



Out of the Shadows: Permissive and Overprotective Parenting in Relation to Theory of Mind Sequencing

Eda Önoğlu Yıldırım, Hande Ilgaz & Jedediah W. P. Allen

To cite this article: Eda Önoğlu Yıldırım, Hande Ilgaz & Jedediah W. P. Allen (07 May 2026): Out of the Shadows: Permissive and Overprotective Parenting in Relation to Theory of Mind Sequencing, Journal of Cognition and Development, DOI: [10.1080/15248372.2026.2667514](https://doi.org/10.1080/15248372.2026.2667514)

To link to this article: <https://doi.org/10.1080/15248372.2026.2667514>



© 2026 The Author(s). Published with license by Taylor & Francis Group, LLC.



[View supplementary material](#)



Published online: 07 May 2026.



[Submit your article to this journal](#)



[View related articles](#)



[View Crossmark data](#)

Out of the Shadows: Permissive and Overprotective Parenting in Relation to Theory of Mind Sequencing

Eda Önoğlu Yıldırım , Hande Ilgaz , and Jedediah W. P. Allen 

Bilkent University, Türkiye

ABSTRACT

Past research has documented differences in the sequence with which children pass the tasks in the Theory of Mind (ToM) battery. Early research into this variation has shown that children from “Western” cultures pass the Diverse Desire (DD), and the Diverse Belief (DB) tasks before the Knowledge Access (KA) task, whereas children from “Eastern” cultures show the reverse pattern (DD>KA>DB). The variance in sequence has been attributed to the collectivism of “Eastern” cultures and the individualism of “Western” cultures. The current study focuses on a cultural group, Turkish children, for which intra-cultural sequence variability has been well-documented (i.e. (1) DD>DB>KA; (2) DD>KA>DB; (3) KA>DD>DB). Given this intra-cultural variability, the current study investigated the possible effects of both general social-contextual variables (socioeconomic status, number of siblings) and child-targeted social-contextual variables (parenting attitudes) while controlling for executive functions. One hundred and twenty preschoolers ($M = 52.46$, $SD = 9.72$) and their parents (104 mothers, 14 fathers) from Türkiye participated in the study. Results indicated that preschoolers whose mothers had more permissive attitudes were more likely to conform to the “Western” sequence and more over-protective attitudes predicted children’s adherence to the “KA-first” sequence. Contrary to expectations, there were no effects of authoritative or authoritarian attitudes on sequencing or total ToM performance. These findings suggest that there is utility in reconsidering the collectivism-individualism (and consequently “Eastern” vs. “Western”) contrast to explain ToM sequence variability by including contextual and culturally significant variables (e.g. permissive, overprotective parenting attitudes).

Culture is a dynamic process that involves some degree of reinvention with each new generation. As a manifestation of culture, parenting is also dynamic and is itself affected by numerous factors. Almost 30 years ago, the US sociologist Sharon Hays indicated how motherhood had changed and “the methods of appropriate child rearing are construed as *child-centered, expert-guided, emotionally absorbing, labor-intensive and financially expensive*” (Hays, 1996, p. 8). Many of these features seem to be ever more present in the parent–child relationship today (Faircloth, 2023; Lee, 2023). Traditionally, parents are the primary

CONTACT Jedediah W. P. Allen  jallen@bilkent.edu.tr  Department of Psychology, Bilkent University, Ankara 06800, Türkiye

*This paper is a part of Önoğlu Yıldırım’s PhD dissertation.

 Supplemental data for this article can be accessed online at <https://doi.org/10.1080/15248372.2026.2667514>

© 2026 The Author(s). Published with license by Taylor & Francis Group, LLC.

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

and dominant source of interaction for children through the preschool years and features of their interaction with their children have been shown to influence diverse areas of development (e.g., social, emotional, cognitive, socio-cognitive) both in the short- and long-term (Baumrind et al., 2010; Clarke-Stewart, 1988). One of these areas pertains to how children come to understand other agents as having a psychological perspective, that is, Theory of Mind (ToM) development (Miller, 2016).

ToM is characterized by an understanding of others' minds as separate from one's own. This ability includes understanding others' desires, beliefs, emotions, motivations, and how they relate to behavior. A key milestone in this ability is the understanding that people will act in accordance with their beliefs, even if those beliefs are false (i.e., False-Beliefs, FB). Early research on ToM focused mostly on FB understanding, and parenting research followed this precedent (Miller, 2016). However, the turn toward a more inclusive approach to ToM started in the late 90s and was consolidated through the construction of the ToM battery (Wellman & Liu, 2004). This battery includes the Diverse Desires (DD), Diverse Beliefs (DB), Knowledge Access (KA), Contents False Belief (CFB), and Hidden Emotion (HE) tasks. According to Wellman's constructivist approach, earlier concepts provide a foundation for later concepts so as to create an invariant sequence for the development of the ToM concepts measured by those tasks. The ToM scale then ordered those tasks according to an increase in conceptual complexity. The conclusion from the empirical results was that children's ToM development does indeed follow a universal sequence: DD>DB>KA>CFB>HE.

Although this sequence was claimed to be universal, multiple studies have shown different kinds of between- and within-culture variability. While parenting has been suggested for some time as a relevant category for thinking about cultural differences in this area (Shahaeian et al., 2011; Wellman et al., 2006; Yu & Wellman, 2024), there is limited research.

Further, the parenting research that does exist has focused on either authoritarian and authoritative attitudes or individual level collectivism-individualism; and none of these studies, which included culturally relevant variables, have controlled for relevant cognitive variables like Executive Functions (EF) (Kabha & Berger, 2020; Kuntoro et al., 2017; Rizqi et al., 2022). Finally, ToM sequencing research with Turkish preschoolers has established that there are three within-culture sequence categories that vary according to EF (Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022). Thus, the current study focuses on a broad range of parenting attitudes and EF for the three within-culture sequences previously found for Turkish samples.

ToM sequence variability

Initial research with the ToM scale showed subtle cross-cultural variability in terms of two sequences that came to be called "Eastern" and "Western." "Western" samples were gathered from Australia and the US (Shahaeian et al., 2011; Wellman & Liu, 2004; Wellman et al., 2011) and showed the theory-driven constructivist sequencing of the tasks: DD>DB>KA>CFB>HE; whereas, "Eastern" samples that were gathered from China and Iran showed a slightly different sequence in which knowledge access and diverse beliefs switch positions: DD>KA>DB>CFB>HE (Duh et al., 2016; Shahaeian et al., 2011; Wellman et al., 2006, 2011). However, subsequent to these initial findings of variability for knowledge

access and diverse beliefs tasks, there has been sequence variability in which “Eastern” countries show the “Western” pattern (Kuntoro et al., 2013; Vishwanath et al., 2023), both “Western” and “Eastern” countries show unique profiles (Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022; Kabha & Berger, 2020; Poulin-Dubois et al., 2020; Sundqvist et al., 2018), and several examples of *within* culture variability have been found (Dixson et al., 2018; Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022; Kuntoro et al., 2013, 2017; Rizqi et al., 2022).

ToM sequence variability in Türkiye

Some of the most robust demonstrations of within-culture variability have come collectively from four Turkish studies. Two studies that have shown within-culture sequence variability were from large samples. The first study ($N = 260$) found the “Eastern” sequence for the overall group of 34-to-80-month-old children, but there was a subgroup who passed the diverse beliefs task but failed the knowledge access task (13.5%), which was interpreted as showing the “Western” sequence. This subgroup differed from the larger sample in terms of age (i.e., they were the younger children), and the number of adults at home for this subgroup was greater than for the overall sample (Selcuk et al., 2018). However, this result was contrary to expectations for a collectivism interpretation (i.e., more adults at home would have been expected for the overall “Eastern” group instead of the “Western” subgroup).

The second Turkish study included data from six separate studies ($N = 366$) and found differences in sequencing (Ilgaz et al., 2022). While this study found the “Eastern” pattern for the overall group, it also analyzed children according to age and other cognitive variables known to be relevant for ToM development (i.e., EF and language). Results indicated the “Western” sequence for 3-year-olds, the “Eastern” sequence for 4-year-olds, and a new KA-first sequence, in which knowledge access was the easiest task, for the 5-year-olds. Further analyses indicated that increases in EF were related to the shifting place of knowledge access in the ToM sequence (i.e., from 3rd to 2nd to 1st). Language, which is one of the most significant predictors of ToM total was found to be not related to ToM sequence. That is why current study did not include language as a possible predictor of ToM sequence variability. Another study with a middle-class Turkish sample ($N = 60$) confirmed the three sequences by age and their relations to EF (Haskaraca & Ilgaz, 2024, Exp. 3). Further complicating matters, a study with at-risk Turkish children (children under government guardianship; $N = 107$) has shown the “Western” pattern for the overall group (Etel & Yagmurlu, 2015).

