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Anticipating disagreement enhances source memory in English- and Turkish-speaking preschool children

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Abstract

Metacognitive abilities like source memory are useful for justifying our beliefs to others. Do they arise *because* of this need? Here, we test whether circumstances that require source reporting enhance source memory. We test this in circumstances in which children anticipate a disagreement, and when children speak a language with obligatory linguistic evidential marking of source (Turkish). We asked 160 English- and Turkish-speaking 3- and 4-year-olds to recall how they knew something and what they knew when communicating with an agreeing or disagreeing interlocutor. Four-year-old English speakers and 3- and 4-year-old Turkish speakers correctly recalled first-hand sources (seeing the object themselves) better than second-hand sources (hearing about it from the experimenter) when they expected their interlocutor to disagree. Disagreement did not affect memory for perceptual features, suggesting its influence is specific to source memory. Together, these results highlight the importance of social and linguistic influences on metacognition, though with some important qualifications about the types of sources relevant for justifying one's beliefs.

Keywords: Source Memory, Disagreement, Evidential Markers, Metacognition, Cross-linguistic differences

Significance: This study finds that preschool children are most likely to recall how they learned something when they saw it first-hand and expect another person to disagree. This was true for 3-year-old children who speak Turkish, which has mandatory grammatical markers of how knowledge was learned. These findings suggest that children's social and linguistic goals support the emergence of source memory.

Anticipating disagreement enhances source memory in English- and Turkish-speaking preschool children

We can share the sources of our beliefs (such as “I saw it myself”; Gopnik & Graf, 1988; Heyes et al., 2020), but the required metacognitive representations are cognitively demanding. Source memory develops later and declines earlier than semantic memory (e.g., Cycowicz et al., 2001; Gardiner & Richardson-Klavehn, 2000) because it relies on frontal lobe functions, including executive functions (Rajan et al., 2014).

Metacognitive abilities can enhance individual epistemic states (e.g., directing study habits; Metcalfe, 2008). Metacognitive abilities also serve *social* goals, such as justifying our beliefs to others (Heyes et al., 2020; Mahr & Csibra, 2017; Mascaro & Sperber, 2009; Mercier & Sperber, 2011; Nagel, 2015). If two individuals are collectively solving a problem but disagree about the solution, exchanging the sources of their beliefs can facilitate rational joint decision-making (e.g., by trusting the belief with a more reliable source; Köymen & Tomasello, 2018; Langenhoff et al., 2023). Moreover, communicating sources can reduce personal accountability for an incorrect joint decision (i.e., “I told you I just *heard* it!”, see Nagel, 2015).

Source memory is especially useful during disagreements, when someone must justify their judgement to another person (Heyes et al., 2020; Mahr & Csibra, 2017; Mercier & Sperber, 2011). The present study investigates whether the potential need for interpersonal justification because of disagreement enhances source memory in development. If it does, this would suggest that interpersonal interactions could play a causal role in the development of this metacognitive ability. Source memory is known to be late-developing: 3- and 4-year-olds struggle to recall the source of a belief even when prompted immediately after learning (“How do you know?”),

whereas 5-year-olds generally succeed (Gopnik & Graf, 1988; Whitcombe & Robinson, 2000). Here, we test whether providing younger 3- to 4-year-old children with the need to justify a source could enhance their source memory. One study looked specifically into whether disagreement enhances children's source memory performance (Mahr et al., 2021). Three- and 4-year-olds learned the contents of a container by either looking inside or hearing from an experimenter. Then, a puppet asked about the contents of the container. Critically, the puppet either agreed or disagreed with the child and asked children how they knew. Four-year-olds, but not 3-year-olds, reported the correct source more often when their interlocutor disagreed with them than when they agreed. While this study provides evidence that disagreement can facilitate young children's source memory–and thus support for social accounts of metacognition–it leaves several questions unanswered.

