Theory-of- Mind among Arab Monolingual and Bilingual Children: A Comparative Study

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This study aims to investigate Theory of Mind (ToM) in Arabic monolinguals and Arabic-English bilinguals. We hypothesized that the bilingual group would outperform the monolinguals on ToM tasks. This study well also answers the main question: are there any differences in ToM development between monolinguals and bilingual Arab children. A total of 160 children participated in this study, which employed an exploratory comparative approach. The participants were aged between 3-12 years, and were divided into two groups: Arabic monolinguals, and Arabic-English bilinguals. Hutchins and Prelock's Theory of Mind Task Battery was used, we applied the Arabic version, that was translated and adapted to Arabic by Moawad (2017). Results indicated that bilinguals perform better than monolinguals on subtask (I) the second-order false-belief only, and on ToM total score, and females outperform males in general on the ToM total score, results are discussed in the light of different issues.

Keywords: Theory of Mind, Arabic monolinguals, Arabic-English bilinguals, children, memory.

Theory of Mind (ToM) refers to the ability to interpret, predict, and explain the behavior of others (Scholl, & Leslie. 1999). It helps in understanding that people have different beliefs, desires, emotions, thoughts, perceptions, intentions, and other mental states (Flavell, 2004). It also helps children to explain, predict, and perceive actions, both their own and that of others (Gopnik & Wellman, 1992). This is why ToM is one of the most interesting abilities that emerge during preschool years, where children appreciate other individuals, and attribute causal mental states in order to explain and predict other people's behavior (Farhadian, et al., 2010).

ToM is an ability that manifests itself during early childhood, at a time when children would have acquired the concept of belief (Scholl, & Leslie. 1999). Children tend to show some competency while dealing with false-belief tasks by the age of three; and by four, their performance on such tasks improves (Leslie, 1994). Three and four-year-old children usually hold the idea that belief and appearances always match reality, and there is only a single perspective. However, by the age of five, children can understand the fact that belief and reality are not always the same (Carlson & Moses 2001). During the manifestation of ToM in children, they generally show early signs of understanding misrepresentation when

forced to consider counter-evidence to their thoughts in a situation (Fabricius, et al., 2021).

There are many factors that affect the development of ToM (Hughes, 2004) gender being one of the factors. It is seen that girls outperform boys on ToM tasks (Carlson & Moses 2001), and (Calero, et al., 2013), they also outperform boys on advanced ToM (Białecka-Pikul, et al., 2021). Yet, in another study no gender differences were detected in ToM tasks between girls and boys (Gabriel, et al., 2021). Language development and executive function also play an essential role in the ToM development of a child (Carlson & Moses 2001). It is however argued that higher executive functions abilities enhance ToM performance in bilingual children (Kovacs, 2012). Language skills also has a strong effect on ToM, where language capabilities are linked to the ability to understand and perform better on false-belief tasks in comparison to children with less language skills (Slade, & Ruffman 2005). Overall, ToM is influenced by several cognitive processes, emotional abilities, peer interactions and school contexts (Weimer, et al., 2021).

It was noted that 4-year-olds perform better than 3-year-olds on similar tasks irrespective of the number of languages they speak. (Goetz, 2003). Having siblings especially older ones is also an indicator of higher ToM performance as these children usually have more experience in dealing with other children and people within the family (Farhadian, et al, 2010). However, the presence of siblings is not enough to accelerates and effect ToM development, yet, the positive interaction between siblings is a factor that promotes ToM skills in children (Hou, et al., 2022).

Studies also revealed a correlation between ToM and Working Memory, where bilingual children showed higher performance on working memory tasks and on ToM (Nguyen & Astington, 2012). Therefore, working memory is a significant predictor of ToM (Arslan, et al., 2017).