Of the four Turkish studies, the first (Selcuk et al., 2018) found the “Western” pattern for the knowledge access and diverse beliefs tasks in the younger group of children; however, amongst the social context variables they measured (i.e., number of siblings, SES) only the number of adults in the household was significantly related and it showed an unexpected pattern (i.e., as number of adults increased, the tendency to follow the “Western” sequence increased). The results from the second and third studies (Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022) indicated variability in sequencing across age groups and indicated that EF may be an important source of this variability. Finally, the results from the fourth study (Etel & Yagmurlu, 2015) suggest the need to look at social-context variables that shape children’s performances on the various ToM tasks. Accordingly, the main research question for the

current study is to investigate the potential of social-contextual variables (with a focus on parenting attitudes) to explain variance in ToM sequencing within Turkish culture.

Explaining ToM sequence variability through social-contextual variables

Theoretical explanations to explain the original variability in knowledge access and diverse beliefs *across* cultures were largely defined by the “collectivism” versus “individualism” distinction (Shahaeian et al., 2011). The existing empirical research on accounting for knowledge access – diverse beliefs variability has tended to accept this theoretical framing and measured social-context variables motivated by it. For parenting attitudes, this means that authoritarian and authoritative parenting attitudes reflect collectivist and individualist cultural values, respectively (c.f. Sorkhabi, 2012). In collectivist cultures, people are characterized as giving priority to the interests of others over those of the self (Hofstede, 2011), and conformity/obedience through shared knowledge (knowledge access) is assumed to be more salient. In contrast, individualist cultures are characterized by prioritizing self-interest and autonomy (Hofstede, 2011) through the expression of diverse opinions or beliefs (diverse beliefs), which are assumed to be most salient in these cultures. Accordingly, authoritative parenting should predict a “Western” sequence, while authoritarian parenting should predict an “Eastern” sequence. Efforts focused on empirically testing this type of prediction have been limited to three studies that sought to find relations between these two parenting variables (along with other social-contextual variables) and different sequencing for groups within the same culture (Kabha & Berger, 2020; Kuntoro et al., 2017; Rizqi et al., 2022).

Two studies involved groups from different cities in Indonesia (Kuntoro et al., 2017; Rizqi et al., 2022). In the first study, 4- to 6.5-year-old children from urban Jakarta and suburban Bogor exhibited “Western” and “Eastern” sequences, respectively; however, none of the social-contextual variables (i.e., collectivism and individualism, authoritative and authoritarian parenting) differed between the two groups. Interestingly, mothers’ ethnic status, but not their education and employment, were related to ToM sequence. In the second study, a third (rural) group was added to the design. Again, 4- to 7-year-old children from urban Jakarta and suburban Bogor showed “Western” and “Eastern” sequences, respectively, and children from rural Bukittinggi also showed the “Eastern” sequence. Parents from rural Bukittinggi held higher collectivist values and authoritarian parenting scores than those from the other two locations. This was taken as evidence that collectivist values and authoritarian parenting are relevant for children developing the “Eastern” sequence; however, this leaves unexplained why the suburban Bogor children did not show a similar effect of these parenting variables.

A third study included social-contextual variables related to maternal cultural values (i.e., collectivism/individualism, masculinity/femininity, and power distance) and social-contextual variables that shape children’s social lives (SES, number of siblings, formal education) with a sample of minority Israeli-Arab children ranging in age from 4- to 6.5-years-old from the Wadi-Ara area of central Israel (Kabha & Berger, 2020). Results indicated that the majority of children ($N = 161$; 62%) followed a unique sequence that could be considered a variant on the “Eastern” one in the sense that knowledge access still comes before diverse beliefs; but, diverse beliefs was actually after contents false belief (i.e., KA>CFB>DB>HE). When children were divided according to maternal masculinity scores

(high and low gender typing); only children of mothers with high masculinity ($N = 54$) followed the “Eastern” sequence ($KA > DB > CFB > HE$). For all other maternal cultural values variables (low masculinity, high vs low collectivism, and high vs low power distance), children followed the unique sequence ($KA > CFB > DB > HE$). When these children were divided (high and low) according to SES, “low” SES ($N = 144$) children followed a version of the “Eastern” sequence where diverse beliefs came after knowledge access but diverse beliefs and contents false belief were almost equal ($KA > DB \sim CFB > HE$). Children in the “high” SES group ($N = 111$) showed the unique sequence where contents false belief also came before diverse beliefs ($KA > CFB > DB > HE$). Other social-contextual variables showed no relations to ToM outcomes or sequencing. However, when children were divided into age groups by 6-month intervals, the youngest group (4.5- to 5-year-olds) followed the “Western” sequence ($DB > KA > CFB > HE$); while all older age groups followed the unique sequence. Interestingly, these younger children were in prekindergarten, while all older groups were in kindergarten.

Results from the aforementioned three studies do not provide clarity on how social-contextual variables might explain within-culture ToM sequencing variability. This suggests the need for continued research. In line with this, the present study includes both general social-contextual variables that shape children’s social and physical environments (e.g., parental education, household income, and other home characteristics) and child-targeted social-contextual variables (e.g., parenting attitudes) to explore ToM sequence variability. Accordingly, in the current study, we examine both types of variables and are open to a characterization of them that reflects collectivist-individualist cultural values. Such a characterization suggests a prediction in which authoritative and authoritarian parenting will be related to “Western” and “Eastern” sequences, respectively. Further, based on the results of prior studies, we predict that lower SES and higher number of siblings will relate to the “Eastern” sequence.

Despite the conceptual utility of characterizing social-contextual variables as reflections of collectivist and individualist values, such a characterization has found limited empirical validation for overall ToM development. Accordingly, we also sought to explore additional parenting attitudes that do not reflect that characterization. Permissive parenting is a third parenting attitude defined by high warmth and low control and is much less studied within the broader ToM literature (Aminin, 2018; Miller, 2016). However, given the more recent trend toward child-centered parenting, this attitude would seem to have renewed importance. Permissive attitudes tend not to include clear boundaries, rules, or expectations for children when navigating social life (Baumrind, 1991). This may result in underdeveloped self-control and the underlying EF abilities related to such capability.

Given the relevance of EF for ToM development in general (Carlson et al., 2013) and its specific role in explaining sequencing variance from Turkish samples (Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022), an investigation of permissive attitudes has renewed importance in the specific context of the current study. Since children who were exposed to higher permissive parenting were found to have lower self-regulatory skills (Morris, 2003; Piotrowski et al., 2013) and self-regulation is related to EF (see Hofmann et al., 2012), it would seem that higher permissive parenting would be associated with lower EF. Further, children with lower EF would be expected to show the “Western” sequence given findings from other studies (Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022). Thus, we predict a negative relationship between permissive parenting and ToM total and a positive relationship

between permissive attitudes and the “Western” sequence (i.e., as permissive attitudes increase, ToM total decreases and sequencing is “Western”).

Finally, overprotective parenting is a fourth category that is defined by excessive warmth and control. Parents with such attitudes presuppose that the environment is dangerous, and that children need constant protection (Karabulut-Demir & Şendil, 2008). This type of parenting is common in non-“Western” cultures, including the Turkish culture (Yavuzer, 1994). Overprotective parenting can be characterized across cultures but also across social contexts within a culture. For example, more overprotective families might prevent children from taking responsibility (Karabulut-Demir & Şendil, 2008), or they might think that risky play should be minimized (Cevher-Kalburan & Ivrendi, 2016). The trade-off for children who receive more overprotective parenting is that they may not develop adequate self-control skills, and this may increase the risk of depression and anxiety in late adolescence (Anlı & Karslı, 2010). Overprotective parenting is important to investigate in the current study for two reasons. First, it is prevalent in the culture being studied; second, it is related to the development of self-management skills and may have somewhat similar (negative) relations to EF as permissive parenting (though for the opposite reason – too much control instead of too little).

Interestingly, the (anxiety-driven) structuring of overprotective parenting shares with authoritarian parenting in the high degree of control, and correlations between the two have been found in other Turkish samples (Allen & Kara, 2024). Further, this form of control has been shown to negatively affect early-school-aged children in terms of their cognitive flexibility and planning (Sharkey et al., 2019). While the sample from Sharkey et al. (2019) was unique in that the children had survived leukemia, it shows the potential downside to excess control motivated by anxiety/fear of danger. This means that overprotective parenting may have relations with ToM that are similar to permissive parenting (via poor EF) or directly through too much control as with authoritarian parenting. However, since direct evidence is missing, we did not make a prediction for this parenting attitude.

