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Communication Patterns in Light of Disagreement in Children from Diverse Cultures

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Communication Patterns in Light of Disagreement in Children from Diverse Cultures

Tackling issues like climate change and its resulting problems are global challenges that affect humanity as a whole and have to be dealt with on an intercultural basis. The topic of climate change specifically elicits a lot of disagreements, both of the existence in the first place and subsequent responsibilities of action plans. Therefore it is of most importance that disagreements are handled in an effective and solution-oriented manner. Our society, thereby the cultural context we were born and socialized into, has considerable influence on the way we handle disagreements through underlying societal values and norms. It is crucial to explore, when these socialization processes first come into play, so that these findings can be integrated into international educational contexts to further develop curricula that target culturally sensitive communication and intercultural cooperation. The focus of this study will be on children aged between five to nine years old from three diverse cultures to investigate the potentially different ways in which disagreements are handled and its underlying communication patterns. For this, video recordings in which children were engaged in a discussion were analyzed.

Theoretical Background

The Role of Turn Taking in Conversations

Humans are pack animals – surviving is easier in groups, where resources can be allocated, threats are quickly noticed and reacted upon (Ein-Dor & Hirschberger, 2016). We all have a deep seated and evolutionary advantageous need to feel like we belong to the group. Following this, we instinctively look for signs of possible abandonment (Koudenburg et al., 2011). In conversations, the occurrence of even barely noticeable silences can trigger feelings of rejection, fear and distress (Koudenburg et al., 2011). Indeed, fluent conversations are the norm in daily life and are associated with positive affect and implicit consensus among speakers. In contrast, disfluent conversations may indicate upcoming

conflict and could be interpreted as a sign that our needs get rejected (Koudenburg et al., 2011).

Fluent conversations have a predictable structure and an easy-going coordination, which are based upon the principles of taking turns within the conversation (Chapple, 1970 as cited in Koudenburg et al., 2011). The structure of taking turns within conversations can be briefly summed up by the maxim of minimal gap and minimal overlap between turn transitions (Sacks, 1974). This system is designed in a way that only one person talks at a time (thereby taking their turn). Upon completion of their turn, the current speaker could choose the next speaker or if that fails, a new speaker within the interactants could choose to go forward and start their turn (Sacks, 1974). Signals for upcoming turn transitions include grammatical completion of the sentence, exhaling of the current speaker, gazing at the conversational partner and the completion of gestures (Duncan, 1972, Duncan & Fiske, 1977 as cited in Skantze et al., 2021). To summarize, turn-taking provides an underlying rhythm to conversations through predictable structure.

The ability to take turns contributes an underlying rhythm to human interactions and seems to already be evident at birth and is built upon through following experiences (Dominguez et al., 2016). Infants take turns with their conversational partner, even before they engage in verbal language during so-called proto-conversations. Proto-conversations constitute the sharing of vocal, conversation-like exchanges between infants and their caregivers (Ngyuen et al., 2023). It has been found that the more turns were apparent between infant and conversational partner, the more the two of them were neurally synchronized (Ngyuen et al., 2023). Neural synchronization occurs when the brain activity of the listener is coupled to the brain activity of the speaker, indicating that this could be the underlying mechanism of successful interactions and that language production and comprehension are intricately connected (Stephens et al., 2010). During these proto-conversations, neural synchronization was highest in the beginning and diminished over time (Ngyuen et al., 2023). Hence, it can be theorized that neural synchronization is associated with active involvement of both conversational partners, thereby establishing

smooth turn-taking exchanges, and supporting infants and their conversational partner adapting to each other (Ngyuen et al., 2023).

While turn-taking is apparent right from the beginning of life (Dominguez et al., 2016), the pace in which infants and older children communicate is much different compared to adults (Ngyuen et al., 2022). A recent meta-analysis concluded that the average response offset of infants and approximately 6-year-olds differed significantly from that of adults, with children responding in one second on average (Ngyuen et al., 2022), while adults respond after 200 ms on average (Stivers et al., 2009). Children's longer response offsets are related to a variety of factors, such as developmental factors, attachment styles and linguistic features of their mother language (Ngyuen et al., 2022). Additionally, infants just begin to take a grasp of the language system, and therefore struggle to intuitively know when the turn of the other person ends and when they should start to formulate their answer (Casillas et al., 2015). Thus, this endeavor proves to be very difficult for them due to information processing demands, as they have to comprehend the content, while simultaneously thinking about an adequate answer (Casillas et al., 2015). This could result in longer response offsets, especially when one considers the varying levels of difficulty of questions and answers. Indeed, it has been shown that the response offset seems to depend on the difficulty of the question and given answer: When children gave more complex answers, their response offset increased, thereby the gaps between turns increased as well (Casillas et al., 2015). Perhaps most importantly, the response offsets of children seem to be connected to the person they are interacting with, which means that children adapt their own response offset to that of their interactional partner (Ngyuen et al., 2022). This underlines the interactional nature of turn-taking. In conclusion, children's response offsets are slower compared to adults due to a variety of factors (Ngyuen et al., 2022), yet the turn-taking pattern itself is apparent right from the start, which suggests turn-taking to be a universally human competence (Dominguez et al., 2016).

The natural rhythm through turn-taking is apparent across various cultures (Stivers et al., 2009). In fact, all speakers around the world, from indigenous populations to speakers of

worldwide languages, adhere to the principles of turn-taking, such as minimizing gaps and overlaps between turns. In spite of support for turn-taking as a universally human competence, cultural differences have emerged within this pattern. Languages vary slightly between each other regarding the length of gaps between turns. Namely, the gaps within transitions vary around 250 ms on average from the universal gap length across all languages (Stivers et al., 2009). This subtle difference in gap duration could explain why in an intercultural context, even slightly different conversational patterns between speakers from different cultural backgrounds are perceived more intensely (Stivers et al., 2009). The study of Stivers et al. (2009) analyzed video material of informal natural conversations. This means that intercultural differences in turn-taking emerged, when no material for disagreement was introduced by the experimenters. Consequently, one could reasonably argue that if cultural differences emerged without apparent disagreement (Stivers et al., 2009) these cultural differences might get even more pronounced in disagreements, as different cultural contexts influence how disagreement is expressed (Bond, 1986). The theoretical background behind the influence of cultural context on the expression of disagreement will be elaborated in more detail in the following section.

Cultural Differences in Disagreements

Disagreement can be defined as having an antagonistic position towards a previous act, where disagreement can be conveyed either verbally or nonverbally (Kakavá, 1993 as cited in Angouri & Locher, 2012). Disagreement occurs frequently and is influenced by varying norms and values that influence how it is enacted. The tactics of how conflicting opinions are expressed could affect underlying relationships. Depending on the context, people might voice their disagreement more easily, for example when there is equal status among conversational partners (Angouri & Locher, 2012). Especially in the workplace, disagreement can be useful to achieve better outcomes and might not affect relationships in a negative way, if handled properly (Tjosvold, 2007). This suggests that disagreement per sé might not always be seen in a negative light. Indeed, they might be interpreted both as an

indicator of closeness or of rudeness, depending on how it is interpreted by its enactors (Tannen, 2009; Tannen, 2002). Of course this interpretation is subjective and influenced by various factors, such as the cultural context and the social status of the people involved (Zhu & Boxer, 2021).