Many studies indicated an effect of bilingualism on the development of different cognitive, social, and emotional aspects, where bilinguals show an advantage in cognitive development over monolinguals. Accumulating evidence demonstrate that bilingual individuals have an advantage over monolinguals on ToM (Yu, et al., 2021). On the one hand, Bialystok and Codd (1997), Bialystok and Majumder's (1998) and (Bialystok, 1999) studies showed that bilinguals outperform monolinguals in solving a problem that requires higher level of intentional control, and bilingual children have an advantage over monolinguals when performing ToM tasks. Other studies indicate that bilingual children have an advantage over their monolingual peers that is specific to performing ToM tasks (Kovács, 2009); such results were also detected in adult bilinguals, as bilingual university students score higher on false-belief tasks than monolinguals (Rubio-Ferna´ndez and Glucksberg, 2012). While on the other hand, A study conducted on Romanian and Bulgarian monolinguals and bilinguals indicated no differences between groups while performing ToM tasks (Kyuchukov, and DeVilliers, 2009), Swedish young bilingual and monolingual children also showed no significant differences on ToM tasks (Dahlgren, et al., 2017).

Acquiring two languages during the early childhood years is becoming common in many families globally.

Therefore, researchers are interested to know how bilingual children differ from monolinguals, especially as bilingualism changes something fundamental in the cognition process (Bialystok, 2005). In a study by Goetz (2003), results indicated that Mandarin-English bilinguals perform better than monolinguals on ToM tasks (Goetz, 2003). In another study conducted by Farhadian et al (2010), which aimed to examine the difference between ToM development in Kurdish-Persian bilingual and Persian monolingual preschool children, showed that bilinguals were more advanced on ToM development in comparison to monolinguals. Similarly, Goetz (2003) showed that four-year-old bilingual Mandarin–English-speaking children perform significantly better than monolingual children speaking Mandarin and English, on false-belief tasks (Goetz, 2003). A study also reported that English–French bilinguals performed better than English and French monolingual children on false-belief tasks when socioeconomic factors were controlled (Nguyen & Astington, 2012).

It is probable that the advantage seen in bilingual's ToM is related to their higher metalinguistic abilities, which they have possibly acquired through their deeper linguistic analysis and recognizing that one object can be represented in two ways linguistically (Goetz, 2003). It could also be attributed to the reason that bilinguals have better inhibitory control (Karatas, & Aktan-Erciyes, 2022), greater metalinguistic understanding, and higher sensitivity to sociolinguistic interactions with interlocutors (Goetz, 2003). Another reason behind the higher performance of the bilingual children on ToM tasks is that they are frequently presented with objects that can be represented in two ways linguistically.

They may easily recognize the arbitrariness of language which it can help them recognize that one object or event can have different interpretations by different people, which affects the ToM development of bilinguals (Farhadian et al, 2010).

Additionally, general language abilities have a strong effect on the performance of ToM tasks (Navarro, et al., 2021). Children with higher verbal and communication skills show better ToM abilities in comparison to those with lower verbal abilities (Farhadian et al, 2010), as better language competencies facilitate ToM development later in preschool children, which indicates a strong contribution of language on ToM performance (Slade, & Ruffman, 2005). This is because ToM and false-belief understanding appears to be closely tied to certain language fundamentals (De Villiers, 2007), especially vocabulary size and language comprehension (Strasser, & Río, 2014). As well as active participation in group conversations, which provides social training for children's ongoing ToM development (Lecce, et al., 2022).

Development of Memory is also associated with ToM, (Gordon, & Olson, 1998). Working memory can be accounted for children's ToM, where a certain level of memory is necessary for success on ToM tasks (Slade, & Ruffman, 2005). A significant interaction effect was also detected between both episodic memory and ToM in three- to seven-year-old children (Perner, et al., 2007). Another study conducted with Chinese children indicated that awareness of sources of knowledge and memory sharing activities help promote social skills and ToM (Lu, et al., 2008). Overall, memory seems to be one of the cognitive

functions affecting ToM, mainly when symbolic computation is required in a ToM task (Kalbe, et al., 2010). It is also seen with the development of working memory and the improvement of ToM (Lecce & Bianco, 2018).