Current study

The current study aims to account for some of the within-culture variability in ToM sequencing in a Turkish sample. This involves exploring the relations between ToM sequencing and two social-contextual variables that shape children’s social and physical environments (SES & number of siblings), child-targeted social-contextual variables (i.e., parenting attitudes), and child variables pertinent to ToM development (age & EF). The current study extends earlier work by not only including parenting attitudes that have been considered reflections of collectivist and individualist values (i.e., authoritative and authoritarian) but also by including two parenting attitudes that go beyond such a characterization (i.e., permissive and overprotective). Authoritative and authoritarian parenting attitudes were expected to predict “Western” and “Eastern” sequences, respectively. Permissive parenting was also thought to predict the “Western” sequence due to its potential relations with EF. Predictions for overprotective parenting were unclear and left open. Given EF’s role in accounting for some of the sequence variability for Turkish samples (Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022), it was included as a control variable.

Method

Participants

One hundred and twenty (68 female; 52 male) Turkish preschoolers¹ (Range = 36–71 months, $M = 52.46$, $SD = 9.72$; 42 of them were 36–47 months, $M = 42.02$, $SD = 3.42$; 41 of them were 48–59 months, $M = 52.46$, $SD = 3.63$; 37 of them were 60–71 months, $M = 64.30$, $SD = 3.64$) and 118 parents (104 mothers, 14 fathers) participated in the current study (two mothers did not respond to any questionnaires). Of the 118 parent–child dyads, only mothers' data were included in the study ($N = 104$). Mothers' age ranged from 27 to 48 ($M = 36.13$, $SD = 4.62$). Four children also had one of their siblings in the study. For all analyses that included parent data, only one of the siblings was included to eliminate the possibility of random interdependencies in the data. The most prevalent education level for mothers was a university degree (58.2%), followed by a master's degree (20.5%). Also, 74.6% of the participants were from middle-to-high SES levels. All participants were recruited from various preschools in Ankara. Ankara is an urban city of over 5 million residents and is also the capital city of Türkiye.

Procedure

In line with national and institutional regulations, ethical approval from the university was obtained, and upon review by the Ministry of Education, schools serving the target age groups were contacted. Children were tested either in a quiet room in their preschool or at the developmental psychology laboratory facilities of Bilkent University. Both child and parent participants received the tasks and questionnaires in a fixed order. For preschoolers, the order was the Dimensional Change Card Sorting task and then the ToM battery. For parents, the order was the demographics form and then Parenting Attitudes Scale.

Measures

Child measures

Dimensional Change Card Sort (DCCS). The DCCS was used to assess children's EF (Zelazo, 2006). This task was selected because it provides a comprehensive measure of EF components that includes cognitive flexibility and inhibition. Across three sub-tasks (i.e., the color game, the shape game, and the border game) children were first asked to sort picture cards according to one rule (i.e., color), then they had to switch to the other rule (i.e., shape), and finally to flexibly switch between rules based on a superordinate third rule (i.e., border). Following Zelazo (2006), the criteria for passing each of the sub-tasks were as follows: a minimum of 5 of 6 correct in each of the color and shape games and a minimum of 9 out of 12 correct in the border game. The total score for the task ranged from 0 to 3 (1 point for passing each game).

Theory of Mind Battery (ToM). The ToM battery is a widely used measure for assessing children's theory of mind abilities (Wellman & Liu, 2004). This battery includes 5 tasks. Across the 5 tasks, this battery measures children's understanding that individuals may have

¹A subset of the current study's data was included in Ilgaz et al. (2022).

different desires (Diverse Desires – DD); they may entertain and act according to different beliefs (Diverse Beliefs – DB); their perceptual access to information shapes their beliefs (Knowledge Access – KA); they may harbor false beliefs about the world (Contents False Belief – CFB); and they may display a different emotion than the one they truly feel (Hidden Emotion – HE). Each task is administered with pictures (characters, objects), and – for the knowledge access and contents false belief tasks – objects (i.e., boxes). The characters in the tasks were matched with the participant's gender. For each task, children received 1 point if they correctly answered the target question. The diverse desires and diverse beliefs tasks did not have control questions; correctly answering the target question for each task awarded children 1 point for each. For knowledge access, contents false belief, and hidden emotion, children had to answer both the control and the target questions to be awarded 1 point and considered having passed the task. The ToM total battery score ranged from 0 to 5 points.

Parent measures

Demographics form. The demographics form included questions about both parents' education levels and family income. This information was used to calculate SES. In addition, the questionnaire included questions about the parents' ages, the child's age, and the number of siblings.

Parenting Attitudes Scale (PAS). This parenting scale was developed to measure the attitudes and behaviors of parents of 2- to 6-year-old children (Karabulut-Demir & Şendil, 2008). The creators of this scale reviewed the literature on “Western” samples for parenting and created a questionnaire that was validated as a measure of Turkish parents' parenting attitudes and behaviors. In addition to the predominantly measured parenting attitudes (i.e., authoritarian, authoritative, and permissive; PSDQ, Robinson et al., 1995), the overprotective category was included since it has been observed as prominent in some non-“Western” cultures, including Türkiye (e.g., Selin, 2014; Yavuzer, 1994). The scale includes 46 items. Seventeen items tap authoritative, 11 items tap authoritarian, 9 items tap permissive, and 9 items tap overprotective parenting attitudes. An example item for authoritative is, “I encourage my child to do things on his own;” for authoritarian, “I yell at my child when he misbehaves;” for permissive, “I allow my child to interrupt when I am talking to someone else;” and for overprotective, “I protect my child from tasks that may be tiring for him/her.” Participants are asked to rate their agreement to statements from never to always on a 5-point Likert scale. The internal reliability values of each of the subscales were as follows (the original values from scale are provided in parenthesis for comparison): authoritative parenting was .85 (.83), authoritarian parenting was .76 (.76), overprotective parenting was .82 (.75), and permissive parenting was .68 (.74). Overall, the values were all in the acceptable to good range.

Results

Analysis plan

Studies that test variables in relation to ToM sequencing have been somewhat limited in their analyses given that sequence is not actually a score of individual participants (i.e., it is a pattern that belongs to groups of participants passing or failing different tasks). While

many studies have considered how variables might be related to a ToM total score (i.e., how many tasks does each child passes), that is not a test of sequencing itself (higher scores do mean passing more tasks, but the order of the tasks is not part of the scores and sequence is about order). Accordingly, the studies that have focused on some aspect of sequencing per se have tended to, collectively, employ three analytic strategies in addition to using ToM total (Dixon et al., 2018; Duh et al., 2016; Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022; Kabha & Berger, 2020; Kuntoro et al., 2013, 2017; Rizqi et al., 2022; Selcuk et al., 2018; Shahaeian, 2015; Shahaeian et al., 2011; Sundqvist et al., 2018). First, some studies have conducted analyses on one of the specific ToM tasks that vary across sequences (e.g., knowledge access for an “Eastern” sequence or diverse beliefs for a “Western” sequence, etc.). A second strategy has been to test for sequence differences according to a grouping variable (e.g., high-low SES, urban-rural, younger-older). A third strategy has been to analyze two specific tasks in relation to each other (e.g., children who pass knowledge access but not diverse beliefs and who pass diverse beliefs but not knowledge access). This third strategy is the most direct test of sequence differences but has the trade-off that it uses a subgroup of the overall sample.

For the current study, after some preliminary analyses (including for ToM total), all three of the above analytic strategies were employed along with a novel modification of the last one to include three sequencing groups instead of two. Specifically, a multinomial regression was conducted on the three different sequences assumed in the current sample with the subset of variables that were determined to be statistically relevant from the other analyses. For all analyses using two or three sequencing groups (strategy 3), EF was included as a control variable as it has been demonstrated as a more specific explanation (Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022) for sequencing variability than age. Controlling for EF is valuable in that it helps provide a more stringent test of our target variables than existing studies.

Preliminary analyses I: Child and parenting attitude variables

Analyses that included only child variables consisted of 120 participants. Analyses that included both mother and child variables consisted of 95 of the 118 dyads. Fathers ($n = 14$), siblings ($n = 4$), mothers with incomplete scale data ($n = 3$), and two mothers whose parenting scores were identified as outliers were not included in the analyses (see Table 1 for descriptive statistics of the child and parent target variables).