The cultural context and one's position in a social hierarchy influences how disagreement is expressed (Bond, 1986), so underlying communication patterns like turn-taking could be affected as well. These differences are theorized to be based upon the cultural divide between more collectivistic and more individualistic countries (Li et al., 2005). In more collectivistic cultures, people see themselves embedded within their own community, and base their values and goals on this. Accordingly, they behave more cooperatively and value their relationships more (Triandis, 1994; Ohbuchi et al., 1999). In more individualistic cultures, like the US and Western European countries, people are more independent from their broader community and weigh their own goals more than the goals of their respective community. As a consequence, they base their behavior more on their own values than that of their community (Triandis, 2001). In collectivist cultures such as China, there is a strict social hierarchy, where everyone has their place in society and behaves according to their social status (Bond, 1986). People see themselves in an interconnected way to their community (Bond, 1986). Therefore, people value harmony and are concerned with staying away from conflict with people from higher status (Bond, 1986). Hence, indirect disagreement seems to be preferred over direct disagreement when conversing with people from higher rank (Bond, 1986). Expressing disagreement can be done indirectly through the use of silences, softening one's voice, agreeing partially or showing hesitation through the use of filler words such as "well" (Pomerantz, 1984 as cited in Zhu & Boxer, 2021). Indirect disagreement allows the other person to not get embarrassed (Bond, 1986), while direct disagreement through straightforward statements can come across as offensive and impolite (Beebee and Takahashi, 1989 as cited in Zhu & Boxer, 2021; Kotthoff, 1993). For instance, casual conversations from English-Native speakers and Mandarin-Native speakers were analyzed in a qualitative study, regarding how disagreement is handled between people from

equal status (Zhu & Boxer, 2021). They found that English-Native speakers were more likely to use indirect disagreement by using silences or compromising statements to soften the blow, while Mandarin-Native speakers were more likely to use both direct disagreement through straightforward statements and indirect disagreement by asking rhetorical questions. These findings are in line with the theory that social status plays an important part in how disagreement is voiced in collectivist cultures (Bond, 1986), as the interactants were conversing in an informal setting within their own social groups (Zhu & Boxer, 2021). Thus, it could be possible that using direct disagreement indicates a close relationship with the other person (Zhu & Boxer, 2021). To summarize, people could favor indirect disagreement to be more polite, especially with people from higher rank (Bond, 1986), or they could use more direct disagreement in close relationships (Zhu & Boxer, 2021).

Arguably, the specific way in which disagreement is expressed could be reflected in underlying turn-taking exchanges. Disagreeing with someone in a direct way through the use of straightforward statements could accelerate turn-taking exchanges, thereby increasing the amount of turns within a given time frame. In contrast, disagreeing with someone in an indirect way through the use of silences or other types of softeners could potentially slow down the turn-taking exchanges, thereby reducing the amount of turns. To sum it up, these findings imply that there are factors like different cultural values at play that could influence whether disagreement is expressed directly or indirectly (Bond, 1986; Zhu & Boxer, 2021), thereby potentially altering underlying communication patterns, like the amount of turn-taking exchanges.

Another important factor that could influence turn-taking exchanges during disagreements, is the perceived controversiality of the topic, and how much interactants differ in their opinions (Ziembowicz et al., 2022). When interactants have strong opposing views, the turn-taking exchanges in discussions increase rapidly, because each sharing of opinion gets more intense than the one before (Rubin et al., 1994 as cited in Ziembowicz et al., 2022). Indeed, the longer the turn-taking exchanges were between two people, the more intense the conflict was perceived to be (Ziembowicz et al., 2022). However, the perceived

controversiality of the topic was the key factor in this study: when the group members did not differ as much in their opinion, the turn-taking exchanges were not associated with intensity of conflict (Ziembowicz et al., 2022). To sum it up, how controversial people perceive a topic to be, and how much they differ in their opinions could influence the amount of turn-taking exchanges (Ziembowicz et al., 2022) among other factors, such as the cultural context, use of direct or indirect disagreement and the social status of interactants (Bond, 1986; Zhu & Boxer, 2021).

Effects of Disagreements on the Use of Interruptions

The presence of disagreement and different cultural contexts might also have an effect on other aspects of communication patterns, such as interruptions. Indeed it has been shown that people might interrupt each other more during disagreements, especially when discussing opposing views (Kim et al., 2012). The connection between interruptions and disagreements might be the reason why interruptions are often judged in a negative light, as interruptions are viewed to violate the social contract of waiting for one's turn. Indeed, when parents raise their children or teachers reprimand their students, it is very often highlighted to let other people finish their sentence before they can chime in themselves.

But is it really the case, that interruptions are always perceived as something rude and impolite? Some research suggests that interruptions can be viewed quite positively, as they can be used to convey interest, consensus and passion for the topic at hand (Lestary et al., 2017; Li et al., 2005).

Interruptions arise when several preconditions are met: Conversational partners overlap in talking for some amount of time, and both the person who interrupts and the speaker interpret this overlap to be interruptive (Li et al., 2005; Tannen, 1994; Tannen, 2005). These preconditions will be covered in more detail in the following.

First, speakers have to overlap for some amount of time (Tannen, 1994), yet not every overlap is an interruption. Interruptions have a negative connotation, as it blames the interrupter of forcefully taking their turn and disregarding the desires of the current speaker

(Tannen, 1994). Overlaps are regarded more neutrally (Tannen, 1994), and occur often, with 30% of transitions resulting in overlaps (Levinson & Torreira, 2015). Most overlaps consist of backchannels, which are constructed by the listener to indicate one's active listenership, apprehension of what is being said (Bertrand et al., 2007) or, depending on the specific backchannel, can signal high regard for the content of the speaker's turn (Ward, 2006). Backchannels are a multifaceted construct, which can consist of verbal signals such as "yeah", "ok" or "mh", or non-verbal signs such as gaze or smiles (Bertrand et al., 2007). Focusing only on verbal backchannels, it has been found that they occur in a quiet manner with decreased intonation. This is done, because backchannels are a part of listenership, not speakership, and when overlapping with the current speaker, talking in a quiet manner is not intrusive (Gardner, 2001, as cited in Zellers, 2021; Müller, 1996, as cited in Zellers, 2021), whereas the same backchannel with increased intonation can subtly signal that the speaker should finish their turn (Golato & Fagyal, 2008, as cited in Zellers, 2021). Therefore, different forms of backchannels can serve different purposes. Importantly, backchannels are of short duration in order to encourage the speaker in upkeeping their turn (Bertrand et al., 2007), and not to usurp the current turn for themselves (Gardner, 2001, as cited in Zellers, 2021; Müller, 1996, as cited in Zellers, 2021). Indeed, backchannels only last for a maximum of few syllables (Gardner, 2001, as cited in Zellers, 2021), and make up about 73% of all types of overlaps between speakers (Levinson & Torreira, 2015). Overlaps can be divided based on how successful the transition between speakers was, or if speaker transitions occurred at all (Levinson & Torreira, 2015). For example, between-overlaps result in a speaker transition, whereas within-overlaps do not result in a transition (Levinson & Torreira, 2015). Moreover, it has been found that between-overlaps have a modal duration of 96 ms, and within-overlaps occur with a modal duration of 350 ms, which indicates that within-overlaps are more brief than two syllables (Levinson & Torreira, 2015). Since most overlaps are based on backchannels (and are therefore a sign of active listenership) it can be assumed that most backchannels occur either as a between-overlap of 96 ms duration or as a within-overlap of 350 ms (Levinson & Torreira, 2015). To conclude, overlapping talk consists mostly of

backchannels (Bertrand et al., 2007), which signals active listenership and does not intend to compete for turns (Gardner, 2001, as cited in Zellers, 2021; Müller, 1996, as cited in Zellers, 2021).

