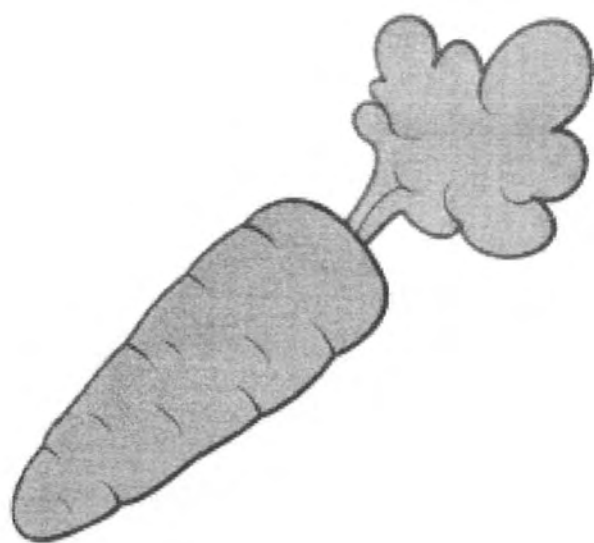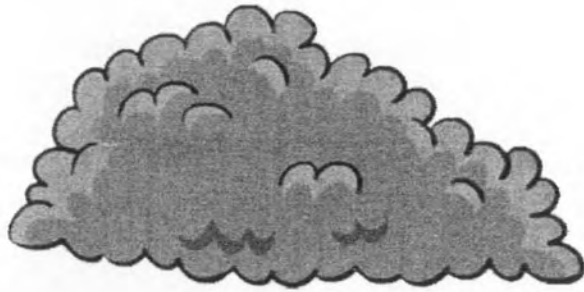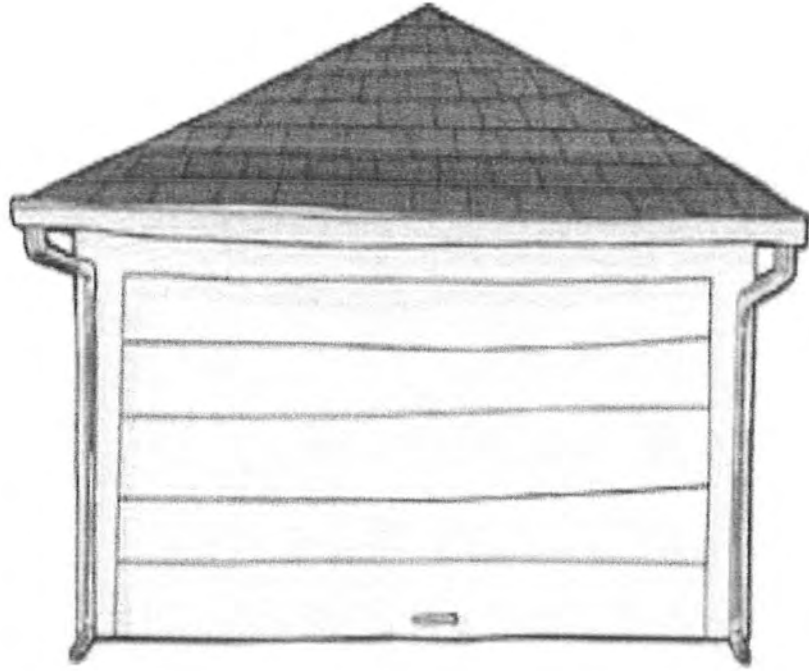
## Ethical Performa

Office of the Ethics Committee

National Institute of Psychology
Center of Excellence
Quaid-e-Azam, University, Islamabad

### Certificate of Approval

It is certified that the research project entitled **"The Role of Parental Involvement, Parental Empathy, and Emotional Expressiveness in The Development of The Theory of Mind Among Children"** submitted by **Rabia Malik** under the supervision of **Dr. Naeem Aslam** is approved from ethics committee dated on $7^{th}$ October 2022.

Chair: Ethics Committee

(Prof. Dr. Rubina Hanif)
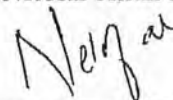
Member: Ethics Committee
(Dr. Sobia Masood)

Member: Ethics Committee
(Dr. Nelofar Kiran Rauf)

## Appendix A9

## Permission Letters

Q stege@ucy.ac.cy                                      X  ⇄        ● Active ▾   ⑦ ⚙ ⠿  〼NIP  R

←  ▣ ⓞ ▥   ▢ ◔ ⑭   ▣ ▭  ⋮                              1 of 1        ▦ ▾

**Rabia Malik** <rabiamalik121@vid.edu.pk>                    Tue, Sep 27, 10:38 PM  ☆  ↩  ⋮
to stege@ucy.ac.cy ▾

Dear Stelios,

I am Rabia Malik and im doing Mphil at Quaid-e-Azam University, Pakistan. I'm planning to work on the development of preschoolers (3-6 years). For this purpose I need to use the Parental Involvement Scale. I saw the scale used in one of your articles available online. Kindly provide access to me.
I will use it only for research purposes only.