This research aims to investigate the differences in theory of mind between Arabic monolinguals, and Arabic-English bilinguals. In addition, answer these questions:

1- Is there any difference between monolinguals and bilinguals on ToM total scores?

2- Is there an interaction effect between monolingualism and bilingualism with gender on ToM?

We also hypothesized that the bilingual group would outperform the monolinguals on ToM tasks. This topic has not been studied thoroughly in regard to Arab bilingual children, and since the number of bilinguals are increasing around the world as well as in the Arab countries and in Saudi Arabia, thus, such studies are important. The issue of bilingualism and its effect on child language and cognitive development has increased because of several factors, one of the most important is the growing awareness of bilingualism because of the increasing number of bilingual individuals around the world (Sohrabi, 2022).

Method

This study followed an exploratory comparative approach.

Participants:

A total number of 160 children between 3-12 years of age (111 females and 49 males) participated in this research. The participants were divided into two groups, 88 Arabic monolinguals (group 1), and 72 Arabic-English bilinguals (group 2), (the mean age of both groups was 7-years). Table 1 shows the classification of the participants by group type (monolingual, and bilingual) and gender.

We distributed a background language questionnaire in Arabic to the parents of the bilingual children to make sure that they use both languages in communication. Bilinguals in this study were enrolled in international education schools in Saudi Arabia, where English is the primary language for all academic subjects, except Arabic and religious studies.

Exposure to a second language among the monolingual participants was minimal, they were sometimes exposed to English while watching cartoons or while shopping with their parents, but never used it as a means of communication at school, or at home. Arabic is the mother language of all participants in both groups.

Table 1
Classification of the participants by language group and gender

Descriptive Statistics for participants		
Group type	Gender	N
Monolingual	Female	69
	Male	19
	Total	88
Bilingual	Female	42
	Male	30
	Total	72
Total	Female	111
	Male	49
	Total	160

Materials

The Theory of Mind task battery designed by Tiffany Hutchins, and Patricia Prelock, was used, which was translated and adapted to Arabic by Moawad (2017), and it was validated and standardized to be used with Arab children. The study indicated that the ToM test has an appropriate degree of validity and stability. Results showed that all ToM questions are valid and that all correlation coefficients are significant at $p < .001$. The test-retest results correlation was 0.069, and that indicates acceptable reliability, thus, the test can be used with normally-developing children between 3 to 12 years of age (Moawad, 2017).

The test comprises 9 tasks incorporating 16 test questions. First task (A) targets emotional recognition (happy, sad, mad, and scared). Second task (B) tests the ability to conclude a desire-based emotion. Third task (C) tests the ability to infer an emotion based on a desire. Fourth task (D) assesses the ability to infer an emotion in three different situations: desire-belief, desire-reality, and second order desire belief. Fifth task (E) is the line-of-sight visual perspective. Sixth task (F) regards inference of both belief and action based on perception. Seventh task (G) is the false-belief (standard location change) test. Eighth task (H) is the message-desire discrepant test. And the ninth task (I) is the second-order false-belief (Hutchins, Prelock, & Chace, 2008).

Procedures

The approval of the Ministry of Education in Riyadh was obtained to conduct this research, by using the ToM task within public, private, and international schools, Data were collected from 6 schools (two public schools, two private schools, and two international schools).

We obtained the consent of our participants parents before administering the ToM task. We have sent a background language questionnaire with the consent form in Arabic to the parents of the bilingual children to make sure that they were exposed to English (their second language) at least 50% of the time at home. The monolingual group was asked if they know any other language besides Arabic, to make sure they are monolinguals. ToM task in Arabic was conducted individually at all schools, each child took between 10 – 15

minutes to complete the task.
Statistical Analyses
Mean, Standard Deviation and independent sample T-test to answer our first question. MANCOVA was applied to answer the second question.

Results
To answer our first question Is there any difference between monolinguals and bilinguals on ToM total scores? We calculated the means, standard deviation and T-score (Table 2).