First, is source memory uniquely privileged during disagreement, or does this reflect a more general attentional mechanism? Experiencing disagreement can benefit young children's cognition, for example, by encouraging their rational belief revision (Langenhoff et al., 2023; O'Madagain et al., 2022; Schleihauf et al., 2022), reducing their overconfidence and prompting curiosity (Langenhoff et al., 2024), and improving their reasoning abilities (Li & Tomasello, 2022). However, being disagreed with might constitute an unexpected experience for children and put them into a state of heightened attention, as is seen for other prediction errors (e.g., Shing et al., 2023). Thus, an attentional mechanism could potentially explain the findings by Mahr et al. (2021) without necessitating any privileged link between disagreement and source memory. Disagreement might enhance not only children's source memory, but also their memory for other aspects of the event (e.g., perceptual features). Therefore, we assessed both children's source memory and their memory for perceptual features.

Second, does disagreement only affect memory at the time of retrieval? Perhaps the youngest children struggle to encode sources unless given a reason to do so, such as *anticipating* disagreement. In Mahr et al. (2021), children only found out that their interlocutor disagreed (or agreed) with them after learning the new information. One reason for 3-year-olds' poor source memory could be that they had never encoded the source information in the first place. In the current study, we instead alerted children to the disagreement at the time of encoding to test whether 3-year-olds might attend to source information because they realize that this could support their future argument.

Third, what is the influence of linguistic input on the link between disagreement and source memory? The cultural origins hypothesis argues that children require guidance from others to develop explicit metacognition like source memory (Heyes et al., 2020). Children who hear more mentions of sources might therefore demonstrate better source memory beyond the predicted effect of interpersonal justification. To test this, we compared children who speak Turkish in which marking the information source is grammatically obligatory to children who speak English in which this is optional. When reporting a past event, Turkish speakers must specify the source of their knowledge via different verb-endings (Aksu-Koç et al., 2009). The direct evidential marker *-di* reports an event that was witnessed first-hand (*Çocuk bir muz yeDİ* 'The child ate a banana [I saw it]'); the indirect evidential marker *-miş* reports an event which was based on indirect observation such as hearsay or inference (*Çocuk bir muz yeMİŞ* 'The child ate a banana [I heard/inferred it]'). Some production studies, in which children mention the sources of their knowledge, have shown an advantage for source memory abilities of Turkish-speaking children relative to English-speaking children (Kandemirci et al., 2023; Özkan et al., 2024; but see Ünal & Papafragou, 2019, 2020). For example, when children disagreed with a

partner about a toy's location, Turkish-speaking 3- and 5-year-olds were more likely than English-speaking children of the same age to reveal their source (e.g., "*I saw it* in that box"; (Özkan et al., 2024). Comparing English- and Turkish-speaking preschoolers in the current study allowed us to test the influence of language on children's source memory during disagreement.

Children and an adult interlocutor in the current study jointly reasoned about the contents of a box. The interlocutor either agreed or disagreed with children, and we assessed children's memory for the sources of their beliefs. We had three predictions at the heart of social accounts of metacognition (Heyes et al., 2020; Mercier & Sperber, 2011; Nagel, 2015). First, experiencing disagreement would facilitate children's source memory compared to experiencing agreement. Second, the effect of disagreement would be specific to source memory, and not lead to general improvements in memory. Third, 3-year-olds, especially those speaking Turkish, might attend to source information if they *anticipate* the disagreement.

Method

Participants

Eighty English-speaking preschoolers (41 3-year-olds, *M* = 3;5 [years;months], *Range* = 3;0-3;10, 27 girls, and 39 4-year-olds, *M* = 4;4, *Range* = 4;0-4;11, 18 girls) participated in museums and daycares in the Bay Area, USA. An additional 12 English-speaking children were excluded as outlined in our preregistration for failing to complete the study (3), not speaking English (3), experimenter error (4), and failing three or more memory checks (2). Eighty Turkish-speaking preschoolers (40 3-year-olds, *M* = 3;7, *Range* = 3;0-3;10, 18 girls, and 40 4-year-olds, *M* = 4;4, *Range* = 4;0-5;0, 18 girls) participated in daycares in two mid-sized Turkish cities. An additional two Turkish-speaking children were excluded for failing to complete the

study. Sample sizes were determined through a power simulation of pilot data from the USA using R package *simr* (Green & MacLeod, 2016).

Materials

For the gift-wrapping game, gifts (e.g., flowers, bracelet) were placed inside wooden boxes (see Figure 1). The boxes were painted and decorated to make them perceptually distinctive.