An ANOVA for the total ToM score, with age (3, 4, & 5) and gender as independent variables showed a main effect for age ($F(2, 114) = 6.82, p < 0.01, \eta^2 = .11$), and a smaller main effect for gender that favored girls ($F(1, 114) = 4.29, p = 0.04, \eta^2 = .04$). No age by gender interaction was observed ($F(2, 114) = 1.70, p = 0.19$). These findings are in line with

Table 1. Descriptive statistics of child and parent target variables.

Variable	N	Mean	SD	Range
EF	120	1.67	0.63	0–3
ToM	120	2.78	1.19	0–5
Authoritative	95	77.48	5.46	17–85
Authoritarian	95	19.59	4.76	11–55
Overprotective	95	29.60	6.08	9–45
Permissive	95	21.12	4.32	9–45

the literature. Gender effects are inconsistently found in the literature, and the effect size in the current study was weak ($\eta^2 = .04$). To rule out variance in age or gender being related to any findings concerning parenting attitudes, a multivariate ANOVA was conducted on parenting attitudes with age and gender as independent variables. There was no main effect of age ($p = 0.26$) or gender ($p = 0.66$) for any of the parenting attitudes. There was also no interaction of age with gender on any of the parental attitudes ($p = 0.99$). These results indicate that parental attitudes were independent of children's age and gender.

Preliminary analyses II: Relations between child and social-contextual variables

Before investigating the general and child-targeted social-contextual variables in relation to *sequence differences*, their possible relation to total ToM performance and other child variables was explored through a bivariate correlation analysis (see Table 2; see Table S1 in supplemental materials for age-partialled correlations). SES was calculated as the standardized z-score of three variables: mothers' education, fathers' education, and monthly household income (Davis-Kean et al., 2019). As expected, children's age was positively related to their EF and ToM abilities. In addition, ToM was positively related to EF ($r = .27$, $p < 0.01$). However, neither SES nor the number of siblings was related to children's total ToM performance. Parenting attitudes showed the expected relations. Notably, authoritarian scores were negatively related to authoritative scores and positively related to permissive scores. It was also observed that mothers with more children were less permissive. Finally, and contrary to general expectations based on previous findings (Lin et al., 2023; Xia, 2020), higher SES was associated with higher authoritarian and lower authoritative attitudes.

Although not a measure of sequence, most research concerned with sequence includes analyses on the ToM total. For purposes of comparison (in general and for studies focused on sequence) as well as to check for a general relation with age, a hierarchical regression was conducted to investigate the concurrent predictive effect of the variables in the correlation table: child variables (age, EF), general social-contextual variables (number of siblings, SES), and child-targeted social-contextual variables (authoritarian, authoritative, permissive, overprotective). The final model was significant, ($R^2 = .18$, $F(8, 85) = 2.38$, $p = 0.02$). From the first model, where age was entered as the only predictor, to the last, where age was entered with all child, social context, and parenting attitudes variables, age remained significant ($p < 0.01$). None of the other variables significantly predicted children's total ToM score (for the final model, see Table S2 in the supplemental materials).

Table 2. Bivariate correlations between social-contextual and child variables.

Variables	1	2	3	4	5	6	7	8	9
1. Child's Age	–								
2. EF	.53***	–							
3. ToM total	.40***	.27**	–						
4. No of Siblings	.04	.03	–.14	–					
5. SES	–.17	–.01	–.03	.07	–				
6. Authoritative	.04	–.12	–.07	–.02	–.24*	–			
7. Authoritarian	.07	.03	–.02	.16	.19 [†]	–.38***	–		
8. Overprotective	.07	.05	–.07	.11	–.14	.05	.06	–	
9. Permissive	.00	.00	–.02	–.19 [†]	.09	–.12	.22*	.30**	–

Note: [†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Task and grouping variables relevant for ToM sequence differences (analytic strategies 1 & 2)

The primary aim of the current study was to investigate whether the within-culture sequence differences observed in Turkish samples can be explained by parenting attitudes. Thus, the first step was to establish the sequence differences for our sample (for additional possible sequences by age that are not theoretically relevant, see Table S3 in the supplemental materials). A Guttman analysis was conducted first on the whole sample, then on the separate age groups (i.e., 3-, 4-, and 5-year-olds). In accordance with earlier findings, the full sample (i.e., all age groups combined) showed the “Eastern” sequence (Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022; Selcuk et al., 2018). The reproducibility value calculated using Green’s method was in the acceptable range (.91). Analyses for the age groups revealed the three expected sequences: 3-year-olds showed the “Western” pattern (DD>DB>KA), 4-year-olds showed the “Eastern” pattern (DD>KA>DB), and the 5-year-olds showed the previously documented KA-first pattern (KA>DD>DB) (see Table 3). The reproducibility values were .90, .93, and .92, respectively. It should be noted that the decrease in performance for the 5-year-olds on the diverse desires task is also consistent with prior studies.

Having established the expected sequence variability by age group (Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022), the subsequent analyses sought to test for relations with the social-contextual variables (general and child-targeted). The first analytic strategy used by others in the literature has been to focus on specific tasks relevant to sequence variability. In the current study, the main task that is relevant for the three different sequences is knowledge access. Across “Western,” “Eastern” and “KA-first” sequences, this variable changed place from third, to second, to first position. Accordingly, a binary logistic regression was conducted that included all the social-contextual variables predicting knowledge access. This allowed for an indirect analysis about sequence variability that included the whole sample (see additional analyses in the supplemental materials). After checking assumptions, results indicated marginal relationships for permissive ($p = 0.05$) and overprotective parenting ($p = 0.07$) on knowledge access performance (see Table 4).

Given the lack of relationships for either SES or number of siblings, the second analytic strategy was used. SES and number of siblings were recoded as categorical variables, and Guttman analyses were used to determine the corresponding sequence for the groupings (Kabha & Berger, 2020). The SES categorization was done both according to mean (0.004)

Table 3. The percentage of children who passed each ToM task.

Tasks	Current Study				Selcuk et al. (2018)	Ilgaz et al. (2022)	Haskaraca and Ilgaz (2024)
	3-year-old children	4-year-old children	5-year-old children	Total	Total	Total	Total
DD	83%	93%	76%	84%	82%	81%	77%
DB	60%	48%	71%	59%	63%	57%	37%
KA	57%	80%	95%	77%	78%	72%	68%
CFB	12%	45%	63%	39%	24%	37%	35%
HE	14%	20%	24%	19%	18%	18%	22%

Table 4. The model of the binary logistic regression analysis predicting KA.

Variables	B	SE	Exp(B)	Sig.	Nagelkerke R ²
Step 1					.096
SES	-.03	.11	.97	.76	
Siblings	-.18	.43	.83	.67	
Authoritative	-.10	.30	.91	.75	
Authoritarian	.16	.30	1.18	.59	
Overprotective	.51	.28	1.66	.07	
Permissive	-.62	.31	.54	.05	

and median (0.269) scores (Range = -7.35 to 4.93).² Both measures of central tendency gave the same results. Accordingly, two SES groups were created: those with scores below the mean (low-SES, $N = 44$) and above the mean (high-SES, $N = 50$). Contrary to Kabha and Berger (2020), our results indicated that both groups showed the same (“Eastern”) pattern. We also sought to apply this grouping strategy to the number of siblings. Mothers who had one child were categorized as sibling absent ($N = 49$), those with more than one were categorized as sibling present ($N = 46$). Again, results indicated the “Eastern” pattern for both groups.

More direct testing of sequence differences (analytic strategy 3)

The third analytic strategy used by others has been to use two tasks in relation to each other. This is the most direct way to test sequencing difference, and so following others, a binary logistic regression was used to predict children who either passed knowledge access but failed diverse beliefs or failed knowledge access but passed diverse beliefs (Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022; Selcuk et al., 2018). This resulted in a subset of the overall sample that included 41 parent–child dyads. To accommodate the reduced power for subsequent analyses, only variables that showed statistically significant relation to sequence in any of the prior sets of analyses or were theoretically central (i.e., parenting attitudes) remained in this analysis. Age was not included as a control variable because the sequence categories are themselves defined by age, and we had measured the more specific/relevant cognitive variable of EF.³ Accordingly, EF was included as a control variable given that it has specifically predicted the sequence differences of concern in this type of analysis (Ilgaz et al., 2022). After conducting assumption checks, results indicated that EF ($p = 0.02$) (i.e., higher EF predicted knowledge access before diverse beliefs) and permissive parenting ($p = 0.02$) (i.e., higher permissive predicted diverse beliefs before knowledge access) significantly predicted sequence differences while overprotective parenting showed a marginal relation ($p = 0.06$) (see Table 5).

