

ORIGINAL RESEARCH

Bilingualism and the Development of Theory of Mind in Early Childhood: A Cross-Cultural Comparison

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Abstract

Background: The development of Theory of Mind (ToM) in early childhood is crucial for social cognition, yet its interplay with bilingualism and cultural context remains a subject of ongoing investigation. Research suggests bilingualism may confer cognitive advantages, potentially extending to ToM, while cultural practices are known to shape its trajectory. This study aims to explore the relationship between bilingualism and ToM development across diverse cultural settings.

Methods: A cross-sectional design was employed, involving 320 children aged 3-6 years from two distinct cultural contexts: a Western European country (Switzerland) and an East Asian country (Japan). Within each culture, participants were divided into monolingual and bilingual groups. ToM was assessed using a battery of false-belief tasks, while language proficiency and exposure were measured through parental reports and structured interviews. Data were analyzed using multivariate analyses of variance (MANOVA) and regression models to examine the main effects and interactions of language status and culture on ToM performance.

Results: Bilingual children, across both cultural contexts, demonstrated significantly higher ToM scores compared to their monolingual peers. Significant cultural differences in ToM development were also observed, with children from the East Asian context exhibiting a slightly earlier mastery of certain ToM components. Crucially, a significant interaction effect indicated that the bilingual advantage in ToM was more pronounced in the Western European sample. Parental ToM coaching and executive function were identified as significant predictors of ToM scores.

Conclusions: This study provides robust evidence for a bilingual advantage in early childhood ToM development, highlighting the cognitive flexibility fostered by navigating multiple linguistic systems. It also underscores the profound influence of cultural context on the timing and manifestations of ToM. The findings suggest that bilingual education and culturally sensitive pedagogical approaches could significantly enhance social cognitive skills in young children.

Keywords: Bilingualism, Theory of Mind, Early Childhood, Cross-Cultural, Cognitive Development, Social Cognition, False Belief, Language Acquisition

Introduction

The capacity to attribute mental states—beliefs, desires, intentions, and emotions—to oneself and others, commonly referred to as Theory of Mind (ToM), is a cornerstone of human social cognition (Rakoczy, 2022). Developing ToM in early childhood is fundamental for successful social interactions, communication, and moral reasoning. Children's ability to understand that

others may hold beliefs different from their own, or different from reality, marks a significant developmental milestone, typically emerging between three and five years of age (Rakoczy, 2022).

Alongside the intrinsic developmental trajectory of ToM, various environmental and experiential factors have been identified as influential. These include family dynamics, parental input, and educational experiences (Shahaeian et al., 2013; Kuntoro et al., 2017; Martucci, 2014; Qu et al., 2015). A particularly compelling area of inquiry concerns the cognitive implications of bilingualism. The experience of acquiring and navigating two or more languages from an early age has been associated with a range of cognitive advantages, including enhanced executive functions such as inhibitory control, cognitive flexibility, and working memory (Gathercole et al., 2014; GOETZ, 2003).

Given the cognitive demands of managing multiple linguistic systems, it is plausible that bilingualism might also impact the development of ToM. Early research hinted at a potential link between bilingualism and metalinguistic awareness, the ability to reflect on and manipulate language structures, which itself involves a form of cognitive flexibility (Cummins, 1978). More recently, scholars have begun to explore whether the constant need to select and inhibit languages, and to interpret social cues in varied linguistic contexts, might foster a more advanced understanding of others' perspectives and mental states (GOETZ, 2003).

However, the relationship between bilingualism and ToM is not isolated from the broader socio-cultural context in which a child develops. Cultural norms, child-rearing practices, and prevalent communication styles can significantly shape the emphasis placed on, and the trajectory of, ToM acquisition (Shahaeian et al., 2013; Kuntoro et al., 2017; O'Reilly & Peterson, 2014). For instance, cultures that prioritize interdependence and group harmony might foster different facets of ToM compared to cultures emphasizing individualism and personal autonomy (Ahn & Miller, 2012; Klein, 1987). Therefore, a comprehensive understanding of the bilingualism-ToM link necessitates a cross-cultural perspective.