Figure 1. Materials used for the two familiarization trials and 4 test trials.

Procedure

Children had two familiarization trials during which they were introduced to the gift-wrapping game, the different sources (Seeing and Telling), and the possibility of agreement and disagreement. All children saw the same familiarization trials in the same order. One experimenter (E1) stated that she and the other experimenter (E2) were preparing presents for their friends and had to make sure to give each friend the right present. Because there were many boxes, they would need the child's help to remember what was inside each box. E2 said that she looked inside the boxes yesterday, but that they should check them again to make sure the correct name tags could be placed on each box. Each trial began with E2 stating her belief about

the contents of a box ("I am sure that it's a toy car," see Figure 2 for a visualization of the procedure and https://osf.io/3m2a8/ for scripts). After E2 stated her belief, she went away to "write gift tags".

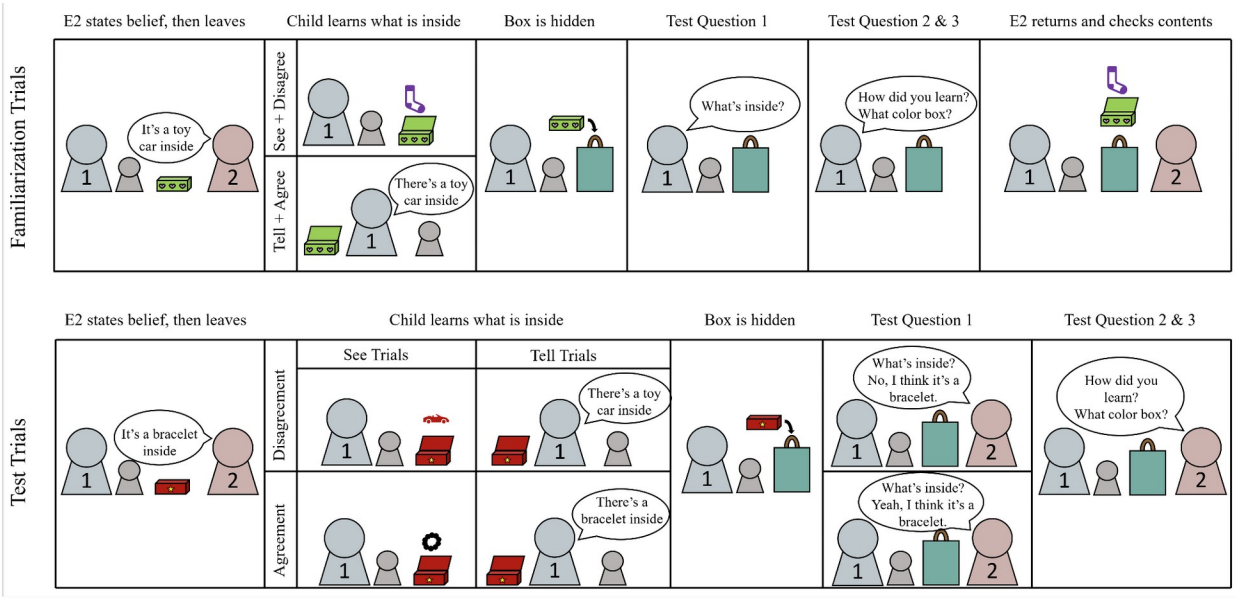

Figure 2. Procedure used in the Familiarization and Test trials.

While E2 was gone, E1 helped the child learn what was inside the box. On the first familiarization trial, E1 invited the child to look inside the box, and the child discovered a pair of socks, which was inconsistent with E2's belief (Disagreement, See). To ensure children noticed the disagreement at the time of encoding, E1 pointed out whether the contents matched E2's belief ("She said it would be a toy car, but it is socks!"). E1 also asked children what was inside the box and corrected the child if they answered incorrectly. The box was then placed inside a gift bag to hide it from view. After E1 asked about the contents of the box, she asked the two critical questions: "How did you learn that it's an [object] inside the box?" (source memory), and "What colour was the box?" (perceptual memory). Each question was repeated if the child answered incorrectly or did not respond within 5 seconds. E1 gave children the correct answers if

they never responded correctly after prompting. E2 then briefly returned to ask what was inside the box and looked inside with the child to confirm before beginning the next trial. On the second familiarization trial, E1 looked inside the box herself and told the child that there was a flower in the box, which was consistent with E2's belief on that trial (Agreement, Tell).