Finally, to explore variability in all three sequences, a *multinomial* logistic regression was conducted on the three sequences as the outcome variable: “Western,” “Eastern,” and the KA-first pattern. This analysis included only the participants whose performances exactly fit these patterns. For the “Western” pattern, preschoolers who passed diverse beliefs and/or diverse desires but not knowledge access were included in the sample. For the “Eastern”

²Kabha and Berger (2020) didn’t specify how they created the two groups, but it seemed to include the full sample.

³However, if the analysis is run with age, none of the statistical decisions change.

Table 5. The model of the binary logistic regression analysis predicting ToM sequence.

Variables	B	SE	Exp(B)	Sig.	Nagelkerke R ²
Step 1					.577
EF	2.22	.91	9.19	.02	
Authoritative	.03	.55	1.03	.96	
Authoritarian	-.01	.64	.99	.99	
Overprotective	1.34	.70	3.81	.06	
Permissive	-1.82	.77	.16	.02	

Note: Children who passed KA but failed DB or failed KA but passed DB ($N = 41$) were included.

pattern, preschoolers who passed diverse desires and knowledge access but not diverse beliefs were included. For the “KA-first,” preschoolers who passed knowledge access but not diverse desires and diverse beliefs were included. This means that participants who failed or passed all three of the diverse desires, diverse beliefs, and knowledge access tasks were not included in this analysis. Consequently, the resultant sample size was the same as for the previous analysis but divided into three groups instead of two.

Given the use of all three groups, the multinomial regression was conducted with only the predictors that showed (marginally) significant effects in the prior analysis: EF, overprotective parenting, and permissive parenting. First, the null model (i.e., with no predictors) was run, followed by a full model that included only the relevant predictors from the prior analysis. For the full model, likelihood ratio tests were consulted to evaluate whether the model was significantly different than the null model. In addition to the *p*-statistic, the AIC (Akaike Information Criterion) scores were consulted to evaluate whether a given model fit comparatively better. Conceptually, AIC values measure the goodness-of-fit of a model while simultaneously taking the complexity of the model into account. Lower AIC values signal a better fit (Akaike, 1998). Following this, the AIC value of the full model (66.69) indicated a better fit as compared to the null model (84.28), and the likelihood ratio test revealed a significant improvement between the full model and the null model ($\chi^2(6) = 29.60$, $p < 0.0001$).

To explain the results regarding the predictors, higher EF predicted the likelihood of following the “Eastern” sequence as compared to the “Western” sequence ($\beta = 2.23$, $p < 0.01$), but it did not predict whether children would show the “Western” versus the KA-first sequence ($p = 0.23$) (see Table 6). Further, the likelihood of Turkish preschoolers showing the “Western” sequence as compared to both the “Eastern” sequence and KA-first sequence

Table 6. Multinomial logistic regression analysis of the independent factors EF, overprotective and permissive parenting attitudes.

	“Western” vs. “Eastern” ^a		“Western” vs. KA-first ^a		Group Differences ^b
	OR ^c	95% CI	OR ^c	95% CI	
EF	9.33**	[0.54, 3.93]	3.53	[-0.80, 3.33]	A < B, A = C
Overprotective	2.86	[-0.35, 2.45]	13.17**	[0.71, 4.45]	A = B, A < C
Permissive	0.19*	[-3.14, -0.19]	0.08**	[-4.41, -0.75]	A > B, A > C

^a“Western” sequence was the comparison category of the dependent variable.

^bGroup differences indicate the extent to which the independent variables increase the likelihood of showing one of the three ToM sequence categories (A= “Western” sequence; B= “Eastern” sequence, C = KA-first sequence).

^cThe associations are significant *($p < 0.05$), ** ($p < 0.01$).

was predicted by mothers' permissive attitudes (compared to "Eastern" $\beta = -1.67$, $p = 0.03$; compared to KA-first $\beta = -2.58$, $p < 0.01$). Higher maternal permissive attitudes were related to a higher likelihood of showing the "Western" sequence. Also, maternal overprotective attitudes were related to children showing the KA-first sequence. Turkish children whose mothers had higher overprotective attitudes were more likely to show the KA-first sequence as compared to the "Western" sequence ($\beta = 2.58$, $p < 0.01$). Maternal overprotectiveness did not significantly predict whether the child would show the "Eastern" or the "Western" sequence ($p = 0.14$).

Finally, although the correlation analysis did not show significant relations between children's EF and any of the parenting attitude variables (see Table 2), analyses that included the two possible interaction terms (i.e., EF $\times$ permissiveness, and EF $\times$ overprotectiveness) were run based on theoretical considerations to test the possibility of interaction effects. Neither of these interaction variables was found to be a significant predictor of ToM sequencing ($.16 < ps < .67$). Although the reason for including EF in the above analysis was that it had been found to be a predictor of ToM sequence differences (Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022), another multinomial regression was conducted without EF (see Table S4 in supplemental materials). Finally, although the reason for *not* including age in the above analysis was that the DV (i.e., the three sequences in the current study) is defined by age (i.e., 3-, 4-, and 5-year-olds), a multinomial regression was conducted with age included as a predictor (see Table S5 in supplemental materials). Results of these ad hoc analyses revealed that the full model (i.e., EF, overprotective attitudes, permissive attitudes) was significantly better than the model without EF and the model including age did not improve the full model.

Discussion

Before interpreting the results in the discussion section, we wish to remind the reader of a few points. First, there are limited studies trying to explain sequence variability with social context variables. Accordingly, it was important to be directly guided in our main analyses by what has been done previously. This was especially important for the null findings. Using the same analytic strategies as others allows for direct comparisons with existing research. Second, the different analyses indicated remarkable consistency in terms of both the effects and the null results (i.e., across the analyses, the same patterns were found). This provides convergent justification for the final analyses in which just under half of the overall parent-child dyad sample was used. However, future work should replicate the novel findings in the current study.

The current study focused on the within-culture differences in ToM sequencing for a Turkish sample and how these related to child and social context variables. In the ToM literature, the existence of two distinct ToM sequences across cultures is well-documented (i.e., see Yu & Wellman, 2024). The coexistence of multiple sequences within cultural groups is also well-established (e.g., Dixson et al., 2018; Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022; Kabha & Berger, 2020; Kuntoro et al., 2013, 2017; Rizqi et al., 2022; Sundqvist et al., 2018), even if not widely acknowledged (Yu & Wellman, 2024). The fact that Turkish samples display the two *across* culture sequences, one in which diverse beliefs is passed before knowledge access and the other in which knowledge access is passed before diverse beliefs, has been verified by several studies (Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022;

Selcuk et al., 2018). In addition to these two sequences, a third sequence in which knowledge access is passed before both diverse desires and diverse beliefs has been identified and replicated (Haskaraca & Ilgaz, 2024; Ilgaz et al., 2022). The current study differs from previous work in its focus on variables at different levels relative to the child. As an important addition to the ToM sequencing literature, the current study focused on social contextual variables that are part of preschoolers' environment (SES, number of siblings) and those that are more direct (parenting attitudes). Further, the current study was able to conduct analyses that specifically target sequence variability while also controlling for EF.

Past research has tended to minimize sequence variability and has used the collectivism versus individualism distinction to frame an understanding of differences across cultures (Yu & Wellman, 2024). This framing connects individualistic values with the sequence that was observed in the US, Europe, and other English-speaking samples, and it connects collectivistic values with the sequence observed in samples from Iran, Türkiye, and China. However, variance in collectivism and individualism is regularly observed within cultures and based on multiple dimensions that include subsistence, geography, climate, regional culture, and the like, regardless of the specific measure that is used (for a detailed investigation of collectivism in Türkiye, see Marcus et al., 2019).

Collectivism-individualism explanations of the “Eastern” and “Western” sequence differences motivate thinking about parenting in terms of cultural values as well. The obedience and conformity socialization goals of authoritarian parenting have been proposed to align with collectivism, while the self-interest and autonomy goals of authoritative parenting align with individualism. Results from the current study do not support a relationship between these two parenting attitudes and child variables (i.e., ToM total, ToM sequence, nor EF). This is largely consistent with past literature. While studies with “Western” samples have sometimes found a relation with ToM and these two parenting attitudes (Miller, 2016), samples from other cultures also differ (Shahaeian et al., 2014; Vinden, 2001). For studies focused on sequencing specifically, direct relations between parenting and ToM have not been found (Kuntoro et al., 2017; Rizqi et al., 2022). This suggests that the two parenting attitudes that have been argued to align with the collectivism-individualism framing may not be relevant for understanding within-culture variability on ToM sequence.