I shall be very thankful to you for permitting me to use the scale.

Best regards,

**Stelios Georgiou** <stege@ucy.ac.cy>                     Tue, Sep 27, 11:29 PM  ☆  ↩  ⋮
to me ▾

Dear Rabia,
Attached is the scale you have requested. Please feel free to use it for your study. Proper citations will be appreciated.
Sincerely,

Stelios N. Georgiou,
Professor of Educational Psychology,
Department of Psychology
University of Cyprus
Office tel: 357 2289 2076
Fax 357 2289 2071
E-mail address: stege@ucy.ac.cy

...

Q Search in mail

Active ▾

to davismn@eckerd.edu ▾

Respected Mark . Davis,

I am Rabia Malik and I'm doing Mphil at Quaid-e-Azam University, Pakistan. I'm planning to work on the development of preschoolers (3-6 years). For this purpose I need to use the 2 subscale of Interpersonal Reactivity Index. I saw the scale used in one of your articles available online.
Kindly provide me the permission to use the scale along with its copy and psychometric properties.

I shall be very thankful to you for permitting me to use the scale.

Best regards.

**Mark Davis** <davismn@eckerd.edu>
to me ▾

Sun, Oct 2 3:04 PM

Dear Rabia:

Thanks for your interest in the IRI. You have my full permission to use the instrument in your research, and I am attaching some material that may be of use to you. Best of luck with your project!

Regards,
Mark

...

Respected Mizokawa.

I am Rabia Malik and I'm doing Mphil at Quaid-e-Azam University, Pakistan. I'm planning to work on the development of preschoolers (3-6 years). For this purpose I need to use the Self Expressiveness Questionnaire that will be used for parents. I saw the scale used in one of your articles available online. Kindly provide me the permission to use the scale along with its copy and psychometric properties. I will use it for research purposes only.

I shall be very thankful to you for permitting me to use the scale.

Best regards.

Ai MIZOKAWA <aimizokawa@gmail.com>                                                                    Tue, Oct 4, 11:54 PM

Dear Rabia Malik

Thank you very much for your messages. I am sorry for the late response.
I assume you are referring to "The Modified Version of the Self-Expressiveness in the Family Questionnaire" in the following article (Mizokawa, 2013). Please feel free to use it in your research.
https://www.frontiersin.org/articles/10.3389/fpsyg.2013.00807/full

Sincerely yours
Ai

← ⬇ ⓘ 🗑 ✉ ⏲ ☑ ⬇ ⬜ ⋮                              1 of 2  ‹  ›   📅

**Rabia Malik** <rabia0309malik@gmail.com>                    Thu, 22 Sept. 07:28  ☆  �ᐣ  ⋮
to h-hw ▾

Dear Henry Wellman,

I am Rabia Malik and im doing Mphil at Quaid-e-Azam University, Pakistan. Im planning to work on the development of theory of mind among preschoolers (3-5 years). For this purpose i need to use your scale. I will use it only for research purposes and i can also share my research progress with you if required.

I shall be very thankful to you for permitting me to use the scale.

Best regards.

**Rabia Malik** <rabia0309malik@gmail.com>                    Mon, 26 Sept. 03:16  ☆  ↩  ⋮
to h-hw ▾

•••

**Henry Wellman**                                    @ Mon, 26 Sept. 05:16  ☆  ↩  ⋮
to me ▾

Certainly you can use the Scale. Attached is our manual for more details.

Henry M. Wellman
Harold W. Stevenson Collegiate Emeritus Professor
Department of Psychology
University of Michigan

•••

Rabia Malik <rabia0309malik@gmail.com>

als Online (ThaiJO)     3 September 2023 at
                                        22:08
ditor@su.ac.th>

velopment of Theory of Mind among
LPAKORN UNIVERSITY JOURNAL OF
ement system that we are using, you will
rnal website:

mission/265245

nal as a venue for your work.

nam Chandra Palace Campus

4 September 2023 at 10:24

The Role of Parental Involvement, Parental
Empathy, and Emotional Expressiveness in the
Development of the Theory of Mind (ToM)
Among Children By Rabia Malik