The four test trials followed the same procedure as familiarization trials: E2 stated her belief, left, and the child either saw or was told the contents of the box. For half of the children, the contents were consistent with E2's belief (Agreement condition), and for the other half they were inconsistent (Disagreement condition). E1 always repeated both E2's belief and what was really inside the box to ensure children noticed whether they matched. The box was then hidden in the gift bag. In a counterbalanced order, each child experienced two *see* trials, in which they looked inside the box themselves and discovered the contents of the box, and two *tell* trials, in which E1 looked inside the box and informed the child about the contents of the box.

E2 returned and asked what was inside the box. In the Agreement condition, she agreed and re-stated her belief ("Yeah, I think it's a rubber duck inside. I think it's a rubber duck inside"). In the Disagreement condition, she disagreed and re-stated her belief ("I don't think it's a pair of socks inside. I think it's a toy car."). She then asked how the child learned what was inside the box (source memory question) and what colour the box was (perceptual memory question). The order of these two questions was counterbalanced.

Coding was performed live by E1 for English-speaking children and from transcripts of video recordings by E2 for Turkish-speaking children. Twenty-five percent of the data were double-coded by another experimenter from the available codable videos. Intraclass correlation coefficients based on a two-way random effects model were 0.74 (English-speaking) and 0.99

(Turkish-speaking). The accuracy for Content memory question ("what is inside the box?") was 97%, so this was not analyzed further. For the two critical questions:

- Source memory question ("how did you learn it's a [object] inside the box?"): A correct response required children to correctly indicate that they saw or heard about the contents of the box (e.g., "I saw/heard X", "She told me"). Non-responses were coded as incorrect. If children did not provide a relevant answer, E2 repeated the question twice. As a follow-up question (coded separately), children also answered a forced-choice question "did you see it yourself or did you hear it from her?".
- Perceptual memory question ("what colour was the box?"): A correct response required children to provide the correct color.

Transparency and Openness

This study's design, hypotheses, and analysis plan were preregistered (https://osf.io/8bcq3/ and https://osf.io/bysv4/). All data presented in the manuscript, analysis code and outputs, and full scripts for the study are available on OSF (https://osf.io/ydtcq/).

Results

We ran generalized linear mixed-effects models (GLMMs) for source memory and perceptual memory. We first report an exploratory model including fixed effects for linguistic group (English or Turkish, contrast-coded), Condition (Agreement/ Disagreement, contrast-coded), Source (See/Tell, contrast-coded), Age (in months, centered), all interactions, and the random intercept for each participant. Following our preregistration, we then report these models separately for the English-speaking and Turkish-speaking samples. We followed up on significant effects with Wilcoxon Signed-Rank and Wilcoxon-Mann-Whitney tests between

subgroups of interest. We deviate slightly from our preregistered plan by not removing non-significant fixed effects from the models to better facilitate future comparisons to this work.

Source Memory

There was a significant 4-way interaction between Language, Age, Condition, and Source. See Table 1 for the full model. We report the preregistered simple effects grouped by Language here and simple effects grouped by Age in Supplementary Material B.

English-speaking children's recall accuracy depended on a three-way interaction between age, source, and condition. When we computed the model separately for 3- and 4-year-olds, we found a significant interaction between source and condition for 4-year-olds (see Table 2). As shown in Figure 3A, 4-year-old English-speakers in the disagreement condition were significantly more accurate in see trials than in tell trials, $Z = -2.36$, $p = .018$, $r = 0.54$. Four-year-olds' source accuracy in the agreement condition did not differ between see and tell trials, $Z = 1.81$, $p = .070$, $r = 0.41$. Three-year-olds' recall did not differ by source, condition, or their interaction, p's > .062.