Despite growing interest, direct cross-cultural comparative studies investigating how bilingualism interacts with cultural background to influence ToM development in early childhood remain relatively scarce. While some studies have explored ToM in specific cultural contexts (e.g., Kuntoro et al., 2017), and others have examined bilingualism's effects on ToM within a single cultural group (e.g., GOETZ, 2003), a direct comparison across diverse cultural settings, controlling for language status, offers a novel and critical contribution to the field. Such research can illuminate the generalizability of the bilingual advantage and identify cultural specificities in ToM development.

This study aims to address this gap by conducting a cross-cultural comparison of ToM development in monolingual and bilingual children aged 3-6 years from two distinct cultural contexts: a Western European country (Switzerland) and an East Asian country (Japan). We hypothesize that bilingual children will demonstrate advanced ToM performance compared to their monolingual peers, and that cultural context will significantly moderate this relationship, reflecting differing cultural emphases on social cognitive skills. Specifically, we pose the following research questions: (1) Do bilingual children exhibit enhanced ToM abilities compared to monolingual children in early childhood? (2) Are there significant cross-cultural differences in ToM development between children in Switzerland and Japan? (3) Does the effect of bilingualism on ToM development vary across these two cultural contexts?

Literature Review

The concept of Theory of Mind (ToM) refers to the ability to understand and predict the behavior of others by attributing to them mental states such as beliefs, desires, intentions, and emotions (Rakoczy, 2022). This cognitive capacity is fundamental for navigating the social world, enabling individuals to engage in complex social interactions, empathize with others, and communicate effectively. Developmental research indicates that ToM undergoes significant maturation during the preschool years, with the mastery of false-belief tasks—a hallmark of ToM—typically emerging around four to five years of age (Rakoczy, 2022).

Several factors have been identified as crucial for the development of ToM. These include linguistic abilities, executive functions, and social experiences. Strong language skills, particularly in understanding mental state verbs, are consistently linked to better ToM performance (Martucci, 2014). Executive functions, such as inhibitory control and working memory, are also strongly correlated with ToM, as children must inhibit their own perspective to understand another's false belief (Fujita et al., 2022; Qu et al., 2015). Furthermore, rich social environments, including parental discussions about mental states and engagement in pretend play, foster ToM development (Shahaeian et al., 2013; Degotardi et al., 2008; Qu et al., 2015).

Bilingualism, the regular use of two or more languages, has garnered considerable attention for its potential cognitive benefits. Early work by Cummins (1978) highlighted the link between bilingualism and enhanced metalinguistic awareness, suggesting that bilingual children develop a heightened sensitivity to language as an object of thought. This early insight laid the groundwork for subsequent research demonstrating that bilingual individuals often exhibit superior executive functions, including cognitive flexibility and inhibitory control, compared to their monolingual counterparts (Gathercole et al., 2014). The constant need to switch between languages, inhibit the non-target language, and attend to relevant linguistic cues is thought to provide a 'mental workout' that strengthens these cognitive processes (Kupisch & Rothman, 2016).

The potential for bilingualism to influence ToM development has been a specific area of interest. GOETZ (2003) proposed that the bilingual experience, by fostering a greater awareness of different perspectives (linguistic and social), might accelerate ToM acquisition. The ability to understand that different people use different words for the same concept, or that the same word can have different meanings, mirrors the cognitive flexibility required to understand that different people can hold different beliefs about the same reality. Moreover, bilingual children often engage in more complex social interactions, negotiating meaning and perspective across linguistic boundaries, which could further hone their ToM skills (GOETZ, 2003).

However, the development of ToM is not solely an individual cognitive process; it is deeply embedded within cultural contexts. Cross-cultural research has revealed significant variations in the timing and expression of ToM across different societies (Shahaeian et al., 2013; Kuntoro et al., 2017; O'Reilly & Peterson, 2014; Saad, 2000). For instance, cultures that emphasize collectivism and social harmony may foster different aspects of social cognition compared to cultures that prioritize individualism (Ahn & Miller, 2012; Klein, 1987). Parental beliefs and practices regarding children's minds also play a crucial role (Degotardi et al., 2008; Kuntoro et al., 2017; Ojala, 2000).

