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Embodying epistemic responsibility
The interplay of gaze and stance-taking in children's collaborative reasoning

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The study explores how children deploy gaze and embodied epistemic stance displays to establish a mutual epistemic responsibility when dealing with potentially controversial questions. Drawing on video recordings of 24 peer interactions involving children aged 9–12 years, the sequential and multimodal analysis describes the practices that construct intercorporeal participation frameworks for collaborative reasoning. Findings demonstrate that children coordinate gaze and multimodal displays of epistemic stance to mobilize co-participants' attention toward their position, while at the same time subjecting it to negotiation. Furthermore, children recruit the current speaker's gaze to issue a friendly challenge to his/her pre-determined stance. When the mutual epistemic responsibility was at stake, children occasioned a *recalibration* of stance displays at the earliest possible place. The children's embodied participation frameworks thus reflect their orientation to knowledge as being socially constructed.

Keywords: collaborative reasoning; gaze; epistemic stance; epistemic responsibility; intercorporeal participation framework

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Introduction

In revealing how participants negotiate what counts as knowledge and who is entitled to possess knowledge, ethnomethodological and conversation analytic studies have shown that the 'morality of knowledge' (Stivers, Mondada & Steensig, 2011, p. 19) is an intrinsic and common feature of everyday social interaction, as it is built into and grows out of the basic structure of discourse (Bergmann, 1998). The present study explores how children deploy gaze and epistemic stance displays to establish a mutual epistemic responsibility when dealing with potentially controversial questions. It seeks to show that the coordination of gaze and epistemic stance markers is crucial for organizing participation frameworks (Goodwin, 2003, 2007) that allow for the friendly challenging, support and interactive ratifying of claims.

When moral issues or divergent claims become manifest in discourse, participants usually draw on sedimented discursive practices for dealing with them (Luckmann, 1986; Quasthoff, Heller & Morek, 2017), such as disputes and conversational argumentation. These practices are also ubiquitous in children's peer interaction (e.g. Church, 2009; Cekaite, 2014; Corsaro & Rizzo, 1990; Goodwin, 1982; Morek, 2015). Previous research on peer disputes provides insights into their sequential organization (Maynard, 1985) and highlights their function for negotiating the social and moral order (Danby & Theobald, 2012; Evaldsson, 2007; Goodwin & Kyratzis, 2007; Morek, 2015; Bateman & Roberts, 2018; Holm Kvist, this volume; Björk-Willén, this volume), as well as discursive learning (Zadunaisky Ehrlich & Blum-Kulka, 2014). The question of whether children also draw on argumentation as a vehicle for constructing knowledge or reaching knowledge-based decisions has received only little attention in child interaction studies so far.

Conversation analytic studies have established that interlocutors engage in two practices when dealing with (potentially) diverging positions. They either *constitute a dissent* by producing a claim as a first turn and a challenge or opposing position as a second turn (e.g. Coulter, 1990; Goodwin, 1982; Maynard, 1985) or *problematize* (i.e. put a claim up for negotiation or raise a question; e.g. Pontecorvo & Fasulo, 1997; Sterponi, 2009; Heller, 2014). Whereas the first practice frames the activity as persuasive and competitive, the second practice contextualizes the activity as collaborative reasoning. These frames entail different epistemic orders that are also relevant in

whether and how reasons are produced. In competitive frames, reasons are mainly provided for asserting one's own claim, whereas cooperative frames entail reasons being jointly scrutinized to explore the validity of claims (Ehlich, 2014; Quasthoff, Heller & Morek, 2017).

Within the field of education, collaborative reasoning is assumed to be particularly relevant for the construction of (scientific) knowledge and learning in general. Experimental studies show that children of different ages are sensitive to different argumentative contexts. Children who are exposed to cooperative contexts produce not only more arguments, but also more 'two-sided' arguments than children who are prompted to win over their interlocutor (Domberg, Köymen & Tomasello, 2017; Garcia-Mila, Gilabert, Erduran & Felton, 2013). While these studies show that children are sensitive to different argumentative contexts, they do not examine the kinds of contexts that children themselves create when dealing with alternative viewpoints and the kinds of resources they recruit for doing so. However, findings by Hauser and Luginbühl (2017) concerning children's argumentations between grade 2 and 6 show a parallel increase in weighing proposals and the use of modal adverbs and subjunctives. This indicates that epistemic stance displays might be an important resource for engaging in collaborative reasoning.

Building on these observations, the present study focuses on the interplay of epistemic stance and gaze in collaborative reasoning. Epistemic stance displays enable speakers to mark a position as hypothetical (i.e. as just one possible perspective on a problem), and thus to invite co-participants to share their views. Gaze is an important resource to monitor how a position is being received and to observe how other speakers are modulating their stances by means of facial and other bodily displays. Mutual gaze can be used to interactively calibrate stances and thus minimize the risk of confrontational opposition. Drawing on conversation analysis and multimodal analysis, the paper examines in detail how children coordinate epistemic stance displays and gaze for establishing *intercorporeal* participation frameworks (Goodwin & Cekaite, 2013); that is, publicly visible configurations that embody the activity they are created for. The following section discusses empirical findings on the interplay of epistemic stance and gaze. I then introduce the data and explicate the analytical approach. Three extracts are then examined to describe the bodily and linguistic resources on which children draw to create an epistemic order in which all participants are jointly responsible for solving the problem.

Different practices are reconstructed that are either deployed by the speaker in the opening turn, or, when mutual epistemic responsibility is at risk, by a recipient in the second turn. Findings are discussed with regard to the role multimodal resources play in creating intercorporeal participant frameworks for collaborative reasoning and orienting toward knowledge as being socially constructed (Schütz, 1953).

The interplay of epistemic stance and gaze

As a pervasive phenomenon of everyday social interaction, epistemic stance (Kärkkäinen, 2003) refers to the position a speaker conveys both 'towards a piece of information in a particular domain of knowledge' and 'with respect to one another as concerns who knows what and how they came to know it' (Couper-Kuhlen & Selting, 2018, p. 3). Conversation analytic studies have studied epistemic stance in relation to epistemic statuses, i.e. the jointly recognized, relative stable knowledgeability of one participant with respect to another concerning a particular domain of knowledge (Heritage, 2012). By constantly adjusting their epistemic stances with respect to one another, participants produce what has been called a 'K+/K− seesaw' (ibid., p. 45) and constantly determine 'who knows best' (Sidnell, 2012, p. 304).