Source Memory

Term	Est.	*SE*	*z*	*p*
Intercept	-1.32	0.38	-3.48	< .001
Source	0.88	0.27	3.24	.001
Condition	0.11	0.47	0.23	.822
Age	1.71	0.29	5.97	< .001
Language	-1.18	0.48	-	.014

			2.46	
Trial	0.12	0.11	1.10	.271
Language:Age	-0.91	0.50	-1.84	.066
Condition:Language	-0.04	0.94	-0.04	.965
Source:Language	0.77	0.53	1.45	.148
Source:Age	-0.13	0.29	-0.44	.658
Condition:Age	-0.42	0.49	-0.85	.397
Condition:Source	-2.08	0.55	-3.80	< .001
Condition:Source:Age	-1.32	0.59	-2.23	.026
Condition:Language:Age	0.39	0.98	0.40	.692
Condition:Source:Language	-0.31	1.06	-0.30	.768
Source:Language:Age	0.37	0.59	0.63	.532
Condition:Source:Language:Age	4.17	1.21	3.45	.001

Perceptual Memory

Term	**Est.**	***SE***	***z***	***p***
Intercept	1.20	0.27	4.43	< .001
Source	0.25	0.20	1.23	.217
Condition	0.01	0.28	0.05	.963
Age	0.49	0.15	3.40	.001
Language	0.02	0.28	0.07	.946
Trial	-0.05	0.09	-0.52	.600
Language:Age	0.56	0.29	1.96	.050
Condition:Language	0.22	0.55	0.40	.689
Source:Language	-0.04	0.41	-0.10	.923
Source:Age	0.11	0.21	0.51	.608
Condition:Age	-0.21	0.29	-0.74	.458
Condition:Source	-0.10	0.41	-0.25	.806
Condition:Source:Age	0.00	0.42	0.01	.995
Condition:Language:Age	-1.30	0.58	-2.24	.025
Condition:Source:Language	0.30	0.81	0.37	.712
Source:Language:Age	0.12	0.42	0.28	.780
Condition:Source:Language:Age	-0.63	0.84	-0.75	.455

Table 1. Results of GLMMs for Source Memory and Perceptual Memory, including Language (Turkish-Speaking or English-Speaking) as a predictor.

	English-Speaking Sample					Turkish-Speaking Sample				
Source Memory	**Term**	**Est.**	***SE***	***z***	***p***	**Term**	**Est.**	***SE***	***z***	***p***
	Intercept	1.22	0.55	2.20	.028	Intercept	1.45	0.53	2.76	.006
	Source	0.52	0.39	1.33	.185	Source	1.24	0.38	3.23	.001
	Condition	0.12	0.71	0.17	.862	Condition	0.09	0.64	0.14	.889
	Age	2.27	0.47	4.81	< .001	Age	1.21	0.35	3.42	.001
	Trial	0.31	0.16	1.88	.060	Trial	0.05	0.15	0.30	.763
	Age:Source	0.32	0.47	0.68	.495	Age:Source	0.06	0.37	0.15	.880
	Age:Condition	0.65	0.76	0.84	.399	Age:Condition	0.21	0.65	0.33	.741
	Source:Condition	2.02	0.80	2.51	.012	Source:Condition	2.19	0.76	2.89	.004
	Age:Source:Condition	3.56	0.99	3.58	< .001	Age:Source:Condition	0.74	0.74	1.01	.314
Perceptual Memory	**Term**	**Est.**	***SE***	***z***	***p***	**Term**	**Est.**	***SE***	***z***	***p***
	Intercept	1.50	0.42	3.60	< .001	Intercept	0.93	0.35	2.64	.008
	Source	0.29	0.29	1.01	.311	Source	0.21	0.28	0.75	.455
	Condition	0.10	0.45	0.22	.825	Condition	0.12	0.35	0.34	.737
	Age	0.22	0.23	0.99	.321	Age	0.71	0.19	3.74	< .001
	Trial	0.13	0.13	0.99	.323	Trial	0.02	0.12	0.21	.838
	Age:Source	0.05	0.29	0.17	.868	Age:Source	0.15	0.30	0.50	.615
	Age:Condition	0.50	0.45	1.10	.271	Age:Condition	0.79	0.37	2.14	.033
	Source:Condition	0.27	0.58	0.47	.636	Source:Condition	0.05	0.57	0.09	.929
	Age:Source:Condition	0.35	0.58	0.60	.548	Age:Source:Condition	0.29	0.60	0.48	.634

Table 2. Results of GLMMs for Source Memory and Perceptual Memory by Linguistic Group.