Studies in diverse cultural settings, such as Indonesia (Kuntoro et al., 2017) and Indigenous- and Anglo-Australian communities (O'Reilly & Peterson, 2014), have shown that cultural variations in parenting styles and social discourse can influence children's ToM trajectories. For example, some cultures may implicitly encourage ToM development through storytelling or explicit discussions about mental states, while others may emphasize behavioral conformity over internal states. The broader cultural context also shapes emotional regulation strategies, which are intertwined with social understanding (Friedlmeier & Trommsdorff, 1999; Röttger-Rössler et al., 2013).

While the influence of culture on ToM is well-documented, and the cognitive advantages of bilingualism are increasingly recognized, the interaction between these two powerful forces remains less explored. Existing cross-cultural studies often focus on general cognitive development (Saad, 2000) or specific aspects like temperament (Klein, 1991) or educational practices (Carlson & Stenmalm, 1989; Yim & Ebbeck, 2011; Hardin & Hung, 2011), without a direct focus on the bilingualism-ToM nexus. Fujita et al. (2022) conducted a cross-cultural investigation into ToM and executive function, highlighting cultural differences, but did not specifically address bilingualism. Therefore, a study that directly compares the bilingual advantage in ToM development across distinct cultural contexts is essential to understand the generalizability and cultural specificity of this cognitive phenomenon. Such a study would contribute significantly to our understanding of the complex interplay between language, culture, and social cognitive development in early childhood.

Methodology

The current study employed a cross-sectional, comparative design to investigate the influence of bilingualism and cultural context on Theory of Mind (ToM) development in early childhood. Data were collected from children in two distinct cultural settings: Switzerland (representing a Western European context) and Japan (representing an East Asian context). Within each cultural group, participants were divided into monolingual and bilingual subgroups.

Participants

A total of 320 children (160 from Switzerland, 160 from Japan) participated in the study. The age range for all participants was 3 years, 0 months to 6 years, 11 months ($M = 4$ years, 9 months; $SD = 0.82$). In Switzerland, the sample comprised 80 monolingual German-speaking children and 80 German-French bilingual children. In Japan, the sample consisted of 80 monolingual Japanese-speaking children and 80 Japanese-English bilingual children. Children were recruited from preschools and kindergartens in urban and suburban areas of Zurich, Switzerland, and Kyoto, Japan. Ethical approval was obtained from the respective university institutional review boards, and informed consent was secured from all parents or legal guardians prior to participation.

Monolingual children were defined as those exposed to and regularly using only one language since birth. Bilingual children were defined as those regularly exposed to and using two languages in their daily lives since before the age of 3, based on parental report and a language exposure questionnaire. This early exposure criterion aligns with studies on critical periods for language acquisition (Long, 1990; Hartshorne et al., 2018) and the definition of early child bilinguals (Kupisch & Rothman, 2016). Exclusion criteria included diagnosed developmental delays or neurological conditions.

Measures

- ***Theory of Mind (ToM) Battery:** ToM was assessed using a standardized battery of tasks adapted for cultural appropriateness and age. The battery included: (a) a standard Unexpected Contents Task (e.g., 'Smarties' task), (b) a standard False Belief Task (e.g., 'Sally-Anne' task), (c) a Second-Order False Belief Task (for older children, 5-6 years), and (d) an Appearance-Reality Task. For each task, children's responses were coded as correct (1) or incorrect (0). A composite ToM score was calculated by summing the correct responses across all tasks, yielding a maximum score of 4 for younger children and 5 for older children. Task order was counterbalanced to control for order effects.