With a somewhat different focus, C. Goodwin (2007) shows that stance-taking also operates on a different order of interaction. He demonstrates that epistemic and affective stances, together with bodily arrangements and gaze, are central to the framing and organization of larger activities such as doing homework. From this perspective, epistemic stance forms a critical resource for creating a participation framework, i.e. a 'dynamic frame that indexically grounds the talk and embodied action occurring within it' (Goodwin, 2007, p. 57). As Kendon (1985) shows, the only way participants can know how co-participants are taking the situation is by observing the cues they provide. Epistemic stance displays, in their capacity to index the position a speaker takes toward participants' relative knowledge, provide cues to the epistemic order that may, for example, frame the activity-in-progress as either collaborative or confrontational. Likewise, body postures, head movements and gaze are resources for establishing intercorporeal participation frameworks that – by virtue of embodying the activity they are created for – also serve as framing devices (Goffman, 1959).

Recent studies focus on the interplay of gaze and epistemic stance-taking. Haddington's (2006) study of assessments in multi-party settings shows that together with language, gaze is not only used to create a shared participation framework but also to construct a (convergent or divergent) position in relation to the positions proposed by co-participants. Gaze aversion, like linguistic devices for mitigation, is frequently deployed for projecting dispreferred responses. Kendrick and Holler (2017) find that gaze aversion by respondents can occasion self-repair by questioners in the transition space between turns, and Iwasaki (2015) shows that speakers halt an unfolding turn right after the assessable, shift gaze to the recipient and thus create an 'interactive turn space' for the recipient to produce the next item. These practices enable the interlocutors to calibrate and eventually align their stances.

Aside from speaker and addressee selection (Argyle & Cook, 1976; Auer, 2017; Goodwin, 1982; Kendon, 1967) and the organization of activities (Goodwin, 2007; Rossano, 2012), gaze also serves as a resource for the construction of socially affiliative or disaffiliative actions. Gaze direction thus seems to be a 'positionally sensitive signal the function of which depends on the specific context in which it occurs and the organizationally relevant order(s) of interaction at that position' (Kendrick & Holler, 2017, p. 29).

With regard to gaze behaviour in preschoolers, Krantz, George and Hursh (1983) found that gaze-related utterances were longer and more likely to receive a relevant response. The authors propose that gaze and mutual gaze play an important role in the development of conversational competence. There are no studies, however, on how children deploy gaze in their self-organized problem-solving activities.

Data and method

The data for this study come from video recordings of 24 peer interactions between 90 mono- and multilingual children aged 7–12 years. All children attended inclusive classes in primary and secondary schools (grade 2, 3, 4 and 6) in Germany. Within the school setting, groups of three to five children were asked to deal with two problem scenarios. The first scenario (which is the focus of the present paper) entailed a shipwreck and required children to decide on three essential survival items; the second scenario concerned a moral dilemma. Both scenarios allowed for a variety of solutions; it was therefore likely that the children's positions would diverge.

Each scenario was introduced by an adult and was also described and graphically illustrated on a handout that was made available throughout the activity. The adult left the room after introducing the scenario. The video recordings of the first problem scenario comprise 98 minutes in total, those of the second scenario 112 minutes.

Since the present study is not interested in phenomena of language acquisition but aims to reconstruct general ways of coordinating multimodal epistemic stance displays and gaze in collaborative reasoning activities, the analysis concentrates on older children (9–12 years). Based on preliminary analyses, six interactions (totalling 24 minutes) that are exemplary for collaborative reasoning were selected. Analysis focuses on the beginning of the activity, when the children were figuring out how to deal with the scenario.

The analysis of epistemic stance displays attends to lexical markers (e.g. modal adverbs and particles, verbs of cognition) and morphological (e.g. subjunctive) markers of epistemic modality, syntactical formatting, tag questions, collaborative turn completions, as well as gestures and facial displays. Instead of focusing on a single epistemic marker and its interactional use and function, the analysis explores how diverse resources for displaying epistemic stances are combined to shape an epistemic and moral order for the joint activity.

Participants' gaze is analysed in terms of *systems* (Kendon, 1985), i.e. mutually established and temporarily sustained spatial-orientational formations of co-operative gaze. In the multi-party setting analysed here, there are different visual fields to which participants can orient themselves. As a speaker or recipient, they can orient themselves to the handout on the table, and if they do so at the same time, they establish a shared visual orientation. They can also establish mutual gaze or a joint orientation toward the speaker, or disalign with the shared focus on the current speaker by looking to the handout (or to elements in the classroom environment). In this way, they can display their attention to their own perspective or a co-participants' perspective.

The transcription follows the GAT 2 conventions proposed by Selting et al. (2011). For the six selected interactions, multimodal phenomena have been included in the transcripts. To represent relevant bodily actions and action components, stills were extracted from the videos and temporally aligned with the emerging verbal utterance. For reasons of anonymization, the stills had to be converted into drawings that capture the most relevant

features. With respect to gaze, the transcription system developed by Rossano (2012; see also Auer, 2017) was adapted. Mutual gaze between two participants is symbolized by a bold double arrow. One-sided gaze from the speaker to the hearer or vice versa is symbolized by a one-sided arrow pointing to the participant being looked at. When gaze is oriented to the handout on the table (symbolized by a square box) or somewhere else, this is also represented by arrows. Curled brackets mark the approximate duration of a gaze configuration.

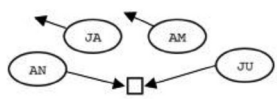
Speaker-initiated practices

This section describes how *speakers* mobilize their co-participants' attention in the opening turn of the sequence. In complex ways, they coordinate embodied and linguistic epistemic displays with turn-internal gaze to enlist their co-participants as co-problem-solvers in the activity. The analysis also shows how the recipients respond to this invitation.

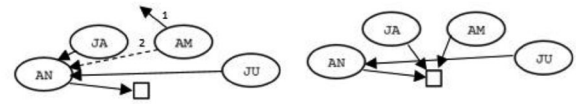
Mobilizing co-participants' (visual) attention through an embodied display of 'doing thinking' and displaying a not-yet-determined epistemic stance

The following extract represents the beginning of the children's activity. The adult has introduced the problem and left the room. By performing a thinking face and producing an epistemic bracket (entailing a preface and tag question), the first speaker, Annika, puts her position up for negotiation.