One of the difficulties with cross-cultural studies on parenting attitudes is whether the measures assess the “same” thing. Authoritarian parenting has different meanings across cultures, such that the means of achieving obedience and conformity (e.g., using coercion) can be quite different in cultures like the US versus China (Rudy & Grusec, 2006; Sorkhabi, 2012), and overall parental warmth might be greater in countries like Türkiye (Rudy & Grusec, 2001; Sen et al., 2014). In *Parenting Across Cultures*, Sen et al. (2014) argued that Turkish mothers show high parental warmth across a broad range of SES groups and this may influence the relations for parenting relative to what is found in the “Western” literature. The current study had two “unusual” findings. First, a positive relation between authoritarian and permissive parenting. These two attitudes are supposed to be opposites in terms of the control and warmth dimensions; however, with a middle-to-high Turkish SES sample, it may be that variability in warmth does not discriminate between the two attitudes. However, this finding has been found in other Turkish samples which suggests that it may be a cultural difference that again suggests authoritarian parenting has a different meaning in “non-Western” cultures (Allen & Kara, 2024; Özdil, 2019).

The second finding is more unusual in that SES had the opposite relations that would be expected from the “Western” literature for both authoritarian and authoritative parenting. That is, SES was positively correlated with authoritarian attitudes and negatively correlated with authoritative attitudes. However, a follow-up analysis indicated that it was just the income dimension that drove the relations (i.e., no relation for the education dimension), and when education was controlled, only the positive relation between income and authoritarian parenting remained. While we are unclear whether this finding is specific to our sample (as well as how to interpret it), there is one major difference in Turkish culture relevant for measuring SES through income and education. Türkiye has undergone substantial growth over the past 25 years that has transformed the economy, and therefore, income may not be the best way to measure SES. While this leaves more open questions than answers, it follows a growing trend for the developmental literature in which concepts like SES probably need more culture-specific measures, research, and interpretation (Singh & Rajendra, 2024).

One of the reasons to refrain from associating “Eastern” and “Western” sequences with collectivism and individualism is the fact that studies have either not measured these constructs (Selcuk et al., 2018; Shahaeian et al., 2011) or they have generally failed to find a relationship with sequence differences (Kabha & Berger, 2020; Kuntoro et al., 2017). Other studies have adopted proxy variables that the authors assume are a reflection of within-culture individualism and collectivism. These proxy variables have included SES, size of household, and number of siblings (Molzhan, 2016; Selcuk et al., 2018; Shahaeian, 2015). The assumption is that lower SES, a higher number of children, and a higher number of adults who live with the child indicate more traditional and more collectivist attitudes. However, the results of the current study did not provide evidence for this assumption. There was no relation between SES and the number of children with the child variables (i.e., ToM total, ToM sequence, nor EF). The lack of relations is actually similar to the past literature which has tended not to find relations between SES and ToM total or ToM sequence⁴ (Kabha & Berger, 2020; Kuntoro et al., 2017; Selcuk et al., 2018; Shahaeian, 2015). One partial exception comes from Kabha and Berger (2020) who split their sample roughly in half to create low and high SES groups and found the “Eastern” sequence for the low group but their original sequence for the high group. However, these researchers did not give a collectivism-individualism framing to SES and that seems supported by their other results as well. Specifically, while SES was negatively related to individual-level collectivism and power distance, neither of these “cultural values” variables were related to ToM sequence. Importantly, the overall sample of that study did range from low SES to high SES in absolute terms. Such range is in contrast to the current study (as well as most studies in the literature) where the overall sample is middle to high SES. This suggests that SES is an important variable for further investigation in trying to understand ToM sequence variability and that it would be better studied outside of a collectivism-individualism framing.

Permissive and overprotective parenting have not been argued in literature to align with a collectivist-individualist framing of ToM cultural differences. Instead, permissive

⁴Of all their variables, Selcuk et al. (2018) only found a relation between “Western” sequence (DB>KA) and number of adults in the home; however, that contradicts an individualism-collectivism framing. According to that construal, a higher number of adults should reflect collectivist cultures and preschoolers should follow the “Eastern” sequence (KA>DB). Further, a study from Iran also showed the “Eastern” sequence but did not find evidence for a relation with the size of the household (Shahaeian, 2015).

parenting may have renewed importance given the ongoing societal shift toward a more child-centered approach to parenting and development. Further, the relations between ToM and EF are well established in general (Carlson et al., 2013), and Ilgaz et al. (2022) found that EF was also relevant for ToM sequence variability. Since permissive parenting is also related to self-regulation (Morris, 2003; Piotrowski et al., 2013) it was important to include this understudied attitude in the current project. The results indicated that permissive parenting had a robust relation to ToM sequence; however, the interaction between permissive parenting and EF was not significant. While this was unexpected, there is some indirect evidence that EF is still relevant for understanding the relationship between permissive attitudes and ToM sequencing. In particular, when EF was removed from the multinomial analysis (see Table S4 in the supplemental materials), permissive parenting was not a significant predictor of the “Western” to “Eastern” sequence.

There are at least two explanations for the lack of relation between permissive parenting and EF for ToM sequencing. First, the current study utilized a single EF task. A more comprehensive measurement of EF via multiple tasks that specifically focus on EF components (e.g., inhibition, set shifting, and working memory) could provide a deeper exploration of a possible relationship. Second, EF might be more sensitive to parenting *dimensions* (i.e., hostility, laxness, sensitivity, responsiveness, etc.) than to *types* of parenting (Valcan et al., 2018), and this relation may best be studied longitudinally (see Thompson & Steinbeis, 2020). For example, Blair et al. (2014) have shown that the sensitivity and responsiveness dimensions of parenting measured at 36 months were more strongly related to children’s EF at 60 months than the concurrent relations at 36 months. These findings suggest that future studies should investigate parenting dimensions in tandem with EF longitudinally.

While the current study does not provide evidence for a relation between permissive parenting and EF, the results showed a novel robust relationship between permissive parenting and ToM sequencing such that increased permissiveness predicted the “Western” sequence relative to the other two. Further evidence that the effect is robust comes from the supplemental analysis in which age is controlled and the predictive effect remains (see Table S5). In terms of the tasks, this means that increased permissiveness predicts a decrease in passing the knowledge access task and an increase in passing the diverse beliefs and diverse desires tasks. This shift in knowledge access relative to the diversity tasks is also evident in the developmental change from 3-, to 4-, to 5-year-olds (see Table 3).

The fact that Turkish children whose parents had higher permissive attitudes passed the diversity tasks (i.e., diverse desires, diverse beliefs) earlier could be due to an increased prevalence of parent–child interaction where the parent concedes to the child’s perspective. That is, as parents high in permissive attitudes try to structure their children’s lives, they end up yielding to the child’s wishes/opinions more often than those who are less permissive. These children would be learning that they have some agency in holding a different perspective from their parents. Since parents high in permissiveness will still initiate and attempt to structure their children’s lives, the diversity of opinion would be made explicit for these children on a regular basis (i.e., because it works, children regularly protest with a different opinion, wish, etc.). This would not imply better perspective taking in general (i.e., when tasks require *coordinating* conflicting perspective as in the false-belief tasks) but may have the counter-intuitive consequence for better understanding of diversity (i.e., their

own perspective which frequently conflicts with, although often yielded to, their parents' perspective). In short, parents' frequent submission to children's mental attitudes may provide agency that makes differences of opinion explicit, although it would put children at a deficit when those different opinions need to be coordinated.

While this may explain the decreased difficulty for the diversity tasks, it leaves open the increased difficulty of the knowledge access task. The results for overprotective attitudes indicated a positive relationship with sequence such that increased overprotectiveness predicted the shift in knowledge access from the "Western" sequence to the "KA-first" sequence. That is, with increased overprotectiveness, the knowledge access task was easier to pass. Overprotective attitudes presuppose that the world is dangerous, and that children need constant protection (Karabulut-Demir & Şendil, 2008). The fear involved in this attitude may lead to anxiety-driven control that makes it difficult for children to show agency. To avoid the anxiety behind this form of control, children may need to align themselves with the parent by understanding their assessment of the situation. This assessment would depend on what their parents do and do not know which requires understanding how knowledge is acquired.

Future directions and limitations

The current study showed the importance of studying parenting within the context of understanding ToM sequence differences in a Turkish sample. The present study justifies bringing permissive and overprotective parenting out of the shadows by showing that they may have more important relations to sequencing variability than the two more studied attitudes (authoritarian and authoritative). Permissive and overprotective attitudes are both high in warmth (i.e., they differ in terms of control), which may be why they were correlated. Given that they differ in terms of control and their predictive relations were in opposite directions, the control dimension should be studied in more detail and in a culturally relative way (i.e., the meaning of control depends on the culture).