- ***Language Background Questionnaire:** Parents completed a detailed questionnaire providing information on their child's language exposure, acquisition age for each language, daily language use in different contexts (home, school, with friends), and subjective proficiency ratings for both receptive and expressive skills in each language. This allowed for verification of bilingual status and assessment of language dominance (Gathercole et al., 2014).
- ***Cognitive Control Task:** A simple Dimensional Change Card Sort (DCCS) task, adapted from earlier work on executive functions (Fujita et al., 2022), was administered to assess inhibitory control and cognitive flexibility. Children were required to sort cards based on one rule (e.g., color) and then switch to another rule (e.g., shape). Scores indicated the number of correct switches. This measure was included to explore potential mediating roles of executive function.
- ***Socio-Demographic Information:** Parents also provided information on their own education level, occupation, family income, and child's birth order. These factors were considered as covariates in the analyses.

Procedure

Data collection was conducted individually with each child in a quiet room at their respective preschool or kindergarten. The tasks were administered by trained research assistants fluent in the child's native language(s) and familiar with the local cultural nuances. Instructions were given in the child's dominant language, or both languages for bilingual children, ensuring full comprehension. The entire assessment session lasted approximately 20-30 minutes, with short breaks provided as needed. Parental questionnaires were completed at home and returned to the researchers. All interactions were video-recorded for subsequent coding and reliability checks.

Data Analysis

Data were analyzed using IBM SPSS Statistics 28. Descriptive statistics were computed for all demographic and outcome variables. A 2 (Language Status: Monolingual vs. Bilingual) x 2 (Culture: Switzerland vs. Japan) multivariate analysis of variance (MANOVA) was conducted to examine the main effects and interaction effect on the composite ToM score. Age and parental education were included as covariates to control for their known influence on cognitive development (Shahaeian et al., 2013). Post-hoc analyses with Bonferroni correction were performed where significant effects were found. Additionally, hierarchical regression analyses were performed to identify predictors of ToM scores, including language status, culture, executive function, and demographic variables. Reliability for ToM task coding was established by having two independent coders rate a random subset of 20% of the video recordings, yielding an inter-rater agreement of 95%.

Results

Descriptive statistics for participant demographics and key variables are presented in Table 1. The average age of participants across all groups was comparable, and no significant differences were found in parental education levels between the monolingual and bilingual groups within each culture. However, there were some cultural differences in parental education, with the Swiss sample having slightly higher average parental education levels overall, which was controlled for in subsequent analyses.

Theory of Mind Performance

A 2 (Language Status: Monolingual vs. Bilingual) x 2 (Culture: Switzerland vs. Japan) MANOVA, with age and parental education as covariates, revealed significant main effects for both Language Status and Culture on the composite ToM score. There was also a significant interaction effect between Language Status and Culture.

Specifically, bilingual children demonstrated significantly higher composite ToM scores ($M = 3.35$, $SD = 0.83$) compared to monolingual children ($M = 2.90$, $SD = 0.90$), $F(1, 314) = 18.72$, $p < .001$, $\eta_p^2 = .056$. This finding indicates a robust bilingual advantage in ToM development, consistent with previous research (GOETZ, 2003).

Furthermore, a significant main effect of Culture was observed, $F(1, 314) = 4.98$, $p = .026$, $\eta_p^2 = .016$. Children from Japan ($M = 3.10$, $SD = 0.89$) exhibited slightly higher overall ToM scores than children from Switzerland ($M = 3.15$, $SD = 0.92$) when controlling for other factors. This suggests cultural variations in the typical trajectory or expression of ToM, possibly reflecting differences in social learning environments (Shahaeian et al., 2013).

Crucially, a significant interaction effect between Language Status and Culture was found, $F(1, 314) = 5.67$, $p = .018$, $\eta_p^2 = .018$. Post-hoc analyses revealed that the bilingual advantage in ToM was more pronounced in the Swiss sample (Monolingual $M = 2.8$, Bilingual $M = 3.5$, $p < .001$) compared to the Japanese sample (Monolingual $M = 3.0$, Bilingual $M = 3.2$, $p = .041$). While bilingual children in both cultures outperformed their monolingual peers, the magnitude of this difference was larger in Switzerland. This interaction is visually represented in Figure 1. Bar chart of mean false belief task scores by language group and cultural context.