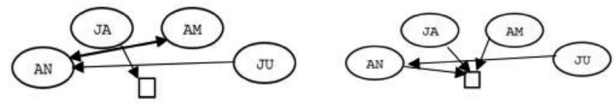
Extract 1
(AN: Annika; AM: Amila; JA: Jarina; JU: Julia)



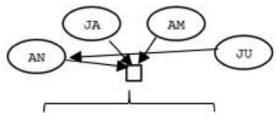
041 AN ((thinking face))



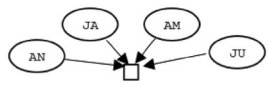
042 wenn man |das !SO! sehen würde,= |
if one would look at it this way
|((points toward handout)) |



043 =dann braucht man doch immer ein DACH überm kopf-
then one always needs a roof over one's head



044 JA JA.=
yes



045 AN das |ZELT (.) | nimmt man doch
(so) one certainly takes
|((points 2x at tent))|

(dafür) (.) ganz bestimmt mit; =oder?
the tent, right?

((...))

051 AM also ein ZELT braucht man auf jeden fAll-
so in any case one needs a tent

Before she starts speaking, Annika performs a thinking face (i.e. a facial gesture that speakers produce, for instance, when searching for a word; Goodwin & Goodwin, 1986). While gazing silently at the handout, Annika cups her chin in her hand and frowns. The publicly visible performance mobilizes the visual attention of her co-participants who are temporarily turned into an audience. The performance is charged with epistemic meaning: remaining silent and refraining from other bodily or verbal actions, it conveys that something is going on 'within the person', with the self-touch and the frown instructing the audience members to locate this event 'within the head' of the performer. By embodying an action that the co-participants can easily interpret as 'thinking', the facial expression assumes a modal function (Bavelas et al., 2014) and serves as a framing device. The framing is related to organizational problems on multiple interactional planes: first, on the level of the *turn-taking organization*, the performance of 'doing thinking' indexes that Annika is about to share her thoughts and projects that she is going to take the first turn. Secondly, with regard to *action formation*, the thinking face provides a cue for the audience members as to what kind of action the turn will be doing; the prolonged embodiment of 'doing thinking' functions as an epistemic marker with which Annika exhibits a thoughtful stance toward the task. This instructs the co-participants to expect the ensuing action to encompass a disclosure of both a choice and the 'thoughts behind it'. Thirdly, on the level of the *activity*, the placement of the embodied display at the beginning of the sequence projects how the performer conceptualizes the nature of the joint project, namely as one that involves thorough thought.

Furthermore, the facial display mobilizes the co-participants' gaze. The moment Annika starts speaking, Jarina and Amila (who had been looking at the adult leaving the room), and Julia (who was already looking at the handout), shift their gaze toward her. The participants have created a facing formation (Kendon, 1967), with all recipients gazing at the speaker and the latter gazing at the handout. The thinking face thus prevented the recipients from establishing a competing focus of attention toward the items on the handout and from coming up with their own choices. Instead, it arouses their attention for the perspective Annika is about to formulate. By aligning their visual focus, the recipients produce a publicly observable display of their orientation toward the current speaker's perspective. Within these first one and half seconds, the participants have created an intercorporeal framework for mutual orientation that allows for collaborative reasoning.

Pointing toward the handout, Annika formulates her position and at the same time invites her co-participants to critically scrutinize her perspective. This is achieved by bracketing the multi-unit turn with a metadiscursive preface (line 42) and a tag question (line 45). The preface is built on the sedimented projector construction (Couper-Kuhlen & Selting, 2018, p. 487) 'if one would look at it this way'. The conditional clause and epistemic use of the perception verb 'look', together with the subjunctive, build an epistemic frame for the second part of the utterance, which is marked as hypothetical. The preface enables the speaker to distance herself from the position and contextualize it as a proposal. When speakers make a proposal, they present a proposed action or decision as contingent upon the recipients' approval (Sidnell, 2012; Stevanovic, 2012). With this, the speaker conveys that the co-participants have the right and responsibility to be involved in the decision-making process. Projecting a proposal with a preface, Annika calls for the co-participants' independent judgment even before the proposal is actually delivered. The co-participants are thus established as fellow thinkers.

To formulate her premise, Annika draws on an idiom (line 43: 'roof over one's head') and the modal particle 'doch' (which has no English equivalent). The turn-internal 'doch' is a linguistic resource that meta-pragmatically instructs the recipients to update common ground (Pittner, 2007). Activating knowledge that is marked as belonging to the shared argumentative background prompts the recipients to dismiss alternative views. The modal particle thus functions as an epistemic stance marker that serves to invalidate potential divergent views before they can be given and conveys the speaker's expectation that her co-participants will accept the premise. Annika's gaze toward Amila, however, indicates the speaker's assumption that the premise cannot be taken as valid, but needs to be ratified by the other interlocutors. While formulating the premise, Annika withdraws her gaze from the handout and orients it toward Amila, who also gazes at her. This mutual gaze enables Annika to address her statement to one particular participant (Auer, 2017) and monitor how her premise is received (Iwasaki, 2015).

After Jarina has acknowledged the premise (line 44), Annika formulates a consequence (line 45). By pointing twice to the tent, she directs the co-participants' gaze to the item, which is now seen in light of the premise that it provides a useful roof (only Amila looks to the adult, who is closing the door). As with the premise, the consequence is furnished with

an epistemic stance marker (the modal adverb 'bestimmt' – 'certainly') that strengthens her claim. The strong stance is immediately calibrated, however, through a tag question. Heritage and Raymond (2005) show that tag questions in first assessments downgrade an epistemic claim and cede responsibility. Using a tag question, Annika indicates that her position should be heard as a proposal that needs to be interactively ratified. Her turn-final tag question forms the second part of the epistemic bracket with which she invites the other co-participants as fellow thinkers. With this, she invokes a '*reciprocal obligation to provide reasons*' (Heller, 2014, p. 139), i.e. the mutual 'epistemic responsibility' (Stivers et al., 2011, p. 17) for solving the problem by both justifying and critically scrutinizing proposals. At the end of this utterance, all participants gaze again at the handout. In this way, they are treating the turn as complete (Kendon, 1967). Taking the next turn, Amila produces a second to Annika's proposal. She confirms the usefulness of the tent, using the epistemic marker (line 51: 'auf jeden Fall' – 'in any case'), and then providing a reason (not shown in the transcript). With that, she has not only aligned with Annika's position, but also demonstrated her commitment to the discursive norm of giving reasons.