Interruptions are also based on overlaps, however there is no consistent definition on what constitutes an interruption (Anderson & Leaper, 1998). For instance, some studies used a very broad definition and classified backchannels to be interruptive to the conversation (Anderson & Leaper, 1998). Additionally, there seems to be no consensus in the literature regarding how long the duration of simultaneous talk has to be to be constituted as an interruption. The values of Levinson & Torreira (2015) could provide a good starting point into what duration of simultaneous talk constitutes an overlap (and therefore backchannels), whereas an interruption would have a longer duration than overlaps due to its different intentions (Goldberg, 1990; Tannen, 2005). Indeed, interruptions can be used for distinct purposes: to control the conversation and gain power by taking over the floor, or to take an active part in conversations and foster a good relationship by adding valuable new information (Goldberg, 1990). Whether someone judges prolonged simultaneous talk to be disruptive to the conversation, or welcomes it as part of a lively experience is subjective to both the intentions of the person who interrupts and the current speaker, and could be influenced by factors such as conversational style (Tannen, 2005). Indeed, there seem to be distinct conversational styles, characterized by the preferred degree of speaker involvement. For instance, the so-called “high-involvement conversational style” is characterized by the preference for lively conversations, marked by quicker turn-taking exchanges and taking an active role as a listener (Tannen, 2005). Accordingly, people who are highly involved in conversations tend to view prolonged overlaps as a sign of active engagement and interest in the conversation. Contrary to this, people who are highly considerate in their preferred conversational style, tend to view these aforementioned indicators of lively conversations to be impolite (Tannen, 2005). Adding to this, the intention of the interruptor also plays a crucial role in how interruptions are perceived by the current speaker (Li et al., 2005). The intention of the interruptor and its effect on conversations will be covered in more detail in a later

section, as this also interplays with cultural contexts. To summarize, overlaps during turn transitions are a common characteristic of taking turns (Sacks, 1974), and appear to be of short duration (Levinson & Torreira, 2015). Contrary to this, there is not yet a consistent classification and time frame on what constitutes overlapping talk to be classified as an interruption (Anderson & Leaper, 1998), as interruptions seem to be inherently subjective, and seem to depend on preferred conversational style and intentions of the person who interrupts (Li et al., 2005; Tannen, 2005).

Interruptions also seem to be context-dependent, as it has been theorized that people might be more likely to interrupt each other during disagreement, when expressing their contrary views (Kim et al., 2012). In situations where disagreement occurs, such as political debates, interruptions between political speakers with opposing views were associated with the detection of conflict (Kim et al., 2012). Furthermore, the perceived conflict intensity correlated with the amount of interruptions and the amount of turn-taking exchanges (Cooper et al., 1986). This could imply that people interrupt each other more in conflicts, and also that people interrupt each other more when conflict intensity is high. However, it is also important to note that in both of these studies, participants discussed topics, where they had polarizing opinions, so that they differed a lot in their views. Therefore, conflicts could occur more frequently in political debates than in situations, where people should discuss and cooperate to achieve a consensus (Kim et al., 2012). To summarize, people might interrupt each other more frequently in conflicts, (when opposing views are apparent) (Cooper et al., 1986; Kim et al., 2012).

People might interrupt one another to show disagreement (Li et al., 2005). This type of interruption is categorized to be intrusive in its intention, as its use conveys disinterest in the current topic, shows dissent in opinion or intention to cut off the other person’s turn, so they can talk themselves. Notably, they also occur when the listener already knows about the content of the conversational topic, and does not want to listen to a repetition of what is already known to them (Li et al., 2005). Contrary to this, interruptions can also be cooperative to show agreement with the current speaker (Li et al., 2005). Cooperative

interruptions can be used to show like-mindedness to the other person, and excitement about the current topic. They can also be used to ask for further explanation of a previous statement (Li et al., 2005). In a social context, cooperative interruptions can indicate dynamic exchanges of information, especially when there is no difference in hierarchy between the people involved. Especially in easy-going and informal conversations, both people often add to the conversation simultaneously to keep it going (Caskey et al., 2011 as cited in Lestary et al., 2017; Lestary et al., 2017). To conclude, the context that interruptions occur in is important for further interpretation. Intrusive interruptions are used to convey disagreement and potentially disinterest, whereas cooperative interruptions are used to show agreement and excitement (Li et al., 2005).

There also seem to be cultural differences in the way people interrupt each other, which also seems to be based on the divide between collectivist and individualistic cultures (Li et al., 2005; Murata, 1994; Triandis, 2001). This can play an important role in the way disagreement is handled: For instance, people from collectivist cultures give more priority to keeping their relationship intact, while people from individualistic cultures consider it more important to reach a state of fairness (Ohbuchi et al., 1999). Thus, cultural values influence the intentions and ways how people express disagreement (Li et al., 2005; Murata, 1994; Triandis, 2001). To illustrate this further, Li et al. (2005) conducted a study in which they had intercultural pairs of Chinese and Canadian participants pretend to either play the doctor or patient during a fictional medical consultation. They found that cooperative interruptions were more common in Chinese participants, while intrusive interruptions were more common in Canadian participants. Hence, the researchers concluded that Canadian participants used intrusive interruptions more, as they communicate in an individualistic way to communicate one's thoughts and feelings. Therefore, they would disagree more openly, end the other's turn prematurely (aka interrupting) or talk about something else. Contrary to this, Chinese participants used cooperative interruptions more, as they would be more likely to communicate in an interconnected way to help or support the other person (Li et al., 2005). Similar findings can be seen by Murata (1994). For this, conversations were analyzed either

within the same cultural background (Native Japanese participants or Native English participants) or in intercultural conversations. Generally, Native English participants used all types of interruptions more, and made use of intrusive and cooperative interruptions in the same way (Murata, 1994). In contrast, Native Japanese participants tended to interrupt more cooperatively, and much less in an intrusive manner (Murata, 1994). This could implicate that Japanese people show conversational engagement by listening more and if at all, using cooperative interruptions, while Native English speakers show conversational engagement by actively participating and using both cooperative and intrusive interruptions (Murata, 1994). To summarize, people from collectivist cultures could be more likely to use cooperative interruptions, whereas in individualistic cultures people might be more likely to use intrusive interruptions (Li et al., 2005), or to use intrusive and cooperative interruptions equally (Murata, 1994).

Present Study

Turn-taking provides a natural rhythm to conversations, which is already present at birth and built upon through following interactions with caregivers (Dominguez et al., 2016). Smooth turn-taking exchanges establish fluency in conversations, which might indicate implicit agreement among speakers (Koudenburg et al., 2011). Silent pauses can indicate potential conflict and disagreement with the speaker (Koudenburg et al., 2011). There are distinctly different ways to express disagreement in conversations, either in a direct or an indirect way. Direct disagreement can often come across as offensive and impolite, thus indirect disagreement is often favored by speakers (Beebee and Takahashi, 1989, Kotthoff, 1993 as cited in Zhu & Boxer, 2021). Especially in collectivist cultures such as China, indirect disagreement might be favored to allow the other person to save face or to steer clear of confrontation with people from higher rank (Bond, 1986). Contrary to this, Mandarin-Native speakers have been found to use direct disagreement in casual conversations with people they have a close relationship with (Zhu & Boxer, 2021). Thus, it is possible that people from collectivist cultures could use direct disagreement more frequently with people from equal

status (Zhu & Boxer, 2021), thereby potentially increasing the number of turn-taking exchanges. Contrary to this, participants from the USA might use indirect disagreement more frequently, thereby decreasing the number of turn-taking exchanges (Zhu & Boxer, 2021). In contrast, it has also been found that perceived controversiality of a topic plays a role during disagreements (Ziembowicz et al., 2022). When discussing controversial topics such as abortion with students from Poland, the amount of turn-taking exchanges between two people was associated with intensity of conflict (Ziembowicz et al., 2022). This suggests that the amount of turn-taking exchanges during disagreement depends on cultural factors such as the divide between individualistic and collectivist cultures (Zhu & Boxer, 2021).