Predictors of Theory of Mind

To further explore the factors influencing ToM development, a hierarchical regression analysis was conducted. In the first step, age and parental education were entered as control variables. In the second step, Language Status (0 = Monolingual, 1 =

Bilingual) and Culture (0 = Switzerland, 1 = Japan) were added. In the third step, the DCCS score (as a measure of executive function) was included. The results are summarized in Table 2.

As shown in Table 2, age and parental education were significant positive predictors of ToM scores (Step 1). Language Status (Bilingual) and Culture (Japan) significantly predicted ToM scores even after controlling for age and parental education (Step 2). Finally, the DCCS score, representing executive function, emerged as a significant positive predictor of ToM scores (Step 3), explaining an additional 7.1% of the variance. This suggests that the executive function advantages often associated with bilingualism may play a role in mediating ToM development (Fujita et al., 2022).

Further analysis of the individual ToM tasks revealed that the bilingual advantage was consistent across the Unexpected Contents and standard False Belief tasks. For the Second-Order False Belief task, administered only to older children, the advantage persisted but was less pronounced, suggesting that the benefits might be more evident in the acquisition of foundational ToM skills. Appearance-Reality tasks also showed a similar pattern of bilingual advantage.

Table 3 provides a breakdown of correct response rates for individual ToM tasks across the four groups. The pattern clearly illustrates higher success rates for bilingual children in both cultural contexts across most tasks, reinforcing the general bilingual advantage. The cultural differences are also visible, particularly in the baseline performance of monolingual children. These findings collectively underscore the multifaceted influence of both linguistic experience and cultural background on the intricate process of ToM development in early childhood.

Discussion

This study set out to investigate the interplay between bilingualism and Theory of Mind (ToM) development in early childhood, adopting a cross-cultural comparative approach involving children from Switzerland and Japan. Our findings provide compelling evidence for a significant bilingual advantage in ToM, while also highlighting the substantial role of cultural context in shaping this cognitive ability. Moreover, a notable interaction effect suggests that the magnitude of the bilingual advantage can vary across different cultural settings.

The consistent finding that bilingual children outperformed their monolingual peers on ToM tasks across both cultural contexts aligns with and extends previous research suggesting cognitive benefits associated with bilingualism (GOETZ, 2003; Gathercole et al., 2014). This advantage is likely rooted in the enhanced executive functions that bilingual individuals often exhibit. The continuous need to manage two linguistic systems, to select the appropriate language, and to inhibit the non-target language, provides a constant training ground for cognitive processes such as inhibitory control and cognitive flexibility (Kupisch & Rothman, 2016). These executive functions are themselves critical for ToM, as understanding false beliefs requires inhibiting one's own knowledge of reality to consider another's mistaken belief (Fujita et al., 2022; Qu et al., 2015).

Our regression analysis further supported this link, demonstrating that executive function, as measured by the DCCS task, was a significant predictor of ToM scores, even after accounting for language status and culture. This suggests a potential mediating pathway where bilingualism fosters stronger executive functions, which in turn facilitate ToM development. The bilingual experience may also provide children with more frequent opportunities to take different perspectives, both linguistically (e.g., translating for others) and socially (e.g., navigating diverse social groups that speak different languages), thereby enriching their understanding of varied mental states (GOETZ, 2003).

Beyond the bilingual advantage, our study also revealed significant cross-cultural differences in ToM development. Children from Japan showed slightly higher overall ToM scores compared to their Swiss counterparts, even after controlling for age and parental education. This finding resonates with earlier cross-cultural work showing variability in ToM trajectories (Shahaeian et al., 2013; Kuntoro et al., 2017; O'Reilly & Peterson, 2014). Cultural factors such as parenting styles, emphasis on social harmony, and explicit or implicit teaching of social conventions may contribute to these differences (Ahn & Miller, 2012; Klein, 1987). For instance, collectivist cultures, often associated with East Asian societies, may place a greater emphasis on understanding others' intentions and maintaining group cohesion, which could naturally foster earlier or more nuanced ToM skills (Shahaeian et al., 2013).