The analysis shows that the interplay of gaze and epistemic stance is crucial for establishing an intercorporeal activity framework for collaborative reasoning. The embodied display of 'doing thinking' served to mobilize co-participants' visual attention and to prefigure the activity as one that involves thorough thought. Linguistic means such as epistemic brackets, modal adverbs and modal particles allowed Annika to display a tentative stance toward her own proposal. In conjunction with the turn-initial mobilization of the co-participants' attention to her perspective and the turn-internal mutual gaze, these linguistic resources enabled her to invoke a reciprocal epistemic responsibility for weighing the proposal.

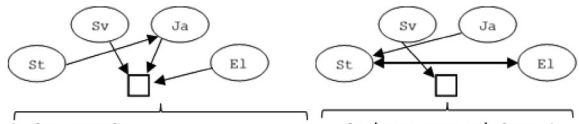
Mobilizing co-participants' (visual) attention by alternating gaze while displaying a strong epistemic stance

In addition to mobilizing co-participants' visual attention through embodied displays of 'doing thinking', speakers can deploy other practices to establish a framework for collaborative reasoning. In the next extract, the speaker uses alternate gaze throughout the turn and a turn-final pragmatic gesture to mobilize the co-participants' attention. The transcript begins after the activity has commenced; Jacqueline has stated that she had

already selected three items, though Svea blocked the disclosure of the choices (not shown in the transcript). Here, Stefan takes the next turn.

Extract 2

(ST: Stefan; SV: Svea; JA: Jacqueline; EL: Elena)

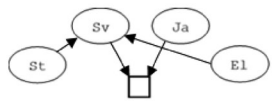


028 ST |=das HANdy bringt uns nichts,|
the mobile phone does not do it for us
|((points at mobile phone)) |

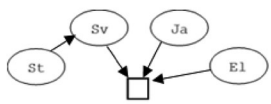
029 [|weil wir haben auf [der insel|] |keinen emPFANG; |
because there is no reception on the island
|((points at mobile phone)) | |((bilateral oh palm vert.))|

030 SV [|(weil wir ham da ja [schon mal) |]
cause we already have
|((oh palm vert. toward handout))| ((points toward handout))

031 EL [klar;]
sure



032 SV DAS stimmt;=
that's right



033 JA =ja JA;
yes yes

Stefan produces a claim (line 28) and immediately provides a reason (line 29), which is marked by the causal conjunction 'weil' ('because'). The

fact that there is no reception on the island provides a reason against the mobile phone. Both the claim and reason are delivered without verbal marking of epistemic stances. The verbal design of the utterance would suggest that the position is not being put up for negotiation, and appears to block further discussion. Taking gaze and gesture into account, however, a different picture emerges.

While pointing to the mobile phone on the handout, Stefan starts to speak and simultaneously alternate his gaze (Auer, 2017) between the participants. The different temporalities – the duration of the deictic gesture and the shorter gaze periods – allow for establishing reference while at the same time enlisting all recipients into the activity (also see the pronoun 'wir' – 'we' – and 'uns' – 'us'). Stefan first gazes at Jarina, who thereupon shifts her gaze from the handout to him. At this moment, he directs his gaze to Elena, with whom mutual gaze is established. Overlapping with the final component of his turn, Stefan then looks to Svea, who indicates that she is ready to take the next turn by moving her hand toward the handout and maintaining her visual orientation. By alternating gaze throughout the production of the opening argument, the speaker manages to mobilize his co-participants' attention to his position (instead of coming up with their own choices), and to monitor how it is received. In so doing, he also conveys that his position still needs to be ratified by his co-participants.

The need for ratification is also embodied by Stefan's turn-final gesture. His two hands are held open, slightly cupped, with the palms facing each other. During the gesture, the hands are further opened so that the palms point upwards; this movement is coordinated with the semantic core-element of the utterance 'no reception' and embodies that a reason is presented and offered. Afterwards, the hands are again held in lateral position. This pragmatic (Kendon, 2004; Müller, 2004) or speech-handling (Streeck, 2009) gesture has a modal function: it alters 'in some way the frame in terms of which what is being said in the utterance is to be interpreted' (Kendon, 2004, p. 159), i.e. it conveys the speaker's epistemic stance. According to Kendon (2004) and Müller (2004), Open Hand Supine (or 'palm up') gestures constitute a gesture family. Their core function is to present an abstract discursive object as a concrete manipulable entity and to invite the interlocutors to join the perspective offered on the speaker's open hand. While the open hand supine with lateral movement marks the proposition expressed in the statement as obvious (Kendon, 2004, p. 277), the variant produced here – opening the hands and exposing the

palms, before moving them back into their lateral position – conveys a strong epistemic stance toward the reason, which is nevertheless offered for inspection. Furthermore, while producing the gesture, Stefan gazes at Svea, who now abandons her turn in which she, in overlap with Stefan, began to formulate a reason (line 30). In this moment, Jacqueline and Elena orient toward Stefan, whose gesture invites them to regard what is being said as having a provisional status and to produce a response. Overlapping with Svea and Stefan, Elena displays her agreement (line 31).