For Turkish-speaking children, there was no 3-way interaction, nor any interactions with age. There was a significant source by condition interaction, a main effect of source and a main effect of age (see Table 2). Children's recall accuracy was better for see over tell trials in the disagreement condition, Z = -3.13, p = .002, r = 0.50. Children's accuracy did not differ in see and tell trials in the agreement condition, Z = -0.60, p = .547, r = 0.10, see Figure 3B. Older children were more likely to provide the correct source.

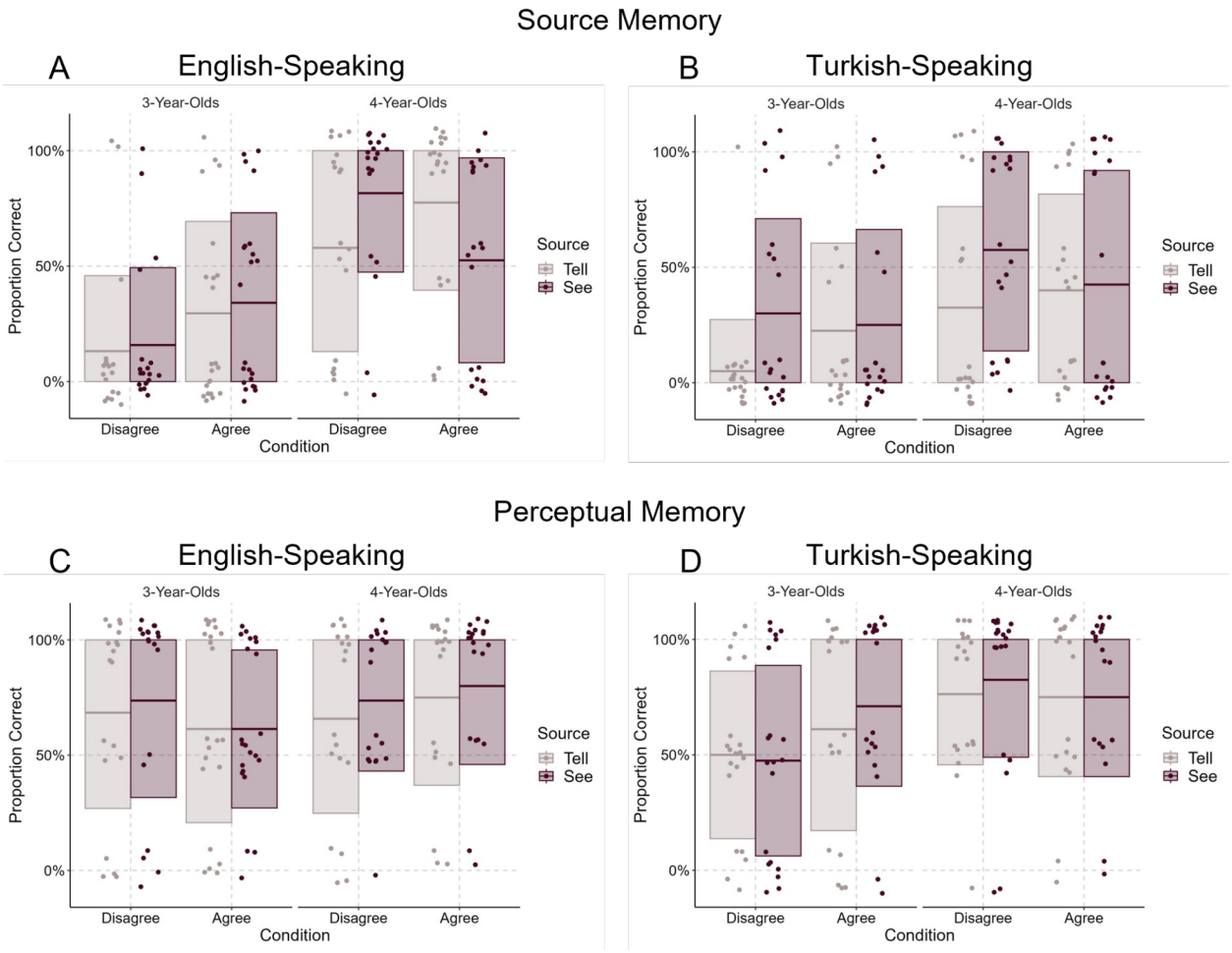

Figure 3. Proportions of trials where children recalled the correct source. Boxplots represent means and standard deviations, dots are individual data points (randomly jittered for visibility).