Table 2
Independent sample T-test to indicates the differences between groups

	Group	N	Mean	SD	T	Sig
Task A	Monolingual	88	3.5227	.97057	-.406	.685
	Bilingual	72	3.5833	.89992		
Task B	Monolingual	88	.89773	.304743	-.105	.916
	Bilingual	72	.90278	.298339		
Task C	Monolingual	88	.7727	.42147	-1.202	.231
	Bilingual	72	.8472	.36230		
Task D	Monolingual	88	.3977	.53691	.557	.578
	Bilingual	72	.3472	.60885		
Task E	Monolingual	88	.6023	.49223	-1.606	.110
	Bilingual	72	.7222	.45105		
Task F	Monolingual	88	.4886	.50274	-.490	.625
	Bilingual	72	.5278	.50273		
Task G	Monolingual	88	1.8636	.92453	-1.694	.092
	Bilingual	72	2.1111	.91244		
Task H	Monolingual	88	.6477	.48042	-.434	.665
	Bilingual	72	.6806	.46953		
Task I	Monolingual	88	.3636	.48380	-3.388	.001
	Bilingual	72	.6250	.48752		
All Task	Monolingual	88	16.3409	3.35585	-3.286	.001
	Bilingual	72	18.3889	4.32990		

Our results show significant differences between both groups on ToM total score, where the results show that scores were significantly higher for bilinguals (M = 18.388, SD = 4.329), than for monolinguals (M = 16.340, SD = 3.355), t(-3.286) p < .001. Results also indicated that there are significant differences between both groups on task I only (second-order false-belief), as bilingual scores were higher (M = .625, SD = .487), than monolinguals (M = .363, SD = .483), t(-3.388) p < .001. while scores on all other tasks (A, B, C, D, E, F, G, H) were statistically not significant.

For answering the second question: Is there an interaction effect between bilingualism and gender on ToM? We applied ANVCOVA to test between subject effects on task I and total scores (Table 3).

Table 3
Describes the binary interaction between group type (Monolinguals and bilinguals) and gender on Task I

Tests of Between-Subjects Effects					
Dependent Variable: Task I					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	6.338[a]	3	2.113	9.808	.000
Intercept	23.439	1	23.439	108.807	.000
Group	3.975	1	3.975	18.454	.000
Gender	3.592	1	3.592	16.673	.000
Group * gender	.126	1	.126	.586	.445
Error	33.606	156	.215		
Total	77.000	160			
Corrected Total	39.944	159			
a. R Squared = .159 (Adjusted R Squared = .142)					

Results presented in Table 3 indicates a significant effect of group type (monolinguals and bilinguals) on Task I at $p< .001.$, it also indicates a statistically significant effect of gender on Task I at $p< .001$, Table 4 descriptive statistics show that female scores are higher than males in both groups. Yet, an ANCOVA [between -subjects factor: gender (male, female); group type (monolinguals, bilinguals) Table 3 did not reveal an interaction between group type and gender on Task I $F(1, 33.60) = .586$ $p< .445$, which indicates no significant interaction between gender and group type.

Table 4
Descriptive statistics for gender differences on task I

Descriptive Statistics				
Dependent Variable: Task I				
Group type	Gender	Mean	Std. Deviation	N
Monolingual	Female	.4493	.50106	69
	Male	.0526	.22942	19
	Total	.3636	.48380	88
Bilingual	Female	.7381	.44500	42
	Male	.4667	.50742	30
	Total	.6250	.48752	72
Total	Female	.5586	.49881	111
	Male	.3061	.46566	49
	Total	.4812	.50122	160

The interaction between group type and gender on ToM (all tasks) indicates a significant effect of group type at $p< .001$, an effect of gender at $p< .007$, where descriptive statistics in Table 5 show that females score higher than males on ToM total score on all tasks.