By including social-contextual and child variables, the design of the current study was sufficient to test the main research question. However, there are some limitations that future studies could address. First, although the sample size for the overall study was adequate ($N = 120/95$), the sample size for the binomial and multinomial analyses could have been larger ($N = 41$). Second, although we measured EF and not language because of the relations found for those two variables in the only study on sequence variability with a similar sample (Ilgaz et al., 2022), language could still be important to consider for future studies on sequence variability, especially in non-Turkish samples. Third, our sample was mostly middle to high SES but there is some evidence that SES may be relevant for understanding ToM sequencing (Kabha & Berger, 2020) as well as the rural-urban contrast (Rizqi et al., 2022). Future studies could include a broader range of SES differences with a larger sample size. Nonetheless, the current study is valuable in terms of bringing increased attention to parenting in general and overprotective and permissive parenting in particular. As a next step, the current findings should be replicated with a bigger sample size, but all studies on this topic should probably broaden their framing of parenting beyond the collectivism-individualism divide (i.e., beyond authoritative and authoritarian attitudes). Finally, parenting was measured with self-report, which has its own limitations as a measurement approach. A more comprehensive

measure of parenting that uses observational methods, in addition to self-report, may reveal the nuances of the hypothesized relations between ToM sequencing and parenting.

Conclusion

More research on a broader variety of social-contextual variables to understand ToM development seems warranted. Such research should include a broader range of parenting attitudes with a focus on the control dimension. Further, the culture-specific nature of parenting may make direct comparisons across cultures more difficult than is often assumed. Given that Turkish parenting is characterized by warmth across all parenting attitudes (Sen et al., 2014), it could be that what counts as authoritative versus authoritarian in “Western” cultures is better captured by permissive versus overprotective parenting in “Turkish” culture. Finally, it seems that there is little reason to continue characterizing ToM sequencing studies in terms of the broad cultural values captured by the collectivism-individualism contrast.

Acknowledgments

We would like to thank the parents and children who participated. We would also like to thank Feride Nur Haskaraca Kızılay for her feedback on this manuscript.

Author contributions

CRedit: **Eda Önoğlu Yıldırım:** Conceptualization, Data curation, Formal analysis, Methodology, Project administration, Writing – original draft, Writing – review & editing; **Hande Ilgaz:** Conceptualization, Formal analysis, Methodology, Writing – original draft; **Jedediah W. P. Allen:** Conceptualization, Data curation, Formal analysis, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing.

Disclosure statement

No potential conflict of interest was reported by the author(s).

ORCID

Eda Önoğlu Yıldırım  <http://orcid.org/0000-0002-8537-6319>
Hande Ilgaz  <http://orcid.org/0000-0003-2785-6717>
Jedediah W. P. Allen  <http://orcid.org/0000-0003-0322-7182>

Data availability statement

Anonymized data request can be made to the corresponding author.

References

- Akaike, H. (1998). Factor analysis and AIC. In E. Parzen, K. Tanabe, & G. Kitagawa (Eds.), *Selected papers of Hirotugu Akaike*. Springer Series in Statistics (pp. 371–386). Springer. https://doi.org/10.1007/978-1-4612-1694-0_15
- Allen, J. W. P., & Kara, D. (2024). Domain-general or specific: How is children's understanding of deception socialized? *Social Development*, 33(1), e12712. <https://doi.org/10.1111/sode.12712>
- Aminin, I. (2018). Influence of parenting styles toward achievement of theory of mind in the late childhood. In *Proceedings of the 1st International Conference on Early Childhood and Primary Education* (pp. 112–117). Atlantis Press. <https://doi.org/10.2991/ecpe-18.2018.24>
- Anlı, İ., & Karşlı, T. A. (2010). Perceived parenting style, depression and anxiety levels in a Turkish late-adolescent population. *Procedia - Social and Behavioral Sciences*, 2(2), 724–727. <https://doi.org/10.1016/j.sbspro.2010.03.091>
- Baumrind, D. (1991). The influence of parenting style on adolescent competence and substance use. *The Journal of Early Adolescence*, 11(1), 56–95. <https://doi.org/10.1177/0272431691111004>
- Baumrind, D., Larzelere, R. E., & Owens, E. B. (2010). Effects of preschool parents' power assertive patterns and practices on adolescent development. *Parenting: Science & Practice*, 10(3), 157–201. <https://doi.org/10.1080/15295190903290790>
- Blair, C., Raver, C. C., Berry, D. J., & Family Life Project Investigators. (2014). Two approaches to estimating the effect of parenting on the development of executive function in early childhood. *Developmental Psychology*, 50(2), 554–565. <https://doi.org/10.1037/a0033647>
- Carlson, S. M., Koenig, M. A., & Harms, M. B. (2013). Theory of mind. *Wiley Interdisciplinary Reviews Cognitive Science*, 4(4), 391–402. <https://doi.org/10.1002/wcs.1232>
- Cevher-Kalburan, N., & Ivrendi, A. (2016). Risky play and parenting styles. *Journal of Child and Family Studies*, 25(2), 355–366. <https://doi.org/10.1007/s10826-015-0236-1>
- Clarke-Stewart, K. A. (1988). Parents' effects on children's development: A decade of progress? *Journal of Applied Developmental Psychology*, 9(1), 41–84. [https://doi.org/10.1016/0193-3973\(88\)90004-4](https://doi.org/10.1016/0193-3973(88)90004-4)
- Davis-Kean, P. E., Tang, S., & Waters, N. E. (2019). Parent education attainment and parenting. In M. H. Bornstein (Ed.), *Handbook of parenting: Vol. 2. Biology and ecology of parenting* (3rd ed., pp. 400–420). Routledge/Taylor & Francis Group. <https://doi.org/10.4324/9780429401459-12>
- Dixon, H. G., Komugabe-Dixon, A. F., Dixon, B. J., & Low, J. (2018). Scaling theory of mind in a small-scale society: A case study from Vanuatu. *Child Development*, 89(6), 2157–2175. <https://doi.org/10.1111/cdev.12919>
- Duh, S., Paik, J. H., Miller, P. H., Gluck, S. C., Li, H., & Himelfarb, I. (2016). Theory of mind and executive function in Chinese preschool children. *Developmental Psychology*, 52(4), 582–591. <https://doi.org/10.1037/a0040068>
- 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. <https://doi.org/10.1177/0165025414556095>
- Faircloth, C. (2023). Intensive parenting and the expansion of parenting. In E. Lee, J. Bristow, C. Faircloth, & J. Macvarish (Eds.), *Parenting culture studies* (pp. 33–67). Palgrave Macmillan.
- Haskaraca, F. N., & Ilgaz, H. (2024). Culturally constituted universals: Evidential basis of belief matters. *Developmental Science*, 27(5), e13398. <https://doi.org/10.1111/desc.13398>
- Hays, S. (1996). *The cultural contradictions of motherhood*. Yale University Press.
- Hofmann, W., Schmeichel, B. J., & Baddeley, A. D. (2012). Executive functions and self-regulation. *Trends in Cognitive Sciences*, 16(3), 174–180. <https://doi.org/10.1016/j.tics.2012.01.006>
- Hofstede, G. (2011). Dimensionalizing cultures: The Hofstede model in context. *Psychology and Culture*, 2(1), 1–25. <https://doi.org/10.9707/2307-0919.1014>
- Ilgaz, H., Allen, J. W. P., & Haskaraca, F. N. (2022). Is cultural variation the norm? A closer look at sequencing of the theory of mind scale. *Cognitive Development*, 63, Article 101216. <https://doi.org/10.1016/j.cogdev.2022.101216>