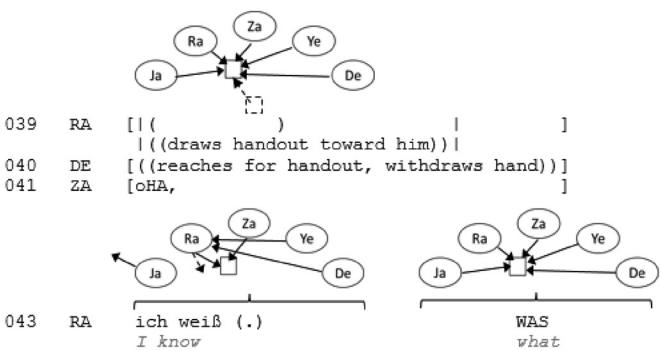
To summarize, Stefan has, like Annika, provided reasons by offering an unsolicited support for his claim. Compared to Annika, however, he displayed a stronger epistemic stance, risking establishing a unilateral epistemic responsibility (Heller, 2014) for the problem. Alternate gaze throughout the turn, coordinated with a turn-completive modal gesture, served to calibrate the stance display and offer the reason as an inspectable object. By visually orienting to the speaker's perspective, and joining in with contiguous responses and further reasons, the participants displayed a mutual epistemic responsibility for the problem and created an intercorporeal and epistemic framework for collaborative reasoning.

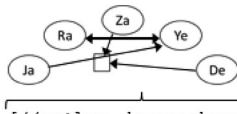
A recipient-initiated practice: Recruiting the current speaker's gaze and issuing a friendly challenge to his pre-determined stance

In the third extract, the *recipient* establishes an obligation to provide reasons after the first speaker has expressed a pre-determined epistemic stance and projected to provide a solution.

Extract 3

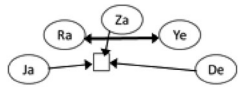
JA: Jan; RA: Rafik; ZA: Zarif; YE: Yeliz; DE: Deana)

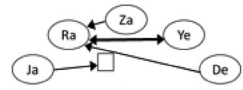




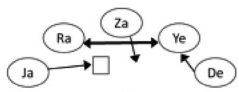
042 YE [((smiles, brows down)) ein HANdy;=]
a mobile phone

043 JA [äh ICH glaub]
uhm I think

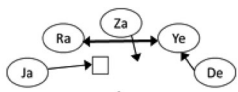


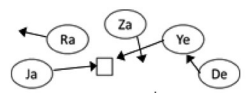


044 RA |=das HANdy |[|würde ich |][|nicht][nehmen;|]
I would not take the mobile phone
|points to mob.))| |((☺, wags head))| |((brows raised))|
045 YE [((smiles))][((nods))][leans back]

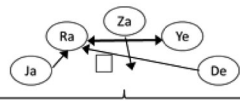


046 YE [=waRUM,]
why
047 ZA [JA,]
yes

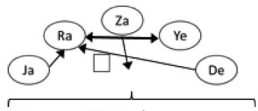




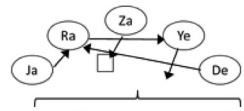
048 RA weil [es auf der insel-]
because on the island
049 YE [da können die doch HILfe,]
they can (get) help there



050 ZA KEIN em(.)[pfang;]
no reception
051 RA [in] der insel (.)
on the island

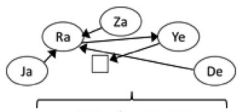


gäb es EH kein
there was no reception

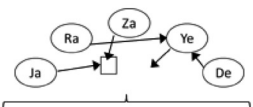


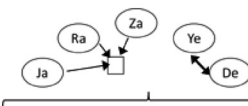
[empfang;=]

052 YE [((thinking face))]



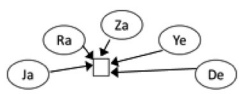
053 RA =und kein NETZ-
and no signal





054 was soll man dann [ma chen ohne] wLAN-
what should one do then without wifi

055 DE [<<laughing> und kein interNET->]
and no internet



056 YE =JA,
yes

By reaching for the handout faster (line 39) than Deana, (line 40) and drawing it toward himself, Rafik claims the opening turn. While gazing at the handout, he starts to state his position with the epistemic stance marker 'I know' (line 41). There are only few studies on the interactional functions of *I know*, and all of them focus on its use in responses. Here, *I know* has been described as claiming to already know what has been proposed (Gardner, 2001) or accepting the grounds of the initiating action, but, depending on the epistemic context, either resisting that action as unnecessary or endorsing it (Mikesell et al., 2017). By using *I know* in the opening turn, however, Rafik displays an already determined and non-negotiable epistemic stance. At this point, the other participants can anticipate that Rafik's turn will not initiate the collaborative work on arguments and that they are not going to be involved as co-problem-solvers.

Yelniz immediately orients herself toward him; her gaze first follows his gaze onto the paper and then shifts to his face. Coordinating a smile with a lowering of the eyebrows, she seems to 'knowingly gaze' at Rafik when she completes his turn with the noun phrase 'a mobile phone'. The

pre-emptive turn-completion of one speaker's turn constructional unit by a subsequent speaker transforms the turn into a collaborative sequence (Lerner, 2004). Although completions are not composed as a guess (e.g. with a try marker), they are treated by the original speaker as a candidate completion that can be accepted or rejected. In the present example, Yelniz completes a turn which the speaker started in order to state an individual choice. Since individual choices generally belong to the speaker's epistemic domain, the pre-emptive completion claims access to something only the speaker 'as subject-actor has rights and obligations to know' (i.e. a 'type 1 knowable', cf. Pomerantz, 1980, p. 187). It could be thus treated as an act of epistemic trespassing (Stivers et al., 2011; Heller 2017) into the speaker's domain of epistemic responsibility. Coordinating the completion with a smile, however, Yelniz displays a friendly affective stance (Cekaite, 2016) which calibrates the trespassing as a playful challenge.

The calibration of the trespassing is consequential not only for the framing of Rafik's response, but for rearranging the intercorporeal participant framework. In order to reject both Yelniz's assumption and her implicit claim of knowing his position, Rafik needs to do more than merely indicate disagreement, but produce a rejection (which he does in l. 44) and demonstrate primary access to his epistemic domain by disclosing the 'thoughts behind' his position (lines 48, 51–54). First, Rafik establishes mutual gaze with Yelniz. Thus, the 'friendly challenge' has prompted him to shift his visual orientation from the paper to one of the recipients. Furthermore, his rejection (line 44) is built with syntactic, morphological, prosodic and facial resources, which serve to display a positive emotional stance that mitigates his non-compliant move (cf. Cekaite, 2016). By placing the object ('HANdy' – 'mobile phone') at the turn-initial position and furnishing it with a focus accent, the speaker establishes contiguity and displays alignment. The polarity element ('nicht' – 'not') is thus shifted to the latest possible slot and does not receive prosodic stress. By using the subjunctive ('würd ich' – 'I would'), the speaker marks his position as hypothetical and invites the co-participants to scrutinize his position. Shaking his head while saying 'würd ich', he projects to the addressee that a rejection is to be expected. In this moment, Yelniz starts to smile, signaling that the rejection will not cause any offense on her side. Only now is the negation particle ('nicht' – 'not') produced and coordinated with a raising of the eyebrows, which marks the production of the non-compliant and unexpected element (cf. Peräkylä & Ruusuvuori, 2006). Having been prepared in this way,