Table 5
Descriptive statistics for gender differences on ToM total score

Descriptive Statistics				
Dependent Variable: All Task				
Group type	gender	Mean	Std. Deviation	N
Monolingual	Female	16.7391	3.26592	69
	Male	14.8947	3.36476	19
	Total	16.3409	3.35585	88
Bilingual	Female	19.1190	4.19176	42
	Male	17.3667	4.38244	30
	Total	18.3889	4.32990	72
Total	Female	17.6396	3.80620	111
	Male	16.4082	4.16292	49
	Total	17.2625	3.94696	160

In spite of that, an ANCOVA [between - subjects factor: gender; group type (monolinguals, bilinguals) Table 6 did not reveal an interaction between group type and gender on ToM (all tasks), $F(1, 156) = .005p< . .945$. Hence, no significant interaction between gender and group on ToM in general.

Table 6
Describes the binary interaction between group type and gender on ToM all tasks

Tests of Between-Subjects Effects					
Dependent Variable: All Task					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	270.510[a]	3	90.170	6.375	.000
Intercept	37341.131	1	37341.131	2640.067	.000
Group	189.434	1	189.434	13.393	.000
Gender	104.105	1	104.105	7.360	.007
Group * gender	.068	1	.068	.005	.945
Error	2206.465	156	14.144		
Total	50156.000	160			
Corrected Total	2476.975	159			
a. R Squared = .109 (Adjusted R Squared = .092)					

Discussion

The overarching aim of this study was to compare ToM performance between two groups (monolinguals and bilinguals Arabic-English). Our main results indicated a total effect of bilingualism on ToM, where bilinguals performed better than monolinguals on one task (task I: the second-order false-belief), and on ToM total score. Thus, we accept our hypotheses, that bilinguals will outperform monolinguals on ToM tasks. Our results agree with Bialystok and Codd (1997); Bialystok and Majumder's

(1998); Bialystok, (1999); Goetz, (2003) Kovács, (2009); Farhadian, et al., (2010), and Yu, et al., (2021), such results were discussed in the light of cognitive abilities, that bilinguals showed grater cognitive abilities than monolinguals, as in higher working memory (Nguyen & Astington, 2012), where memory pathways in the brain are associated with the development of ToM and human social cognition, (Beuriat, et al., 2022); thus, considered a significant predictor of ToM (Arslan, et al., 2017). As well as having better metalinguistic abilities, that is acquired through their deeper linguistic analysis (Goetz, 2003). Inhibitory control could also explain the better performance of bilinguals on ToM tasks in general (Karatas, & Aktan-Erciyes, 2022). In addition, language abilities affect performance on ToM tasks (Navarro, et al., 2021), where false-belief understanding is closely tied to certain language fundamentals (De Villiers, 2007), and that could explain the better performance detected on task I: second-order false-belief by our bilingual participants, and not the monolinguals.

Yet, our results do not agree with Kyuchukov, and DeVilliers, 2009; and Dahlgren, et al., 2017, where both studies did not find significant differences between monolinguals and bilinguals on ToM. Having said that, our results showed significant differences only on task (I), and the total score, there fore it is important to keep that in mind, because most studies indicated the differences between monolinguals and bilinguals on most ToM tasks, while our findings did not, such a result could be for the reason that Arabic has diglossia, where "two or more varieties of the same language are used by some speakers under different conditions" (Ferguson,

1959, 325). In Saudi Arabia, standard Arabic is learned at school, and rarely used as a medium of communication, or in an ordinary conversation, whereas, colloquial Arabic or the spoken variety\ varieties are used in day-to-day communication (Palmer, 2008). Many monolingual communities are marked by both diglossia and bilingualism because there are several speech varieties that are related to different functions and are ranked differently (Fishman, 2000). Therefore, Arabic monolinguals can have similar cognitive abilities as bilinguals because of the two or more varieties of Arabic that they use. Thus, no differences were detected between the monolinguals and the bilinguals on task (A, B, C, D, E, F, G, and H).