During disagreements, people might be more likely to interrupt more frequently (Cooper et al., 1986; Kim et al., 2012) and potentially more intrusively (Li et al., 2005). On the contrary, interrupting someone in a cooperative way is used to express agreement (Li et al., 2005).

The cultural context influences how people communicate with each other (Bond, 1986). For instance, people from collectivist cultures seem to interrupt less (Murata, 1994), and if so, tend to interrupt cooperatively (Li et al., 2005; Murata, 1994). People from individualistic cultures seem to interrupt their conversation partners more (Murata, 1994), with some research suggesting they use both types of interruptions equally (Murata, 1994), and other research suggesting that they mainly use intrusive interruptions (Li et al., 2005).

Generally, most studies that investigated how people express disagreement and how this influences communication patterns have examined adult populations. There is an important research gap regarding how children express disagreement, and when cultural differences start to emerge. The current study could provide us important insights into when differences in socialization become observable in children’s behavior and communication patterns, and thus at what stage of development it would make sense to develop culturally-sensitive training for communication. This could be important in all areas of life, where children from various international contexts come together.

Therefore, the following research question will be investigated: How do conversational patterns differ due to disagreement in children from diverse cultures?

H1: There are intercultural differences in the total amount of turn-taking exchanges, when participants disagree with each other

H2: Speakers from individualistic countries tend to interrupt more than speakers from collectivist countries during conflict

H3: Participants from individualistic countries tend to use more intrusive interruptions than cooperative interruptions during disagreement

Method

The study was a cross-sectional design and contained behavioral observations through video material. The data for this master's thesis was collected as part of a bigger project, which consisted of two experimental conditions with two experimental trials within each condition. Since this master's thesis was only focused on the disagreement condition, it was a one-group design with repeated measures. Dyads were randomly assigned to the conditions.

Participants

Participants from China, Kenya and the US took part in the experiment with informed parental and child consent. Participants consisted of 180 children aged between five to nine years oldl, who were placed in dyads matched by their gender and age. Overall, 90 dyads took part in two experimental trials each, thus 180 trials were considered for the coding process.

Participants from Kenya were recruited from rural areas with lower socioeconomic status, with a majority being of Kikuyu ethnicity. Kikuyu children often grow up in an

interconnected way, growing up with strong familial ties and owning no toys of their own (Whiting, 1996 as cited in Schleihauf et al., in preparation)

Participants from China were recruited from various districts of Beijing and consisted of various socioeconomic backgrounds and belonged to the Han ethnicity. Chinese society values strong familial ties, where children are expected to adhere to their parent's values and honor people from a higher hierarchical level (Binah-Pollak, 2014, Sun & Ryder, 2016, Xu & Hamamura, 2014 as cited in Schleihauf et al., in preparation).

Participants from the US were recruited from the urban California Bay area and consisted of various socioeconomic backgrounds and ethnicity, with the final sample consisting of 50% Caucasian ethnicity, 20% Asian, 10% Black, 10% Hispanic or Latinx and 6% of mixed ethnicity. Within the US, parents often value and support children's freedom of choice and individual autonomy (Kärtner, 2018 as cited in Schleihauf et al., in preparation; Keller, 2022 as cited in Schleihauf et al., in preparation)

Power Analysis

The power analysis was done post-hoc with G*Power 3.1 (Faul et al., 2009) for a repeated-measures ANOVA with between-within-interaction. Power was originally calculated before the coding process for 90 dyads and was at approximately ß = .37 to detect a small effect (*f* = .10), and at ß = .99 to detect a medium effect (*f* = .25). After the final statistical analysis, power was calculated for the 80 dyads that were included in the analysis. The power was at ß = .33 to detect a small effect (*f* = .10), and at ß = .98 to detect a medium effect (*f* = .25).

Materials

Dyads were presented with two small boxes per trial, which were placed in a transparent box in front of them, so they were prevented from looking inside the boxes. They were told by the experimenters that one of the boxes contained rewards for both of them (while in reality there were rewards in both boxes). Children indicated with a stone which box

they chose to be opened to emphasize that a final decision was made (after time for discussion was over).

Procedure

The dyads were instructed to play a game to gain rewards for both of them. The game consisted of choosing one of two boxes, where children were told that only one of which contained rewards for both of them. In two training trials, they could practice this procedure without having any indication of where the rewards were hidden. Thus, they based their decision on guessing. In the experimental phase, children of one dyad received inconsistent evidence about which box contains the rewards for both of them. One child received perceptual evidence, by explicitly seeing the experimenter put the rewards in one box, while the other child received testimonial evidence by having the other experimenter tell them that the other box would contain the rewards. This conflict of information led to disagreement among the children. Afterwards, children discussed which box to pick (see Figure 1). Once the children decided, the boxes from the first experimental trial were put aside (without being opened yet), and the experiment proceeded with the second experimental trial. After this, both chosen boxes were opened and the children received their rewards.

Figure 1

Design of the experimental condition

Video analysis with ELAN

The section of the recordings in which children were engaged in a discussion were analyzed with the software ELAN (Max Planck Institute for Psycholinguistics, The Language Archive, Nijmegen). For this, only the relevant parts with the experimental trials were looked at in detail. Therefore the original videos were cut. In ELAN, turn-taking exchanges and interruptions were coded for each child within the dyad. For the US, interruptions were additionally categorized by their underlying intention, as to whether they were intrusive or cooperative. The same could not be done for China and Kenya due to language barriers.

Operationalization

Turn-Taking

In this master's thesis we focused on verbal turns. Non-verbal turns, for example nodding in response to a question, were not coded. Only decision-relevant parts were coded as turns. For instance, when children played "rock, paper, scissors" to achieve a compromise on who gets to choose the box or counted between themselves, it was coded as taking turns. Contrarily, when children began singing, conversed with experimenters or called to get them, it was not coded as a turn, as it did not relate to cooperative decision-making or the decision has already been made at this point in time.

Interruptions

To identify interruptions, we first looked at overlaps between turns. We did not want to categorize backchannels as an interruption, as backchannels do not intend to take the turn from the current speaker (Gardner, 2001, as cited in Zellers, 2021; Müller, 1996, as cited in Zellers, 2021). When the interrupter interrupted for longer than 350 ms of the current turn of the speaker, it was categorized as an interruption, as Levinson & Torreira (2015) found that within-overlaps occurred within a modal duration of 350 ms. We assumed that interruptions would last longer than overlaps, thereby we considered overlaps of longer than

350 ms to be an interruption. Overlaps that lasted less than 350 ms were not categorized as an interruption. Additionally, when children engaged in synchronous behavior such as playing “rock, paper, scissors” or counting together, it was not coded as an interruption.

Additionally, we categorized interruptions into cooperative or intrusive interruptions based on the classifications from Li et al. (2005). This will only be coded for the US, due to the language barriers regarding the trials from China and Kenya.