- Kabha, L., & Berger, A. (2020). The sequence of acquisition for theory of mind concepts: The combined effect of both cultural and environmental factors. *Cognitive Development*, 54, Article 100852. <https://doi.org/10.1016/j.cogdev.2020.100852>
- Karabulut-Demir, E., & Şendil, G. (2008). Ebeveyn tutum ölçeği. *Türk Psikoloji Yazıları*, 11(21), 15–25.
- Kuntoro, I. A., Peterson, C. C., & Slaughter, V. (2017). Culture, parenting, and children's theory of mind development in Indonesia. *Journal of Cross-Cultural Psychology*, 48(9), 1389–1409. <https://doi.org/10.1177/0022022117725404>
- Kuntoro, I. A., Saraswati, L., Peterson, C., & Slaughter, V. (2013). Micro-cultural influences on theory of mind development: A comparative study of middle-class and pemulung children in Jakarta, Indonesia. *International Journal of Behavioral Development*, 37(3), 266–273. <https://doi.org/10.1177/0165025413478258>
- Lee, E. (2023). Introduction. In E. Lee, J. Bristow, C. Faircloth, & J. Macvarish (Eds.), *Parenting culture studies* (pp. 3–32). Palgrave Macmillan.
- Lin, X., Zhang, Y., Liao, Y., & Xie, W. (2023). Socioeconomic status and problem behaviors in young Chinese children: A moderated mediation model of parenting styles and only children. *Frontiers in Psychology*, 14, 1029408. <https://doi.org/10.3389/fpsyg.2023.1029408>
- Marcus, J., Kahraman, F., Su, S., & Fritzsche, B. A. (2019). Capturing intranational cultural variation in international business research: Microsocietal differences in collectivism across Turkey. *Journal of World Business*, 54(6), 101020. <https://doi.org/10.1016/j.jwb.2019.101020>
- Miller, S. A. (2016). *Parenting and theory of mind*. Oxford University Press.
- Molzhan, A. (2016). *Exploring the influence of socioeconomic status on the executive function and theory of mind skills of preschoolers*. Virginia Commonwealth University.
- Morris, M. A. (2003). *The role of parenting style and the family characteristics of levels of organization and control in the development of self-regulation skills in young children* [Doctoral thesis, University of Massachusetts]. ProQuest Dissertations.
- Özdil, B. (2019). *The relationship between maternal parenting styles, aggression and emotion regulation among Turkish primary school children* [Master's thesis]. SWPS University of Social Sciences and Humanities.
- Piotrowski, J. T., Lapierre, M. A., & Linebarger, D. L. (2013). Investigating correlates of self-regulation in early childhood with a representative sample of English-speaking American families. *Journal of Child and Family Studies*, 22(3), 423–436. <https://doi.org/10.1007/s10826-012-9595-z>
- Poulin-Dubois, D., Azar, N., Elkaim, B., & Burnside, K. (2020). Testing the stability of theory of mind: A longitudinal approach. *PLOS ONE*, 15(11), e0241721. <https://doi.org/10.1371/journal.pone.0241721>
- Rizqi, N. P. A., Kuntoro, I. A., & Halim, L. (2022). Urban-rural influences on parenting and theory of mind development: An intracultural comparative study in Indonesia. *Psychological Research on Urban Society*, 5(1), Article 4. <https://doi.org/10.7454/proust.v5i1.126>
- Robinson, C. C., Mandleco, B., Olsen, S. F., & Hart, C. H. (1995). Authoritative, authoritarian, and permissive parenting practices: Development of a new measure. *Psychological Reports*, 77(3), 819–830. <https://doi.org/10.2466/pr0.1995.77.3.819>
- Rudy, D., & Grusec, J. E. (2001). Correlates of authoritarian parenting in individualist and collectivist cultures and implications for understanding the transmission of values. *Journal of Cross-Cultural Psychology*, 32(2), 202–212. <https://doi.org/10.1177/0022022101032002007>
- Rudy, D., & Grusec, J. E. (2006). Authoritarian parenting in individualist and collectivist groups: Associations with maternal emotion and cognition and children's self-esteem. *Journal of Family Psychology*, 20(1), 68–78. <https://doi.org/10.1037/0893-3200.20.1.68>
- Selcuk, B., Brink, K. A., Ekerim, M., & Wellman, H. M. (2018). Sequence of theory-of-mind acquisition in Turkish children from diverse social backgrounds. *Infant and Child Development*, 27(4), 1–14. <https://doi.org/10.1002/icd.2098>
- Selin, H. (Ed.). (2014). *Parenting across cultures: Childrearing, motherhood and fatherhood in non-Western cultures*. Springer.

- Sen, H., Yavuz-Muren, H. M., & Yagmurlu, B. (2014). Parenting: The Turkish context. In H. Selin (Ed.), *Parenting across cultures: Childrearing, motherhood and fatherhood in non-Western cultures* (pp. 175–192). Springer.
- Shahaeian, A. (2015). Sibling, family, and social influences on children's theory of mind understanding: New evidence from diverse intracultural samples. *Journal of Cross-Cultural Psychology*, 46(6), 805–820. <https://doi.org/10.1177/0022022115583897>
- Shahaeian, A., Nielsen, M., Peterson, C. C., & Slaughter, V. (2014). Iranian mothers' disciplinary strategies and theory of mind in children: A focus on belief understanding. *Journal of Cross-Cultural Psychology*, 45(7), 1110–1123. <https://doi.org/10.1177/0022022114534772>
- Shahaeian, A., Peterson, C. C., Slaughter, V., & Wellman, H. M. (2011). Culture and the sequence of steps in theory of mind development. *Developmental Psychology*, 47(5), 1239–1247. <https://doi.org/10.1037/a0023899>
- Sharkey, C. M., Clawson, A. H., Mullins, L. L., Brinkman, T. M., Pui, C. H., Hudson, M. M., & Krull, K. R. (2019). The relationship of child executive functions to parenting capacities in childhood acute lymphoblastic leukemia survivors. *Pediatric Blood & Cancer*, 66(8), e27761. <https://doi.org/10.1002/pbc.27761>
- Singh, L., & Rajendra, S. J. (2024). Greater attention to socioeconomic status in developmental research can improve the external validity, generalizability, and replicability of developmental science. *Developmental Science*, 27(5), e13521. <https://doi.org/10.1111/desc.13521>
- Sorkhabi, N. (2012). Parent socialization effects in different cultures: Significance of directive parenting. *Psychological Reports*, 110(3), 854–878. <https://doi.org/10.2466/10.02.17.21.pr0.110.3.854-878>
- Sundqvist, A., Holmer, E., Koch, F., & Heimann, M. (2018). Developing theory of mind abilities in Swedish pre-schoolers. *Infant and Child Development*, 27(4). <https://doi.org/10.1002/icd.2090>
- Thompson, A., & Steinbeis, N. (2020). Sensitive periods in executive function development. *Current Opinion in Behavioral Sciences*, 36, 98–105. <https://doi.org/10.1016/j.cobeha.2020.08.001>
- Valcan, D. S., Davis, H., & Pino-Pasternak, D. (2018). Parental behaviours predicting early childhood executive functions: A meta-analysis. *Educational Psychology Review*, 30(3), 607–649. <https://doi.org/10.1007/s10648-017-9411-9>
- Vinden, P. G. (2001). Parenting attitudes and children's understanding of mind: A comparison of Korean American and Anglo-American families. *Cognitive Development*, 16(3), 793–809. [https://doi.org/10.1016/S0885-2014\(01\)00059-4](https://doi.org/10.1016/S0885-2014(01)00059-4)
- Vishwanath, R., Kamath, A. G., Thomas, N., Guddattu, V., & Praharaj, S. K. (2023). Pattern of acquisition of theory of mind in pre-schoolers: A cross-sectional study from South India. *Asian Journal of Psychiatry*, 81, 103443. <https://doi.org/10.1016/j.ajp.2022.103443>
- Wellman, H. M., Fang, F., Liu, D., Zhu, L., & Liu, G. (2006). Scaling of theory-of-mind understandings in Chinese children. *Psychological Science*, 17(12), 1075–1081. <https://doi.org/10.1111/j.1467-9280.2006.01830.x>
- Wellman, H. M., Fang, F., & Peterson, C. C. (2011). Sequential progressions in a theory-of-mind scale: Longitudinal perspectives. *Child Development*, 82(3), 780–792. <https://doi.org/10.1111/j.1467-8624.2011.01583.x>
- Wellman, H. M., & Liu, D. (2004). Scaling of theory-of-mind tasks. *Child Development*, 75(2), 523–541. <https://doi.org/10.1111/j.1467-8624.2004.00691.x>
- Xia, X. (2020). Parenting style and Chinese children's school readiness outcomes: The moderating role of socioeconomic status. *Children & Youth Services Review*, 118, Article 105381. <https://doi.org/10.1016/j.childyouth.2020.105381>
- Yavuzer, H. (1994). *Çocuk psikolojisi*. Remzi Kitabevi.
- Yu, C. L., & Wellman, H. M. (2024). A meta-analysis of sequences in theory-of-mind understandings: Theory of mind scale findings across different cultural contexts. *Developmental Review*, 74, 101162. <https://doi.org/10.1016/j.dr.2024.101162>
- Zelazo, P. D. (2006). The dimensional change card sort (DCCS): A method of assessing executive function in children. *Nature Protocols*, 1(1), 297–301. <https://doi.org/10.1038/nprot.2006.46>