Another finding of our study indicated that females outperform males on ToM tasks, our results are in agreement with Carlson & Moses, 2001; and Białecka-Pikul, et al., 2021. This result could be reviewed in the light of female's prosocial behavior towards others, whereby females understand and care for others' emotions, and peer interactions more than males (Kuhnert, et al., 2017). It could also because related to gender role and empathy, where empathy is corelated to ToM, and females usually have higher empathy, therefore have higher ToM than boys (Andrews, et al., 2021).

Conclusion

Overall results showed that bilingual children outperform monolingual children and females in general show better performance on ToM total score than males. The findings of this study, however, must be seen in light of some limitations. When working with both groups in particular the bilingual children's language proficiency was not

tested by the researcher. Thus, in later studies, language proficiency should be tested and addressed. We did not control for some demographic variables such as intelligence, socio-economic status, school experiences, family size and number of siblings, as these factors could have an impact of ToM (Memisevic, et al., 2018). Diglossia is also an important factor that researchers should keep in mind when investigating cognitive and social abilities of Arabic monolinguals and bilinguals.

References

Andrews, K., Lariccia, L., Talwar, V., & Bosacki, S. (2021). Empathetic Concern in Emerging Adolescents: The Role of Theory of Mind and Gender Roles. *The Journal of Early Adolescence*, *41*(9), 1394-1424. https://doi.org/10.1177/027243 16211002258

Arslan, B., Hohenberger, A., & Verbrugge, R. (2017). Syntactic recursion facilitates and working memory predicts recursive theory of mind. *PloS One*, *12*(1). 1-23. doi:10.1371/journal.pone.0169 510.

Beuriat, P. A., Cohen-Zimerman, S., Smith, G. N., Krueger, F., Gordon, B., & Grafman, J. (2022). Evidence of the role of the cerebellum in cognitive theory of mind using voxel-based lesion mapping. *Scientific reports*, *12*(1), 1-12. doi.org/10.1038/s41598-022-09104-0

Białecka-Pikul, M., Stępień-Nycz, M., Szpak, M., Grygiel, P., Bosacki, S., Devine, R. T., & Hughes, C. (2021). Theory of mind and peer attachment in adolescence. *Journal of Research on Adolescence*, *31*(4), 1202-1217. https://doi.org/10.1111/jora.126 30

Bialystok, E. (1999). Cognitive complexity and attentional control in the bilingual mind. *Child Development, 70 (3).* 634-644. doi.org/10.1111/1467-8624.00046

Bialystok, E. (2005). Consequences of bilingualism for cognitive development. In *Handbook of bilingualism: psycholinguistic approach.* (Ed,s: J. Kroll. & A, De Groot) 417-432. Oxford University Press, USA.

Bialystok, E., & Codd, J. (1997). Cardinal limits: evidence from language awareness and bilingualism for developing concepts of number. *Cognitive Development, 12.* 85–106. doi.org/10.1016/S0885-2014(97)90031-9

Bialystok, E. & Majumder, S. (1998). The relationship between bilingualism and the development of cognitive processes in problem solving. *Applied Psycholinguistics, 19 (1).* 69-85. doi.org/10.1017/S01427164000 10584

Carlson, S.M. & Moses, L.J. (2001). Individual differences in inhibitory control and children's theory of mind. *Child Development, 72 (4).* 1032-1053. doi.org/10.1111/1467-8624.00333

Calero, C. I., Salles, A., Semelman, M., & Sigman, M. (2013). Age and

gender dependent development of Theory of Mind in 6-to 8-years old children. *Frontiers in human neuroscience*, *7*, 281. https://doi.org/10.3389/fnhum.2013.00281

Dahlgren, S., Almén, H., & Dahlgren Sandberg, A. (2017). Theory of mind and executive functions in young bilingual children. *The Journal of genetic psychology*, *178*(5), 303-307. doi.org/10.1080/00221325.2017.1361376

De Villiers, J. (2007). The interface of language and theory of mind. *Lingua 117* (11). 1858-1878. doi.org/10.1016/j.lingua.2006.11.006