Yelniz nods simultaneously and then leans back (line 45). Displaying a not-yet-determined epistemic stance and a friendly attitude, together with a syntactical design that mitigates the non-compliance, makes it possible for the addressee to anticipate the rejection and immediately indicate her positive reception. This way, Rafik and Yelniz skilfully negotiate their stances (cf. Iwasaki, 2015) and ensure that both the epistemic trespassing and its rejection do not cause any relational trouble.

By producing a 'friendly and playful challenge', Yelniz has established herself as an addressee and prompted Rafik to revise his epistemic stance. Consequently, the intercorporeal participant framework is rearranged in a way that allows for collaborative reasoning. By asking a why-question, Yelniz now establishes an obligation to provide reasons. Rafik complies with this obligation and begins to justify his position (line 48). In overlap, Yelniz formulates a counter-argument (line 49: 'they can bring help'). Although the arguments diverge, they are related to the same claim. After Zarif has completed an element of Rafik's turn (line 51), Rafik continues his justification. Throughout his justification (lines 51–53), he uses the subjunctive to frame his utterance as hypothetical. This is carefully combined with an epistemic particle 'eh' ('anyway'), that insinuates that the reason ('no reception') is obvious. Sustaining mutual gaze with Yelniz allows him to monitor how his justification is received. At the end of line 51, Yelniz shifts her gaze. By silently gazing into space and describing a circle with her pupils, she visibly displays to Rafik that she is inspecting his position. This facial expression can be seen as a variant of a thinking face; it encourages Rafik to continue and elaborate upon his justification (line 53). His final rhetorical counter-question (line 54) both exhibits a strong epistemic stance (particle 'denn') and asks for confirmation, which is in turn produced by Yelniz (line 56).

To sum up, a recipient-initiated 'friendly challenge' to the epistemic authority asserted by the first speaker occasioned both a recalibration of the epistemic stance and a rearrangement of the intercorporeal participant framework. Crucial for the success of this was the fact that dispreferred moves (the challenge and its rejection) were embedded within positively valorized affective stance displays, which served to mitigate the threatening acts. This enabled the participants to establish a mutual epistemic responsibility for solving the problem, and to work jointly on individual arguments, which were both challenged and collaboratively elaborated.

Discussion and conclusion

This study examined the interplay of multimodal epistemic stance displays and gaze in the opening of children's argumentations. The fine-grained analysis revealed that gaze and embodied displays of epistemic stance become important resources for children to create an epistemic order in which all participants share the responsibility for solving the problem and are committed to the discursive norm of giving reasons. Different practices have been described that were either deployed by the speaker in the opening turn or, when mutual epistemic responsibility was at risk, by a recipient who pre-emptively completed the speaker's turn. The practices served:

- to mobilize co-participants' (visual) attention for one's own perspective through turn-initial facial displays charged with epistemic meaning or alternate gaze throughout the turn;
- to subject a perspective to negotiation and monitor its reception by combining linguistic resources such as epistemic prefaces with turn-internal gaze;
- to make relevant contiguous responses through turn-completive tag questions or modal gestures and to enlist co-participants as co-problem-solvers; and
- to rearrange the epistemic order by means of a friendly challenge to a speaker's claim of epistemic authority, through the pre-emptive turn completion and valorized affective stance displays (smile).

The practices have important implications for our understanding of children's argumentation. The findings demonstrate that children are not only sensitive to different argumentative contexts (Domberg, Köymen & Tomasello, 2017; Garcia-Mila et al., 2013) but are also able to create contexts for collaborative reasoning on their own. Explicit and embodied displays of epistemic stance proved to be critical for the contextualization of the activity because they provided observable cues to the epistemic order. Likewise, the alignment of different gaze orientations provided publicly visible configurations of the activity-in-progress. The observability of these resources was crucial for establishing an intercorporeal participation framework, i.e. the development of an embodied 'working consensus' (Goffman, 1959, pp. 9–10) on the purpose and structure of the activity-in-progress.

Furthermore, the practices of the children examined in this study point to sophisticated abilities to interactively calibrate epistemic stances. By

coordinating linguistic, facial and gestural stance displays with gaze, the children *modulated* (Cekaite, 2016) their epistemic stance to enlist co-participants as fellow thinkers. When the mutual epistemic responsibility was at stake, they occasioned a *recalibration* of stance displays at the earliest possible opportunity. In this way, they minimized the risk of confrontational opposition and maximized the opportunities for collaborative reasoning. Most of the time, the children were oriented toward establishing an epistemic order in which no one was a priori ascribed a K+/K– status. Instead, everyone was committed to the reciprocal obligation to provide reasons. The moral order of this epistemic ecology allowed for weighing proposals, i.e. for interactively establishing what counts as valid and relevant knowledge for reaching a decision. The intercorporeal participation frameworks that the children created reflect their orientation to knowledge as being socially constructed (Schütz, 1953). This normative orientation toward knowledge became particularly evident when the participation framework was rearranged. The children thus acted as moral agents and used the discursive practice of argumentation as a vehicle not only for negotiating the social order (Danby & Theobald, 2012; Evaldsson, 2007; M. Goodwin & Kyratzis, 2007; Morek, 2015), but also for collaboratively constructing knowledge.

The children examined here (aged 9–12 years) were quite skilful in creating embodied participation frameworks for collaborative reasoning by coordinating gaze and multimodal displays of epistemic stance. Yet the extracts also point to differences in how children participate in collaborative reasoning; with regard to the entire data corpus, considerable age differences become apparent. Future research should therefore investigate how children with varying linguistic and cognitive resources deploy gaze and epistemic stance when dealing with (potentially) controversial questions and how these abilities are cultivated in the course of childhood and adolescence.