Perceptual Memory

There was no significant 4-way interaction between Language, Age, Condition, and Source, but there was a significant 3-way interaction between Condition, Language, and Age. See Table 1 for the full model. We report the preregistered simple effects grouped by Language here and simple effects grouped by Age in Supplementary Material B.

English-speaking children's perceptual memory did not significantly differ by source, condition, age, or their interactions (see Table 2 and Figure 3C).[1]

For Turkish-speaking children, there was no 3-way interaction, nor any interactions with source. The model included a significant age by condition interaction and a main effect of age (see Table 2 and Figure 3D). Specifically, 4-year-olds were equally accurate in their perceptual memory in agreement and disagreement conditions, $Z = 0.67$ $p = .501$, $r = 0.11$; whereas 3-year-olds were more accurate in their perceptual memory after agreement than disagreement, but this difference was only marginally significant, $Z = -1.92$, $p = .055$, $r = 0.30$.

We report additional analyses in the Supplementary Materials, including analyses of two additional dependent variables (Source Mentioned and Source Memory Recognition), and robustness checks.

Discussion

Communicating our sources provides crucial information to others about the reliability of our beliefs, enabling better resolutions for disagreements. This critical function is argued to be a key motivator for our cognitively complex system for explicitly representing the history of our knowledge (Nagel, 2015). Here, we examined several predictions of this social account of

1 Our preregistered plan was to exclude trials in which children did not know the correct colour word in the assessment at the end of the study. As this was not conducted in the Turkish-speaking sample, we report the results here with all children included, and report the analysis as preregistered in Supplementary Material C.

metacognition by asking English and Turkish-speaking children to recall sources and perceptual features when faced with an agreeing or disagreeing interlocutor. Our findings provide some support for the social account of metacognition.

One key prediction was that expecting a disagreeing interlocutor should encourage children to remember their sources. We did not find a generally-improved source memory in the disagreement condition compared to the agreement condition, as did Mahr et al. (2021). Instead, disagreement selectively privileged *first-hand* sources (seeing the object yourself) over second-hand sources (hearing about it from the experimenter) in 4-year-old English-speaking and 3- and 4-year-old Turkish-speaking children. These results point to a nuanced relationship between disagreement and source memory: first-hand sources are more valuable in disagreement than in agreement and are more important to share in that context than second-hand sources. When children's claims have good evidential strength, they are more likely to mention the sources of their claims during disagreement (see Hartwell et al., 2022; Köymen & Tomasello, 2018).

Another prediction was that children younger than 4 years old might accurately refer to information sources in the context of disagreements, particularly for Turkish-speaking children who hear and produce source information more frequently through the obligatory use of evidential markers. In support, Turkish-speaking 3-year-olds, but not English-speaking 3-year-olds, showed the same pattern as 4-year-olds and were more likely to correctly remember that they saw the object when facing disagreement compared to agreement. Thus, 3-year-old Turkish-speaking children communicate the evidential strength of their claims in the context of disagreement, when their claims were based on first-hand observation (in the see trials). This finding is consistent with the literature that the evidential marker for direct observation *-di* is used more frequently than the evidential marker for indirect observation *-miş* (Aksu-Koç et al.,

2009). Unlike previous studies that show an advantage for Turkish-speaking children in communicating the source information (Özkan et al., 2024), however, in this study we explicitly coded whether children used the verbs “see” and “hear” to make a fair comparison with English-speaking children, as English-speaking children had to rely on these verbs in multi-clause sentences to communicate source information. It should be noted that it is optional and redundant to use these verbs in Turkish if evidential markers are used. Rather, these verbs are used to further “emphasize” the source of their knowledge in an interpersonal context. This suggests that Turkish-speaking children may use evidential markers not only because their language forces them in certain contexts, but because they are intentionally marking and emphasizing source information.