1% match (Internet from 15-Dec-2019)
https://link.springer.com/article/10.1007/s10826-012-9643-8

1% match (Internet from 21-Dec-2022)
http://prr.hec.gov.pk/jspui/bitstream/123456789/7148/1/Sumbal_Nawaz_HEC_Scholar_Psychology_2015_QAU_ISD_13.10.2016.pdf

1% match (Internet from 21-Nov-2019)
https://pdfs.semanticscholar.org/a2a3/d96ceb11b62887ccabfd11835c4b1269ca51.pdf

1% match (Internet from 04-Apr-2010)
http://eprints.qut.edu.au/2301/1/Gender_differences_Tom.pdf

1% match (Astington, J.W., "Theory of mind and epistemological development: the relation between children's second-order false-belief understanding and their ability to reason about evidence", New Ideas in Psychology, 200208/12)
Astington, J.W., "Theory of mind and epistemological development: the relation between children's second-order false-belief understanding and their ability to reason about evidence", New Ideas in Psychology, 200208/12

1% match (Mark A. Sabbagh, Lindsay C. Bowman. "Theory of Mind", Wiley, 2018)
Mark A. Sabbagh, Lindsay C. Bowman, "Theory of Mind", Wiley, 2018

1% match (Ai Mizokawa, Mai Hamana. " The relationship of theory of mind and maternal emotional expressiveness with aggressive behaviours in young Japanese children: A effect ", Infant and Child Development, 2020)
Ai Mizokawa, Mai Hamana, " The relationship of theory of mind and maternal emotional expressiveness with aggressive behaviours in young Japanese children: A effect ", Infant and Child Development, 2020

< 1% match (Internet from 26-Jan-2023)
https://link.springer.com/article/10.3758/s13415-018-0641-1?code=c210c97f-8f56-494c-ad46-1a17d12247ab&error=cookies_not_supported

< 1% match (Internet from 17-Dec-2022)
http://prr.hec.gov.pk/jspui/bitstream/123456789/9866/1/Naeem%20Aslam%20Chughtai_QAU_2018.pdf

< 1% match (Internet from 08-Dec-2022)
https://pjpr.scione.com/cms/fulltext.php?id=102

< 1% match (R. C. Gardner, R. E. Ginsberg, P. C. Smythe. "Attitude and Motivation in Second-Language Learning: Course Related Changes", Canadian Modern Language Review, 1976)
R. C. Gardner, R. E. Ginsberg, P. C. Smythe, "Attitude and Motivation in Second-Language Learning: Course Related Changes", Canadian Modern Language Review, 1976

< 1% match (Sodian, Beate, Maria Licata, Susanne Kristen-Antonow, Markus Paulus, Melanie Killen, and Amanda Woodward. "Understanding of Goals, Beliefs, and Desires Predicts Morally Relevant Theory of Mind: A Longitudinal Investigation", Child Development, 2016.)
Sodian, Beate, Maria Licata, Susanne Kristen-Antonow, Markus Paulus, Melanie Killen, and Amanda Woodward, "Understanding of Goals, Beliefs, and Desires Predicts Morally Relevant Theory of Mind: A Longitudinal Investigation", Child Development, 2016.

< 1% match (student papers from 21-Mar-2019)
Submitted to University of Melbourne on 2019-03-21

< 1% match (student papers from 28-Mar-2012)
Submitted to University of Melbourne on 2012-03-28

< 1% match (student papers from 01-Apr-2015)
Submitted to University of Melbourne on 2015-04-01

< 1% match (Internet from 06-Dec-2019)
https://onlinelibrary.wiley.com/doi/full/10.1002/icd.740

< 1% match (Internet from 26-Dec-2022)
https://pure.rug.nl/ws/files/23594670/Complete_thesis.pdf

< 1% match (Carlson, Stephanie M., Melissa A. Koenig, and Madeline B. Harms. "Theory of mind", Wiley Interdisciplinary Reviews Cognitive Science, 2013.)
Carlson, Stephanie M., Melissa A. Koenig, and Madeline B. Harms, "Theory of mind", Wiley Interdisciplinary Reviews Cognitive Science, 2013.

< 1% match (Claire Hughes, Rory T. Devine. "A Social Perspective on Theory of Mind", Wiley, 2015)
Claire Hughes, Rory T. Devine, "A Social Perspective on Theory of Mind", Wiley, 2015

< 1% match (Unto Häkkinen. "Health, schooling and lifestyle among young adults in Finland", Health Economics, 11/2006)
Unto Häkkinen, "Health, schooling and lifestyle among young adults in Finland", Health Economics, 11/2006

< 1% match (Internet from 03-Dec-2017)