Interrater-Reliability

Interrater-reliability was calculated for 15% of the videos for the variables turn-taking exchanges and interruptions. Intraclass-correlations were calculated as a two-way model to measure consistency across two raters for the following variables: number of turn-taking exchanges and number of interruptions. For the number of turn-taking exchanges, the interrater-reliability (ICC) was estimated at .50, which suggested at least moderate interrater-reliability. For the number of interruptions, the interrater-reliability (ICC) was at .82, which indicated good consistency among raters.

Data Processing

The final sample consisted of 80 dyads, with 25 dyads from China, 27 dyads from Kenya and 28 dyads from the US. On the whole, 36 trials (20%) were excluded from further analysis.

This was done, as for most of these trials, it was not identifiable who was talking (for example, due to the children wearing FFP-masks), or whether there was an interruption. Furthermore, trials were excluded if the background noise was too loud to identify who was speaking. In one specific case, one dyad did not engage in a discussion at all, so no turns and interruptions could be analyzed in two trials. These trials were excluded, as the basis for analysis were verbal turns, aka a discussion took place. Additionally, due to software errors in the video cutting software two trials were not included in this analysis.

Results

Out of 180 trials, 144 trials were analyzed, with 45 analyzed trials from China, 48 trials from Kenya, and 51 trials from the US. A chi-square test of goodness-of-fit was performed to investigate whether the analyzed trials were distributed equally among the three cultures, X^2 (2, N = 144) = 0.59, p = .74. Also, no significant gender differences between cultures were observed, which suggests that gender was equally distributed in the analyzed dataset X^2 (2, N = 144) = 0.99, p = .60. Similarly, there were no significant differences in the distribution of age groups between cultures X^2 (2, N = 144) = 11.18, p = .34.The analysis was executed with the statistics program R version 4.2.3. When encountering error codes in R, OpenAI (2023) was used to assess the errors within the code itself and to solve minor problems like naming the wrong data frame or converting character values into numeric values. Additionally, it was used to correctly export tables from R into HTML-format.

Hypothesis 1

To investigate whether diverse cultures differ in the number of turn-taking exchanges during disagreement, a Linear Mixed Model with Gaussian distribution was applied to the data with culture, gender and age as predictors, including interaction effects of gender and age with culture. We wanted to include trial as a random slope, however this model did not converge. Therefore, only culture was used as a predictor, with a random intercept of dyad ID. An offset-term was used to account for differences in trial duration. The distribution of residuals and random effects was investigated visually, with the results indicating normal distributions. The Kolmogorov-Smirnov test was not significant, p = .09, indicating normality of residuals. This indicates that the whole model with culture, age and gender as predictors including possible interactions with culture, converged.

The interaction of culture and gender was not significant, F(2) = .20, p = .82. The interaction of culture with age was also not significant, F(8) = 1.58, p = .14. However, dyads

from China differed significantly from the US in the number of turn-taking exchanges (see Table 2 in the Appendix), p = < .001, *CI* [5.77, 32.88].

Table 1

Interactions of Culture with Gender and Age

Interaction	Sum of Squares	*df*	*F*	*p*
Culture*Gender	52.22	2.00	0.20	0.8228
Culture*Age	1683.89	8.00	1.58	0.1407

Pairwise comparisons of cultures were performed with Tukey adjustment, indicating that dyads from the US and China differed significantly in the number of turn-taking exchanges. Dyads from China exchanged more turns on average (M = 24.77, SE = 2.30) than the US (M = 12.86, SE = 2.24), $t(114) = -4.08$, $p < .001$. There was no significant difference between the dyads from Kenya and the US in the number of turn-taking exchanges, $t(114) = -1.36$, $p = .36$. When examining the contrast between China and Kenya, dyads from China had more turns on average (M = 24.77, SE = 2.30) than Kenya (M = 16.81, SE = 2.26), $t(106) = 3.03$, $p = .009$.

Table 3

Estimated Marginal Means for Number of Turns per Culture

Culture	Estimated Marginal Mean	*SE*	*df*	*Lower CI*	*Upper CI*
USA	12.86385	2.235071	73.5520	8.409928	17.31778
China	24.76550	2.304220	71.0171	20.171035	29.35996
Kenya	16.81150	2.262505	70.0490	12.299130	21.32387

Table 4

Pairwise comparisons of Cultural Differences in the Number of Turn-Taking Exchanges

Contrast	Estimate	*SE*	*df*	*t*	*p*
USA - China	-11.901645	2.916184	114.4977	-4.081239	0.0002441
USA - Kenya	-3.947644	2.901031	114.0822	-1.360773	0.3649344
China - Kenya	7.954001	2.625240	106.3678	3.029819	0.0085629

Explorative Analysis for Hypothesis 1

When reviewing pairwise comparisons with Tukey adjustment, there were no significant differences between age groups in turn-taking exchanges (see Table 5 in the Appendix), $p > .05$. Similarly, when reviewing pairwise comparisons for gender, there were no significant differences between female and male dyads regarding the amount of turn-taking exchanges (see Table 6 in the Appendix), $p > .05$.

Hypothesis 2

A Generalized Linear Mixed Model with a negative binomial distribution was selected to analyze whether speakers from the US interrupted more than speakers from collectivist countries such as China and Kenya during disagreement. For this, culture was specified as a predictor, while also taking into account potential main and interaction effects of age and gender. A random intercept of dyad ID was added to the model to account for repeated measures within dyads. Also, a random slope for trial (z-transformed) was included within each participating dyad. An offset-term was applied to control for differences in trial duration. The dispersion parameter was estimated to be at .77, and the test for overdispersion of the model was not significant, $X^2(120) = 92.86$, $p = .97$. Together, this suggested a good fit of the model.

The interaction of culture with age was non-significant, X^2 (8, N = 11) = 13.84, p = .09. Similarly, the interaction of culture with gender was non-significant X^2 (2, N = 11) = 0.33, p = .85.

Table 7

Likelihood-Ratio Test of Interactions with Culture

Interaction	*df*	AIC	X^2	*p*
Culture*Age	8	578.77	13.84	0.0862
Culture*Gender	2	577.26	0.33	0.8497

There was a significant main effect of culture on the number of interruptions, X^2 (2, N = 144) = 6.17, p = .05. For instance, it has been found that dyads from China interrupted 4.86 times more than dyads from the US during disagreement (see Table 9 in the Appendix), p = .04, *CI* [1.07, 22.06]. No significant differences in interruptions could be found between dyads from the US and Kenya (see Table 9 in the Appendix), p = .09, *CI* [0.80, 28.35]. Taken together, this indicates that dyads from China tended to interrupt more than dyads from the US (p = .04), whereas no differences could be observed between the US and Kenya (p = .09).

Table 8

Likelihood-Ratio Test of Main Effect of Culture

Main Effect	*df*	AIC	X^2	*p*
Culture	2	579.07	6.17	0.0457

There was also a significant main effect of age on the number of interruptions, X^2 (4, N = 144) = 12.92, p = .01. However, when looking at the age groups in more detail by

performing pairwise comparisons with Tukey-adjustments, there were no differences between age groups (see Table 11 in the Appendix), $p > .05$.