Although our results are in line with previous studies that have shown that Turkish-speaking children distinguish between direct and indirect observations in their speech around age 3 (Aksu-Koç, 1988; Kandemirci et al., 2023; Özkan et al., 2024), some studies suggest that Turkish-speaking children do not reliably distinguish the functions of direct and indirect evidential markers when other people use them until about age 6 (Ozturk & Papafragou, 2016; Ünal & Papafragou, 2016, 2020), suggesting a production–comprehension asymmetry. This begs the question why learning a language with obligatory evidential marking would facilitate source monitoring before this system is fully acquired. This production–comprehension asymmetry could perhaps be explained through children’s perspective-taking skills (Ünal & Papafragou, 2020). Whilst the production of the evidential markers requires monitoring the speaker’s own information sources (what the speakers themselves witnessed versus heard) as the children in our study did, the comprehension of these markers requires representing *someone else*’s perspective and their information sources, making the latter more demanding for young children.

Our findings also have implications for children's advanced argumentative skills. Previous research suggests that children younger than 5 years speaking English or German (languages without evidential marking) often do not mention their information sources when supporting their claims, termed as "metatalk" (Hartwell et al., 2022; Köymen & Engelmann, 2022; Köymen & Tomasello, 2018). In our study too, 4-year-old English-speaking children produced so-called metatalk and explicitly mark the evidential strength of their claims (e.g., "I saw/heard …"). This is also the youngest observed age for children producing metatalk without speaking a language with obligatory evidential marking (see also Mahr et al., 2021).

Another key prediction was that the effect of disagreement should be specific to source memory, and not lead to general improvements in memory. The current findings support this prediction. Memory for perceptual features was not more accurate when the interlocutor disagreed than when they agreed, and there was no influence of source (see or tell). If anything, this effect was in the opposite direction for Turkish-speaking 3-year-olds, with slightly higher memory accuracy in the agreement condition, but this difference was not statistically significant. Thus, our findings underscore the privileged link between disagreement and source memory beyond a generic attentional mechanism following disagreement. Based on the social account of metacognition, this is consistent with disagreements heightening a need for justification, though we acknowledge that this mechanism is an assumption of our study rather than something explicitly verified.

In contrast to the procedure by Mahr et al. (2021) where children disagreed with a puppet, children in the current study disagreed with an adult experimenter. Children tend to avoid prolonged disagreements or provide reasons for their claims with adult partners, as compared to partners that they perceive as equal such as a peer or a puppet, due to adults' superior general

knowledge and authority (Mammen et al., 2019; Piaget, 1932). Our findings again highlight the nuanced context of disagreement in which children justify their claims for an adult when their claims are based on first-hand observation, even if this claim contradicts their adult partner's claim. Future studies could investigate how the identity of different interaction partners influences children's source memory performance.

One concern could be that because the default past tense marker "-di" in Turkish marks what the speaker witnessed and the instructions included some past tense sentences, such use of the direct evidential markers might have drawn Turkish-speaking children's attention to communicating about information sources more than English-speaking children. To avoid this confound, the places we used past tense sentences also involved lexical markers about information sources so that we would not disadvantage English-speaking children. We paid special attention to match these in the critical questions in which we ask, for instance, "How did you find out it's a flower inside the box?/ *Kutunun içinde çiçek olduğunu nasıl anladın?*" to make questions equally suggestible across the two languages (Aydin & Ceci, 2013). Since these questions directly ask children to monitor their information sources and when such lexical markers of source information are included, Turkish- and English-speaking preschoolers interpret the sentences the same way (Özkan et al., 2025), we believe that the usage of evidential marking in these past tense questions did not disadvantage English-speaking children in anyway.

Together, these results provide support for social accounts of metacognition with some important qualifications. The context of disagreement *did* privilege children's memory for sources when children's claims had strong evidential strength, i.e., when these claims were based on first-hand observation. Disagreement seems to prompt children to monitor their source knowledge and share whether they have first-hand evidence. We saw this pattern in both

English- and Turkish-speaking children, although this emerged earlier in Turkish-speaking children (at age 3). This points to cultural features, which could include language with obligatory evidential marking, as facilitators of source monitoring and communicating source information at younger ages.

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