About the author

Vivien Heller is professor in German linguistics and their didactics at Wuppertal University. She received her PhD in linguistics from Dortmund University on genre repertoires and argumentative discourse practices in families and classrooms. Her research focuses on embodiment and coordination, language acquisition in typically and atypically developing children, and classroom interaction. Recent publications focused on embodied aspects of language learning, epistemic ecologies in the classroom and academic discourse practices.

References

Argyle, M., Ingham, R., Alkema, F. & McCallin, M. (1973). The different functions of gaze. *Semiotica*, 7(1), 19–32. https://doi.org/10.1515/semi.1973.7.1.19

Auer, P. (2017). Gaze, addressee selection and turn-taking in three-party interaction. *Interaction and Linguistic Structures*, 60, 1–32.

Bateman, A. & Roberts, P. (2018). Morality at play: Pretend play in five-year-old children. *Research on Children and Social Interaction*, 2(2).

Bavelas, J., Gerwing, J. & Healing, S. (2014). Including facial gestures in gesture-speech ensembles. In M. Seyfeddinipur & M. Gullberg (eds), *From Gesture in Conversation to Visible Action as Utterance* (pp. 15–34). Philadelphia, PA: Benjamins. https://doi.org/10.1075/z.188.02bav

Bergmann, J. (1998). Introduction: Morality in discourse. *Research on Language and Social Interaction*, 31(3–4), 279–294. https://doi.org/10.1080/08351813.1998.9683594

Björk-Willen, P. (2018). Learning to apologize: Moral socialization as an interactional practice in preschool. *Research on Children and Social Interaction*, 2(2).

Cekaite, A. (2014). Tattling and dispute resolution: Moral order, emotions and embodiment in the teacher-mediated disputes of young second language learners. In S. Danby & M. Theobald (eds), *Disputes in Everyday Life* (pp. 165–191). Bingley: Emerald.

Cekaite, A. (2016). Emotional stances and interactional competence: Learning to calibrate disagreements, objections, and refusals. In M. Prior & G. Kasper (eds), *Emotion in Multilingual Interaction* (pp. 131–152). Philadelphia: Benjamins. https://doi.org/10.1075/pbns.266.06cek

Church, A. (2009). *Preference Organisation and Peer Disputes: How Young Children Resolve Conflict*. London: Routledge.

Corsaro, W. & Rizzo, T. (1990). Disputes in the peer culture of American and Italian nursery-school children. In A. Grimshaw (eds), *Conflict Talk: Sociolinguistic Investigations of Arguments in Conversations* (pp. 21–66). Cambridge: Cambridge University Press.

Coulter, J. (1990). Elementary Properties of Argument Sequences. In G. Psathas (ed.), *Interaction Competence* (pp. 181–204). Washington, DC: University Press of America.

Couper-Kuhlen, E. & Selting, M. (2018). *Interactional Linguistics: Studying Language in Social Interaction*. Cambridge: Cambridge University Press.

Danby, S. & Theobald, M. (eds). (2014). *Disputes in Everyday Life: Social and Moral Orders of Children and Young People*. Bingley: Emerald.

Domberg, A., Köymen, B. & Tomasello, M. (2017). Children's reasoning with peers in cooperative and competitive contexts. *The British Journal of Developmental Psychology*, 36(1), 1–14.

Ehlich, K. (2014). Argumentieren als sprachliche Ressource des diskursiven Lernens. In A. Hornung, G. Carobbio & D. Sorrentino (eds), *Diskursive und textuelle Strukturen in der Hochschuldidaktik* (pp. 41–54). Münster: Waxmann.

Evaldsson, A.-C. (2007). Accounting for friendship: Moral ordering and category membership in girls' relational talk. *Research on Language and Interaction*, 40(4), 377–404. https://doi.org/10.1080/08351810701471377

Garcia-Mila, M., Gilabert, S., Erduran, S. & Felton, M. (2013). The effect of argumentative task goal on the quality of argumentative discourse. *Science Education*, 97(4), 497–523. https://doi.org/10.1002/sce.21057

Gardner, R. (2001). *When Listeners Talk: Response Tokens and Listener Stance*. Amsterdam: Benjamins. https://doi.org/10.1075/pbns.92

Goffman, E. (1959). *The Presentation of Self in Everyday Life*. New York: Doubleday Anchor.

Goodwin, C. (2003). The body in action. In J. Coupland & R. Gwyn (eds), *Discourse, the Body and Identity* (pp. 19–42). Basingstoke: Palgrave Macmillan. https://doi.org/10.1057/9781403918543_2

Goodwin, C. (2007). Participation, stance and affect in the organization of activities. *Discourse & Society*, 18(1), 53–73. https://doi.org/10.1177/0957926507069457

Goodwin, M. H. (1982). Processes of dispute management among urban black children. *American Ethnologist*, 9(1), 76–96. https://doi.org/10.1525/ae.1982.9.1.02a00050

Goodwin, M. H. & Cekaite, A. (2013). Calibration in directive/response sequences in family interaction. *Journal of Pragmatics*, 46(1), 122–138. https://doi.org/10.1016/j.pragma.2012.07.008

Goodwin, M. H. &. Goodwin, C. (1986). Gesture and coparticipation in the activity of searching for a word. *Semiotica*, 62(1–2), 51–75.

Goodwin, M. H. & Kyratzis, A. (2007). Children socializing children: Practices for negotiating the social order among peers. *Research on Language and Social Interaction*, 40(4), 279–289. https://doi.org/10.1080/08351810701471260

Haddington, P. (2006). The organization of gaze and assessments as resources for stancetaking. *Text & Talk*, 26(3), 281–328. https://doi.org/10.1515/TEXT.2006.012

Hauser, S. & Luginbühl, M. (2017). Wenn Kinder argumentieren – Grundlagen und erste Befunde einer Studie zur mündlichen Argumentationskompetenz von Schulkindern. In I. Meißner & E. Wyss (eds), *Begründen, Erklären, Argumentieren* (pp. 89–106). Tübingen: Stauffenburg.