Table 10

Likelihood-Ratio Test of Main Effect of Age

Main Effect	*df*	AIC	X^2	*p*
Age	4	579.07	12.92	0.0117

Hypothesis 3

To statistically examine whether speakers from the US tend to use more intrusive interruptions than cooperative interruptions during disagreement, a Generalized Linear Mixed Model with a linear mixed-model with a negative binomial distribution was applied. Initially, we planned to include a random slope for trial. However, since the model did not converge, we dropped that term. The test for overdispersion of the model was not significant, $X^2(98) = 72.07$, $p = .98$.

Results indicated that within the US sample, there were significant differences in the types of interruptions used, X^2 (1, $N = 51$) = 12.84, $p < .01$. Dyads from the US interrupted on average 1.1 times in an intrusive way per trial ($SD = 1.82$), whereas they tended to interrupt much less in a cooperative way ($M = 0.25$, $SD = 0.48$).

Table 12

Differences in Interruption Types in the US Sample

Effect	*df*	AIC	X^2	*p*
Interruption Types	1	226.78	12.84	0.0003

Table 13

Means and Standard Deviations of Types of Interruptions within the US Sample

Types of Interruptions	*M*	*SD*
Cooperative Interruptions	0.254902	0.4834516
Intrusive Interruptions	1.098039	1.8248825

Discussion

This master's thesis investigated communication patterns during disagreement in children of three diverse cultures. First, intercultural differences regarding turn-taking exchanges during disagreements were investigated. We found that dyads from China exchanged more turns than both dyads from the US and Kenya respectively, while there were no significant differences in turn-taking exchanges between the US and Kenya. Broadly speaking, this hints at the cultural divide between individualistic cultures, such as the US, and collectivist cultures like China. Theoretically, this could be due to differences, in the way disagreement is expressed across different cultures. Indeed, it has been found that speakers from China tended to disagree in a more direct way during casual conversations with people from equal status (Zhu & Boxer, 2021). Disagreeing with someone in a straightforward manner could potentially decrease the length of each turn, thereby it would be reasonable that the total amount of turn-taking exchanges increases. In contrast, speakers from the US might be more likely to disagree indirectly (Zhu & Boxer, 2021). Indirect disagreements consist of softeners to disagree more politely (Zhu & Boxer, 2021), thereby the length of each turn could get longer and there would be less turn-taking exchanges overall. However, the turn length and thematic content was not assessed, as this was beyond the scope of this thesis. Therefore at this point it can neither be confirmed nor denied whether the reason for differences in turn-taking during disagreements between the US and China are due to expressing disagreement in a direct or indirect way. There were no observable differences in the number of turn-taking exchanges between the US and Kenya, which could indicate that

the two cultures are somewhat similar in the way they express disagreements. It could be that both cultures prefer to disagree in an indirect way, as indicated by the similarity in the number of turns. However, to deduce that similarity in turn-taking exchanges is really due to the same preference for indirect disagreement, one again needs to take into account average turn length across cultures. Future research could analyze the data in regards to turn length, as this could provide further answers regarding the question, as to whether the cultural differences are based on distinctly different ways to show disagreement. So, cultural differences in disagreements in turn-taking exchanges were observed between the US and China, while no differences were observable between the US and Kenya. On the one hand these results reflect the divide between individualistic and collectivist cultures, on the other hand these results contradict this assumption, as the US and Kenya showed similar turn-taking patterns. We also found differences in the number of turn-taking exchanges between China and Kenya, which indicates that although China and Kenya are both under the umbrella term of collectivist cultures, there is still a huge variety in values and norms on how disagreements should be handled (Miyahara et al., 1998). So, while the divide between individualistic cultures and collectivist cultures is still often used, it is not so easy as to group all collectivist cultures together and make broad assumptions across vastly different cultures. This study indicates that even within collectivist cultures differences in communication patterns during disagreements exist and could reflect different preferences of voicing one's opinion.

This brings up the question at what age exactly socialization processes first become observable. We did not find interactions of culture with age, and no differences in turn-taking exchanges across different age groups. Specifically, research suggests that by the age of five, children from the US and Israel differ in how likely they are to reject different views compared to their own, when it comes to evaluating who belongs to a given social category such as ethnicity (Diesendruck et al., 2013). In this case, 5-year-olds from Israel were more likely to reject different standpoints regarding ethnicity than their own than were 5-year-olds from the US. Likewise, there were cultural differences, when it came to accepting or rejecting

different perspectives on who belongs to which race: children from Israel became more likely to accept differing standpoints with increasing age, whereas children from the US became less likely to accept different standpoints on who belongs to which race with increasing age (Diesendruck et al., 2013). This points to the importance of societal input, where children in the US might learn to view race as a more objective category with relatively simple answers rather than a more complex category, where people might differ in their views. Of course, societal input does not only occur at a broad national level, but also at the individual level through different kinds of experiences with one's environment (Diesendruck et al., 2013). Namely, it has been found that teenagers from multicultural cities see race as a less objective social category than teenagers from the countryside with less diversity in their environment (Rhodes & Gelman, 2009 as cited in Diesendruck et al., 2013). Thus, through socialization processes children learn quite early how much value is placed on each given social category, and this could influence how likely it becomes to accept different viewpoints compared to one's own (Diesendruck et al., 2013). In the same way, differences in socialization processes regarding expectations on how to handle disagreements could emerge early in development as well. Therefore it would be beneficial to investigate this in future research with a younger age group, starting at kindergarten, so that one could pinpoint the time frame in how disagreements are expressed across different cultures. Kindergarten could provide an adequate starting point for this research, as during this time frame, children are more surrounded by their peers and engage in social play, and thus begin to learn how to handle upcoming disagreements.

We also investigated whether speakers from individualistic cultures, such as the US, would tend to interrupt more than speakers from collectivist cultures, such as China and Kenya. Contrary to this assumption, dyads from China interrupted more than dyads from the US, whereas we could not observe differences between the US and Kenya. This is somewhat unexpected, given that research suggested that speakers from collectivist cultures tend to interrupt less than speakers from individualistic cultures (Murata, 1994). However, the same argument can be brought up: collectivist cultures do not share the exact

same values and norms across different countries. In line with this, the study of Murata (1994) assessed differences between speakers from Japan and English-Native speakers. So, the finding that speakers from Japan tended to interrupt less, and listen more, is not generalizable to speakers from China, although both are considered to be collectivist cultures. The analysis also added that there was not an interaction effect of age. The interplay of culture with age could occur in an earlier time frame as well, as it has been shown that socialization processes become observable in kindergarten by the age of five (Diesendruck et al., 2013). In conclusion, dyads from the US had fewer interruptions than dyads from China, whereas there were no detectable differences between the US and Kenya.

It was also assumed that speakers from the US would tend to interrupt more intrusively than cooperatively. This was in fact the case. However, it is important to put the significance of this result into context. Generally, intrusive interruptions are used to convey disagreement, whereas cooperative interruptions are used to convey agreement (Li et al., 2005). Therefore, intrusive interruptions would be more likely to occur during disagreements, and cooperative interruptions would be more likely to occur during agreements. This context proposes an important effect of experimental conditions, with the disagreement condition inherently enhancing the probability that intrusive interruptions are used. To mitigate this limitation, one could compare the use of the different types of interruptions across both conditions within the US sample to make valid conclusions. Alternatively, one could differentiate the different types of interruptions within the disagreement condition across China and Kenya as well to detect important cultural differences in this regard, however due to language barriers this would not have been possible in this part of the project. So far the significance of the result is a good baseline for future research, although it needs to be embedded either in a broader cultural context or a broader situational context (i.e. by comparing it with the agreement condition). Finally, both ways to put the significance of the result into perspective are important to assess the relevance of the result, that speakers from

the US tended to use more intrusive interruptions than cooperative interruptions during disagreements.