Fabricius, W. V., Gonzales, C. R., Pesch, A., Weimer, A. A., Pugliese, J., Carroll, K., ... & Spinrad, T. L. (2021). Perceptual access reasoning (PAR) in developing a representational theory of mind. *Monographs of the Society for Research in Child Development*, *86*(3), 7-154. doi.org/10.1111/mono.12432

Farhadian, M. Abdullah, R. Mansor, M. Redzuan, M. Gazanizadand, N. & Kumar, V. (2010). Theory of mind in bilingual and monolingual preschool children. *Journal of Psychology, 1 (1)*. 39-46. doi.org/10.1080/09764224.2010.11885444

Farhadian, M. Abdullah, R. Mansor, M. Redzuan, M. Kumar, V. & Gazanizadand, N. (2010). Theory of mind, birth order, and siblings among preschool children. *American Journal of Scientific Research, 7.* 25-37.

Ferguson, C. A. (1959). Diglossia. *word*, *15*(2), 325-340.

Flavell, J. (2004). Theory-of-mind development: Retrospect and prospect. *Merrill-Palmer Quarterly, 50 (3).* 274-290.

Gabriel, E. T., Oberger, R., Schmoeger, M., Deckert, M., Vockh, S., Auff, E., & Willinger, U. (2021). Cognitive and affective Theory of Mind in adolescence: developmental aspects and associated neuropsychological variables. *Psychological Research*, *85*(2), 533-553. doi.org/10.1007/s00426-019-01263-6

Goetz, P. (2003). The effects of bilingualism on theory of mind development. *Bilingualism: Language and Cognition, 6 (1).* 1-15. doi:10.1017/S1366728903001007.

Gopnik, A. & Wellman, H. (1992). Why the child's theory of mind really is a theory. *Mind & Language, 7 (1 & 2).* 145- 171.

Gordon, A. C., & Olson, D. R. (1998). The relation between acquisition of a theory of mind and the capacity to hold in mind. *Journal of Experimental Child Psychology, 68*(1). 70-83. doi.org/10.1006/jecp.1997.2423

Hou, X. H., Wang, L. J., Li, M., Qin, Q. Z., Li, Y., & Chen, B. B. (2022). The roles of sibling status and sibling relationship quality on theory of mind among Chinese preschool children. *Personality and Individual Differences*, *185*, 111273.

doi.org/10.1016/j.paid.2021.111273

Hughes, C. (2004). What are the links between theory of mind and social relations? Review, reflections, and new directions for studies of typical and atypical development. *Social Development, 13*(4). 590-691. doi.org/10.1111/j.1467-9507.2004.00285.x

Hutchins,T.L., Prelock, P.A. & Chace, W. (2008). Test-retest reliability of a theory of mind task battery for children with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 23*(4). 195-206. doi.org/10.1177/1088357608322998

Kalbe, E., Schlegel, M., Sack, A.T., Nowak, D.A., Dafotakis, M., Bangard, C., ... & Kessler, J. (2010). Dissociating cognitive from affective theory of mind: a TMS study. *Cortex*, *46*(6), 769-780. doi.org/10.1016/j.cortex.2009.07.010

Karataş, P., & Aktan-Erciyes, A. (2022). Relation between creativity, executive functions and bilingualism. *Journal of Language and Linguistic Studies*, *18*.

Kovács, A. (2009). Early bilingualism enhances mechanisms of false-belief reasoning. *Developmental Science, 12 (1)*. 48-54. doi.org/10.1111/j.1467-7687.2008.00742.x

Kuhnert, R. L., Begeer, S., Fink, E., & de Rosnay, M. (2017). Gender-differentiated effects of theory of mind, emotion understanding,

and social preference on prosocial behavior development: A longitudinal study. *Journal of experimental child psychology*, *154*, 13-27. https://doi.org/10.1016/j.jecp.2016.10.001

Kyuchukov, H., & DeVilliers, J. (2009). Theory of mind and evidentiality in Romani-Bulgarian bilingual children. *Psychology of language and Communication*, *13*(2), 21. doi: 10.2478/v10057-009-0007-4