Heller, V. (2014). Discursive practices in family dinner talk and classroom discourse: A contextual comparison. *Learning, Culture and Social Interaction*, 3(2), 134–145. https://doi.org/10.1016/j.lcsi.2014.02.001

Heller, V. (2017). Managing knowledge claims in classroom discourse: The public construction of a homogeneous epistemic status. *Classroom Discourse*, 8(2), 156–174. https://doi.org/10.1080/19463014.2017.1328699

Heritage, J. (2012). The epistemic engine: Sequence organization and territories of knowledge. *Research on Language and Social Interaction*, 45(1), 30–52. https://doi.org/10.1080/08351813.2012.646685

Heritage, J. & Raymond, G. (2005). The terms of agreement: Indexing epistemic authority and subordination in talk-in-interaction. *Social Psychology Quarterly*, 68(1), 15–38. https://doi.org/10.1177/019027250506800103

Holm Kvist, M. (2018). Children's crying in play conflicts: A locus for moral and emotional socialization. *Research on Children and Social Interaction*, 2(2).

Iwasaki, S. (2015). Collaboratively organized stancetaking in Japanese: Sharing and negotiating stance within the turn constructional unit. *Journal of Pragmatics*, 83, 104–119. https://doi.org/10.1016/j.pragma.2015.04.007

Kärkkäinen, E. (2003). *Epistemic Stance in English Conversation: A Description of its Interactional Functions, with a Focus on I Think*. Amsterdam: Benjamins. https://doi.org/10.1075/pbns.115

Kendon, A. (1967). Some functions of gaze-direction in social interaction. *Acta Psychologica*, 26, 22–63. https://doi.org/10.1016/0001-6918(67)90005-4

Kendon, A. (1985). Behavioural foundation for the process of frame attunement in face-to-face interaction. In G. P. Ginsburg (ed.), *Discovery Strategies in the Psychology of Action* (pp. 229–253). London: Academic Press.

Kendon, A. (2004). *Gesture: Visible Action as Utterance*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511807572

Kendrick, K. H. & Holler, J. (2017). Gaze direction signals response preference in conversation. *Research on Language and Social Interaction*, 50(1), 12–32. https://doi.org/10.1080/08351813.2017.1262120

Krantz, M., George, S. W. & Hursh, K. (1983). Gaze and mutual gaze of preschool children in conversation. *Journal of Psychology*, 113(1), 9–15. https://doi.org/10.1080/00223980.1983.9923549

Lerner, G. H. (2004). Collaborative turn sequences. In G. H. Lerner (ed.), *Conversation Analysis: Studies from the First Generation* (pp. 225–256). Amsterdam: Benjamins. https://doi.org/10.1075/pbns.125.12ler

Luckmann, T. (1986). Grundformen der gesellschaftlichen Vermittlung des Wissens: Kommunikative Gattungen. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 27, 191–211. https://doi.org/10.1007/978-3-322-91077-6_10

Maynard, D. W. (1985). How children start arguments. *Language in Society*, 14(1), 1–30. https://doi.org/10.1017/S0047404500010915

Morek, M. (2015). Dissensbearbeitung unter Gleichaltrigen – (k)ein Kontext für den Erwerb. *Mitteilungen des Deutschen Germanistenverbandes*, 62(1), 34–46. https://doi.org/10.14220/mdge.2015.62.1.34

Müller, C. (2004). Forms and uses of the palm up open hand: A case of a gesture family? In C. Müller & R. Posner (eds), *The Semantics and Pragmatics of Everyday Gestures* (pp. 233–256). Berlin: Weidler.

Peräkylä, A. & Ruusovuori, J. (2006). Facial expression in an assessment. In H. Knoblauch & B. Schnettler (eds), *Video Analysis: Methodology and Methods* (pp. 127–142). Frankfurt: Lang.

Pittner, K. (2007). Common ground in interaction: The functions of medial doch. In A. Fetzer & K. Fischer (eds), *Lexical Markers of Common Grounds* (pp. 67–87). Boston: Elsevier.

Pomerantz, A. (1980). Telling my side: 'Limited access' as a 'fishing' device. *Sociological Inquiry*, 50(3–4), 186–198. https://doi.org/10.1111/j.1475-682X.1980.tb00020.x

Pontecorvo, C. & Fasulo, A. (1997). Learning to argue in family shared discourse: The reconstruction of past events. In L. Resnick (ed), *Discourse, Tools, and Reasoning: Essays on Situated Cognition* (pp. 406–442). Berlin: Springer. https://doi.org/10.1007/978-3-662-03362-3_18

Quasthoff, U., Heller, V. & Morek, M. (2017). On the sequential organization and genre-orientation of discourse units in interaction: An analytic framework. *Discourse Studies*, 19(1), 84–110. https://doi.org/10.1177/1461445616683596

Rossano, F. (2012). *Gaze Behavior in Face-to-Face Interaction*. Nijmegen: Radboud Repository.

Schütz, A. (1953). Common-sense and scientific interpretation of human action. *Philosophy and Phenomenological Research*, 14(1), 1–38. https://doi.org/10.2307/2104013

Selting, M. et al. (2011). A system for transcribing talk-in-interaction: GAT 2. Translated and adapted for English by E. Couper-Kuhlen & D. Barth-Weingarten. *Gesprächsforschung*, 12, 1–51.

Sidnell, J. (2012). 'Who knows best?': Evidentiality and epistemic asymmetry in conversation. *Pragmatics and Society*, 3(2), 294–320. https://doi.org/10.1075/ps.3.2.08sid

Sterponi, L. (2009). Accountability in family discourse. *Childhood*, 16(4), 441–459. https://doi.org/10.1177/0907568209343269

Stevanovic, M. (2012). Establishing joint decisions in a dyad. *Discourse Studies*, 14(6), 779–803. https://doi.org/10.1177/1461445612456654

Stivers, T., Mondada, L. & Steensig, J. (2011). *The Morality of Knowledge in Conversation*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511921674

Streeck, J. (2009). *Gesturecraft: The Manu-facture of Meaning*. Philadelphia, PA: Benjamins. https://doi.org/10.1075/gs.2

Zadunaisky Ehrlich, S. & Blum-Kulka, S. (2014). 'Now I said that Danny becomes Danny again': A multifaceted view of kindergarten children's peer argumentative discourse. In A. Cekaite, S. Blum-Kulka, V. Grøver & E. Teubal (eds), *Children's Peer Talk: Learning from Each Other* (pp. 23–41). Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139084536.005