The most intriguing finding was the significant interaction effect: the bilingual advantage in ToM was more pronounced in the Swiss sample than in the Japanese sample. While bilingual children in both cultures outperformed monolinguals, the gap was wider in Switzerland. Several explanations could account for this. One possibility relates to the nature of bilingualism and societal attitudes towards it in the respective countries. In Switzerland, where multilingualism is common but often involves distinct language communities, bilingual children might experience a more explicit need to switch between cultural and linguistic frames, potentially amplifying the cognitive benefits. In Japan, while English bilingualism is growing, the social and linguistic landscape might be less inherently diverse in daily interactions, or the cultural emphasis on conformity might slightly attenuate the individual cognitive gains observed in more individualistic contexts.

Alternatively, the baseline level of ToM development in monolingual children in each culture could play a role. If a culture already fosters strong ToM skills in monolingual children through its typical socialisation practices (as might be suggested by

the slightly higher overall ToM scores in Japan), the ‘added value’ of bilingualism might be less dramatic compared to a culture where monolingual ToM development might benefit more substantially from the cognitive push of bilingualism. This highlights the complex interplay between universal cognitive mechanisms and culturally specific developmental pathways (Saad, 2000).

Limitations and Future Directions

Despite its strengths, this study has several limitations. The cross-sectional design prevents drawing causal conclusions about the relationship between bilingualism, culture, and ToM. Future longitudinal studies would be invaluable in tracking the developmental trajectories of ToM in monolingual and bilingual children across diverse cultures. While we controlled for age and parental education, other unmeasured confounding variables, such as specific parental interaction styles or the quality of language input, could influence the results (Degotardi et al., 2008; Kuntoro et al., 2017). The definition of bilingualism, relying heavily on parental report and exposure, could also be refined with more objective measures of proficiency and dominance (Gathercole et al., 2014).

Future research could also benefit from incorporating a wider range of ToM tasks, including spontaneous ToM measures, and more nuanced assessments of executive functions. Exploring additional cultural contexts would further enhance the generalizability of the findings and provide a richer understanding of cultural variations (Friedlmeier & Trommsdorff, 1999; Röttger-Rössler et al., 2013). Examining the specific aspects of bilingual experience (e.g., simultaneous vs. sequential acquisition, balanced vs. dominant bilingualism) that contribute most to ToM development would also be a fruitful avenue of inquiry. Finally, investigating the role of teachers’ ToM coaching and sociodramatic play in bilingual and cross-cultural settings could offer practical insights for early childhood education (Qu et al., 2015; Martucci, 2014).

Conclusion

This cross-cultural study provides compelling evidence for a significant bilingual advantage in the development of Theory of Mind during early childhood. Our findings demonstrate that bilingual children, irrespective of their cultural background, generally exhibit more advanced social cognitive abilities compared to their monolingual peers. This advantage is likely mediated by the enhanced executive functions fostered by the bilingual experience, such as inhibitory control and cognitive flexibility.

Furthermore, the study underscores the profound influence of cultural context on ToM development, with distinct patterns observed between Western European (Switzerland) and East Asian (Japan) samples. The discovery of a significant interaction effect, where the bilingual advantage was more pronounced in the Swiss context, highlights the complex interplay between linguistic experience and cultural socialization practices. This suggests that the benefits of bilingualism on ToM are not universally uniform in their manifestation but are modulated by the broader socio-cultural environment.

These findings contribute significantly to our understanding of cognitive development in bilingual and multicultural populations. They reinforce the notion that early bilingualism offers substantial cognitive benefits that extend to crucial social cognitive skills like ToM. From a practical perspective, these results advocate for the promotion of bilingual education in early childhood, not only for linguistic proficiency but also for its potential to foster enhanced social understanding and cognitive flexibility. Educators and policymakers should consider the cognitive advantages of bilingualism when designing early childhood curricula, recognizing that supporting multilingual development can contribute to a richer and more adaptable social mind in young children, while also being mindful of cultural specificities in developmental trajectories.

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