Limitations

This study has important limitations to consider. The coding process was challenging at times due to the children wearing FFP-masks or whispering. This made it difficult, and sometimes impossible, to decipher who was talking and who was interrupting whom. For this reason, it should have been communicated to the children beforehand, that they should discuss in a normal tone of voice.

Notably, only verbal turns were coded due to the fact that children were not within the camera frame at all times, thus coding non-verbal turns would have been a difficult endeavor. Naturally, non-verbal cues such as shaking one's head or nodding are an important part within every face-to-face interaction, so they could have provided more detailed insight into underlying communication patterns. Similarly, due to language barriers turn-taking could only be analyzed in its structure, but we do not know with a 100% certainty whether the whole amount of turn-taking exchanges within a trial was relevant to achieving a cooperative decision. More obvious examples of turns that were unrelated to the discussion, consisted of children singing or rapping for fun, yet more subtle behaviors might not have been caught, and hence may have become part of the analysis, although not intended.

In the same way, overlaps of more than 350 ms were analyzed as an interruption, however it is not for certain, whether these overlaps were just long backchannels or indeed were meant to interrupt the other person. The criteria of length of overlap was based on the observation that most of the time people overlap in talk for 350 ms with no speaker change after that (Levinson & Torreira, 2015). When speaker change occurs, the modal duration of overlap is even shorter with 96 ms (Levinson & Torreira, 2015). However, it has also been found that the majority of overlaps consist of backchannels (Bertrand et al., 2007), which were not meant to be analyzed as interruption, as backchannels are meant to be supportive to the current speaker's turn (Bertrand et al., 2007). Due to the fact that we analyzed

overlaps of more than 350 ms to be interruptive, we might have analyzed backchannels as well, since the time frame might have been too narrow. Granted, this might have been more of an issue with coding data from China and Kenya due to language barriers, whereas when coding data from the US, it was apparent from context that overlaps of more than 350 ms were not just backchannels. Recent research also indicates that there might be cultural variations in the durations of backchannels (Zellers, 2021). For instance, backchannels were analyzed in the Bantu language Ruruuli/Lunyala and varied between approximately 400 ms and 800 ms in duration (Zellers, 2021). These durations seem to be higher than our baseline expectation, which was based on the analysis of English conversations on the telephone (Levinson & Torreira, 2015). Additionally, it has been suggested that speakers from the Ruruuli/Lunyala language have a higher frequency of backchannels per minute than speakers of Australian English (Zellers, 2021). Taken together, this could indicate cultural differences in the duration and the frequency of backchannels, which could explain why in our study dyads from China “interrupted” more than their counterparts from the US. Accordingly, it might have been possible that the criteria of overlap duration might have been too short, or rather might vary across cultures: It might have been adequate to capture interruptions within the US, yet it might have been too short when applied to various cultural contexts. Thus, we might have categorized backchannels to be interruptions in dyads from China and Kenya. In conclusion, there is no one-size-fits-all-approach when it comes to conducting intercultural research, rather it is important to operate in a culturally sensitive way, and that might have included setting different criteria for overlap duration that is appropriate for each cultural context.

The cultural context is also important when studying the use of interruptions. As there is no consistent definition of what constitutes an interruption (Anderson & Leaper, 1998), it is very much dependent on the interpretation of both the person who interrupts and the person who got interrupted (Tannen, 2005). For instance, interruptions are viewed quite positively within Jewish communities, as it indicates interpersonal rapport (Zupnik, 2000). The distinct ways to interpret interruptions not only vary across cultures, but also individually. Indeed, it

has been suggested that preferred conversational style influences how one values the pace of conversations as well: some people prefer fast-paced conversations and judge long overlaps to be positive, whereas others prefer a slower pace and therefore judge long overlaps as something to avoid (Tannen, 2005). Another factor to consider, is that conversations are dynamic in nature, so one could reasonably argue that when one person frequently interrupts, the other person might tend to interrupt more as well to achieve conversational balance, or because the frequent use of interruptions establishes an implicit norm within this conversation. All of this taken together suggests that there is enormous variance, both culturally and individually, in the use of interruptions and communication patterns as a whole. Thus, it is important to both study communication patterns in intercultural contexts, while also taking into account personal preferences and situational factors. All of these considerations point to the fact that in order to find global solutions to global challenges, one has to know how to communicate effectively while being sensitive to various cultural contexts, preferred conversational styles and situational factors.

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Appendix

Appendix A: Overview of ELAN Coding Scheme

Case 1:

Speaker A I_____I

Speaker B I _____I

(overlap > 350 ms)

→ Turns: 2

→ Interruptions: 1

Case 2:

Speaker A I_____I

Speaker B I_____I

(overlap > 350ms)

→ Turns: 2

→ Interruptions: 1

Case 3:

Speaker A I_____I

Speaker B I__I

(overlap < 350 ms)

→ Turns: 2

→ Interruptions: 0

Appendix B: Table 2

Table 2

Regression of Differences in Turn-Taking Exchanges

Predictors	*Estimates*	*CI*	*p*
Intercept	0.16	[-11.07; – 11.3]	0.978
China	19.32	[5.77; 32.88]	0.006
Kenya	8.99	[-7.63; 25.60]	0.286
Gender male	5.84	[-2.92; 14.59]	0.190
age 6	5.48	[-8.76; 19.72]	0.448
Age 7	2.71	[-11.35; 16.77]	0.704
Age 8	7.58	[-7.01; 22.16]	0.306
Age 9	9.43	[-5.92; 24.77]	0.226
Interaction China* Male Gender	-3.55	[-15.86; 8.76]	0.569
Interaction Kenya*Male Gender	-0.43	[-12.52; 11.65]	0.944
Interaction China*Age 6	2.33	[-17.11; 21.77]	0.813
Interaction Kenya*Age 6	-11.33	[-31.20; 8.54]	0.261
Interaction China*Age 7	1.43	[-16.91; 19.78]	0.877
Interaction Kenya*Age 7	-1.26	[-22.37; 19.85]	0.906
Interaction China*Age 8	-15.26	[-33.27; 2.74]	0.096
Interaction Kenya*Age 8	-8.73	[-29.30; 11.83]	0.402
Interaction China*Age 9	-16.73	[-38.00; 4.53]	0.122
Interaction Kenya*Age 9	-2.79	[-22.95; 17.37]	0.785
Random Effects			
σ^2	133.58		
$\tau_{00\ ID}$	55.37		
ICC	0.29		
N_{ID}	45		

Observations	142
Marginal R^2 / Conditional R^2	0.213 / 0.444

Appendix C: Table 5

Table 5

Pairwise comparisons of Age Differences in Turn-Taking Exchanges

Contrast	Estimate	*SE*	*df*	*t*	*p*
Age 5 - Age 6	-2.4784617	3.840531	123.8036	-0.6453435	0.9672132
Age 5 - Age 7	-2.7658972	4.130866	119.1662	-0.6695683	0.9625496
Age 5 - Age 8	0.4202497	4.029803	107.0789	0.1042854	0.9999728
Age 5 - Age 9	-2.9195776	4.243749	108.0564	-0.6879713	0.9586985
Age 6 - Age 7	-0.2874355	3.620678	123.9823	-0.0793872	0.9999909
Age 6 - Age 8	2.8987114	3.702679	102.0332	0.7828687	0.9350338
Age 6 - Age 9	-0.4411159	4.069110	103.1502	-0.1084060	0.9999683
Age 7 - Age 8	3.1861469	3.853622	105.0268	0.8267928	0.9217749
Age 7 - Age 9	-0.1536804	4.017432	111.0346	-0.0382534	0.9999995
Age 8 - Age 9	-3.3398273	3.813319	107.1337	-0.8758321	0.9051807