Lecce, S., & Bianco, F. (2018). Working memory predicts changes in children's theory of mind during middle childhood: A training study. *Cognitive Development*, *47*, 71-81. doi.org/10.1016/j.cogdev.2018.04.002

Lecce, S., Ronchi, L., & Devine, R. T. (2022). Mind what teacher says: Teachers' propensity for mental-state language and children's theory of mind in middle childhood. *Social Development*, *31*(2), 303-318. doi.org/10.1111/sode.12552

Leslie, A.M. (1994). Pretending and believing: issues in the theory of ToMM. *Cognition, 50*. 211-238. doi.org/10.1016/0010-0277(94)90029-9

Lu, H.J., Su, Y., & Wang, Q. (2008). Talking about others facilitates theory of mind in Chinese preschoolers. *Developmental Psychology, 44*(6), 1726-1736. doi.org/10.1037/a0013074

Memisevic, H., Biscevic, I., & Pasalic, A. (2018). Exploring the link between a theory of mind and executive functions in preschool

children. *Offices of Mental Health Practitioners*, *16*(1), 17-26.

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. doi.org/10.1111/j.1467-8624.2007.01018.x

Moawad, R.A. (2017). Validation of the Arabic Version of the Theory of Mind Task Battery. *Arabic Studies in Education and Psychology (ASEP), 87*.

Navarro, E., Goring, S. A., & Conway, A. R. (2021). The relationship between theory of mind and intelligence: A formative g approach. *Journal of Intelligence*, *9*(1), 11. doi.org/10.3390/jintelligence9010011

Nguyen, T. & Astington, J. (2012). Reassessing the bilingual advantage in theory of mind and its cognitive underpinnings. *Bilingualism: Language and Cognition, 17* (2). 396-409. doi.org/10.1017/S136672891300394

Palmer, J. (2008). Arabic diglossia: Student perceptions of spoken Arabic after living in the Arabic-speaking world. *Journal of Second Language Acquisition and Teaching*, *15*, 81-95.

Perner, J., Kloo, D., & Gornik, E. (2007). Episodic memory development: theory of mind is part of re-experiencing experienced events. *Infant and Child Development, 16*(5). 471-490. doi.org/10.1002/icd.517

Rubio-Ferna´ndez, P. & Glucksberg, S. (2012). Reasoning about other people's beliefs: Bilinguals have an advantage. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 38* (1). 211–217. doi.org/10.1037/a0025162

Scholl, B. & Leslie, A. (1999). Modularity, development and 'theory of mind'. *Mind & Language, 14* (1). 133-153. doi.org/10.1111/1468-0017.00106

Slade, L., & Ruffman, T. (2005). How language does (and does not) relate to theory of mind: A longitudinal study of syntax, semantics, working memory and false belief. *British Journal of Developmental Psychology, 23* (1). 117-141. doi.org/10.1348/026151004X21332

Sohrabi, T. (2022). To Raise a Bilingual or a Monolingual Child: Concerns of an Immigrant Mother. *Canadian Journal of Family and Youth/Le Journal Canadien de Famille et de la Jeunesse*, *14*(1), 23-37. doi.org/10.29173/cjfy29757

Strasser, K., & Río, F. D. (2014). The role of comprehension monitoring, theory of mind, and vocabulary depth in predicting story comprehension and recall of kindergarten children. *Reading Research Quarterly, 49*(2). 169-187. doi.org/10.1002/rrq.68

Weimer, A. A., Warnell, K. R., Ettekal, I., Cartwright, K. B., Guajardo, N. R., & Liew, J. (2021). Correlates and antecedents of theory of mind development

during middle childhood and adolescence: An integrated model. *Developmental Review*, *59*, 100945. doi.org/10.1016/j.dr.2020.100945

Yu, C. L., Kovelman, I., & Wellman, H. M. (2021). How Bilingualism Informs Theory of Mind Development. *Child Development Perspectives*, *15*(3), 154-159. doi.org/10.1111/cdep.12412