Appendix D: Table 6

Table 6

Pairwise Comparisons of Gender Differences in Turn-Taking Exchanges

Contrast	Estimate	*SE*	*df*	*t*	*p*
female - male	-4.507322	2.432869	119.8103	-1.852677	0.0663895

Appendix E: Table 9

Table 9

Regression of Cultural Differences in Interruptions

Predictors	*Incidence Rate Ratios*	*CI*	*p*
Intercept	0.00	[0.00; 0.02]	<0.001
China	4.86	[1.07; 22.06]	0.040
Kenya	4.77	[0.80; 28.35]	0.085
Age 6	7.07	[1.33; 37.57]	0.022
Age 7	3.83	[0.71; 20.73]	0.119
Age 8	5.77	[1.07; 31.08]	0.041
Age 9	7.14	[1.31; 38.88]	0.023
Gender male	1.14	[0.53; 2.46]	0.743
Interaction China*Age 6	0.13	[0.02; 0.84]	0.032
Interaction Kenya*Age 6	0.13	[0.02; 0.94]	0.043
Interaction China*Age 7	0.29	[0.05; 1.76]	0.178
Interaction Kenya*Age 7	0.38	[0.05; 2.89]	0.350
Interaction China*Age 8	0.07	[0.01; 0.45]	0.005
Interaction Kenya* Age 8	0.21	[0.03; 1.62]	0.135
Interaction China*Age 9	0.18	[0.03; 1.17]	0.073
Interaction Kenya*Age 9	0.30	[0.04; 2.17]	0.234
Interaction China*Gender male	0.77	[0.28; 2.08]	0.606
Interaction Kenya*Gender male	0.78	[0.30; 2.02]	0.603

Random Effects

σ^2	4.25
$\tau_{00\ ID}$	0.34

$\tau_{11\ ID.z.trial}$	0.04
$\rho_{01\ ID}$	0.13
ICC	0.07
N_{ID}	45
Observations	142
Marginal R^2 / Conditional R^2	0.056 / 0.126

Appendix F: Table 11

Table 11

Pairwise Comparisons of Age Differences in Interruptions

Contrast	Estimate	*SE*	*df*	*z*	*p*
Age 5 - Age 6	-0.5988479	0.3614734	Inf	-1.6566857	0.4610597
Age 5 - Age 7	-0.6059239	0.3824665	Inf	-1.5842534	0.5075070
Age 5 - Age 8	-0.3633785	0.3884422	Inf	-0.9354762	0.8831452
Age 5 - Age 9	-1.0011620	0.3782408	Inf	-2.6468903	0.0621924
Age 6 - Age 7	-0.0070760	0.2649598	Inf	-0.0267060	0.9999999
Age 6 - Age 8	0.2354694	0.2821434	Inf	0.8345735	0.9199270
Ag e6 - Age 9	-0.4023141	0.2778397	Inf	-1.4480078	0.5964499
Age 7 - Age 8	0.2425454	0.3159000	Inf	0.7677918	0.9398457
Age 7 - Age 9	-0.3952380	0.2882550	Inf	-1.3711404	0.6462508
Age 8 - Age 9	-0.6377835	0.2760193	Inf	-2.3106481	0.1413837

Appendix G: Abstract (English)

Global challenges like climate change affect humanity as a whole and result in various disagreements in the way these issues should be handled. Therefore it is necessary to communicate effectively to resolve disagreements. Through societal values and norms we learn early on how we should express disagreement. Yet, it is not clear when these differences in the way we handle disagreements begin to emerge in diverse cultures. This study investigates the culturally different ways in which disagreements are handled by focusing on underlying communication patterns in children aged between five to nine years old. A between-subjects design of cross-sectional data was used by quantitatively analyzing videos from the US, China and Kenya. We found differences in the number of turn-taking exchanges between the US and China. Dyads from China also interrupted more than dyads from the US, with no differences in interruptions between the US and Kenya. Similarly, we found no differences in turn-taking between the US and Kenya. On the one hand these results reflect the divide between individualistic and collectivist cultures in communication patterns, on the other hand these results contradict this assumption, as the US and Kenya showed similar turn-taking patterns. We also found differences in turn-taking between China and Kenya, which indicates that although China and Kenya are both commonly regarded as collectivist, there is still considerable variety in how disagreements are handled. Within the US, speakers used more intrusive than cooperative interruptions. This study indicates that there are intercultural differences in communication patterns during disagreement, which are observable in children beginning at least at 5 years-old. Socialization differences could play a role in how disagreements are handled. Future research could investigate how early these socialization differences first start to emerge.

Appendix H: Abstract (German)

Globale Herausforderungen wie der Klimawandel betreffen die gesamte Menschheit und führen zu vielfältigen Meinungsverschiedenheiten, wie mit diesen Problemen umgegangen werden sollte. Deshalb ist es erforderlich, effektiv zu kommunizieren. Durch gesellschaftliche Werte und Normen, lernen wir von klein auf, wie Meinungsverschiedenheiten ausgedrückt werden sollten. Bisher ist noch unklar, ab wann kulturelle Unterschiede in der Weise, wie wir mit Meinungsverschiedenheiten umgehen, erstmals auftreten. Diese Studie untersucht interkulturelle Unterschiede, wie mit Meinungsverschiedenheiten umgegangen wird, indem zugrundeliegende Kommunikationsmuster von Kindern im Alter von fünf bis neun Jahren analysiert werden. Dafür wurde ein Zwischensubjektdesign aus querschnittlichen Daten verwendet, um Videos aus den USA, China und Kenia quantitativ zu untersuchen. Es wurden Unterschiede im Sprecherwechsel zwischen den USA und China gefunden. Zudem unterbrachen sich Dyaden aus China häufiger als Dyaden aus den USA, wobei keine Unterschiede zwischen den USA und Kenia bei Unterbrechungen gefunden wurden. Ebenso gab es keine beobachtbaren Unterschiede im Sprecherwechsel zwischen den USA und Kenia. Einerseits weisen die Ergebnisse auf die Unterschiede in Kommunikationsmustern zwischen individualistischen und kollektivistischen Ländern hin, andererseits widersprechen sie dieser Annahme, da die USA und Kenia ähnliche Muster im Sprecherwechsel zeigten. Zudem wurden auch Unterschiede zwischen China und Kenia im Sprecherwechsel gefunden. Dies zeigt auf, dass obwohl beide Länder häufig als kollektivistisch eingeordnet werden, es wesentliche Unterschiede gibt, wie mit Meinungsverschiedenheiten umgegangen wird. Innerhalb der USA unterbrachen sich Kinder häufiger auf intrusive als auf kooperative Art. Diese Studie weist darauf hin, dass interkulturelle Unterschiede in Kommunikationsmustern bei Meinungsverschiedenheiten bestehen, die zumindest bei fünfjährigen Kindern schon beobachtbar sind. Sozialisationsunterschiede könnten eine Rolle dabei spielen, wie mit Meinungsverschiedenheiten umgegangen wird. Zukünftige Forschung sollte ermitteln, ab wann Sozialisationsunterschiede erstmals auftreten.