CHAPTER 4

Turn-taking

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Conversation is a structured, joint action for which children need to learn a specialized set skills and conventions. Because conversation is a primary source of linguistic input, we can better grasp how children become active agents in their own linguistic development by studying their acquisition of conversational skills. In this chapter I review research on children's turn-taking. This fundamental skill of human interaction allows children to gain feedback, make clarifications, and test hypotheses at every stage of development. I broadly review children's conversational experiences, the types of turn-based contingency they must acquire, how they ask and answer questions, and when they manage to make timely responses.

Introduction

Turn-taking is the stuff of everyday conversation. It seems simple enough to accomplish; one person speaks, and then another, with some amount of switching throughout the interaction. But this seemingly simple process has substantial theoretical importance for the ways we use and learn language – turn-taking offers strong universal tendencies in human conversation (Stivers et al., 2009). Human interaction is characterized by a give-and-take sequential structure that participants use to converge on an understanding of intention through clarification, correction, and continuation (Levinson, 2006). For children, this means that conversation with their caregivers isn't simply a source of linguistic input, but an individually-tailored framework for learning about both language and the world at the same time.

To become fully active agents in conversation, children must learn to manage turn-taking in collaboration with their interlocutors. How can they do this? Adult interlocutors systematically select one speaker at any given time by indicating when they will hold the floor, when they are about to relinquish it, and when they want to take it up (Duncan, 1972; Kendon, 1967; Sacks, Schegloff, & Jefferson,

1974). In addition to organizing who will talk when, they exercise conversational contingency by making each turn germane to the topics at hand, grounding contributions as needed (H.H. Clark, 1996; H.H. Clark & Brennan, 1991; Grice, 1967). So, despite its superficial simplicity, turn-taking is supported by a number of complex cognitive processes.

Cross-linguistically, adults are adept at taking turns. They do so rapidly, with brief or no overlap even though turn length and speaker order are rarely specified ahead of time, and there are no categorical turn-ending cues (Levinson, 1983; Sacks et al., 1974; Stivers et al., 2009). When breakdowns occur in conversation, speakers work together to restore missed information via repair sequences (Forrester, 2008; Sacks et al., 1974; Schegloff, 1977, 2000).

Similarly, children develop as conversationalists by learning how to get and maintain joint attention, establish common ground, make repairs, and estimate what is relevant (e.g., E.V. Clark, 1982; Ervin-Tripp, 1982; Filipi, 2009; Forrester, 2008; Gardner & Forrester, 2010; Kidwell & Zimmerman, 2007; Wootton, 1997). Foundational work on children's turn-taking skills focused on both quantitative and qualitative methods of studying children's conversation. But more recently, research on children's turn-taking has been primarily active among Conversation Analysts (Filipi, this volume). In this chapter, I aim to review turn-taking research from each of these methods in an effort to give newcomers a general lay of the land. I review the following topics: when and with whom children get conversational practice, conversational contingency, how children answer questions, and when they learn to take turns in a timely manner.

Conversation with children

Young children do not take turns like adults do. They are often irrelevant, take too long to contribute, and sometimes neglect their turn to speak (Casillas, Bobb, & Clark, under review; Dunn & Shatz, 1989; Ervin-Tripp, 1979; Garvey & Berninger, 1981; Lieberman & Garvey, 1977). In order to develop as conversationalists, children must handle interaction with interlocutors of different ages and skill levels. In part, the ability to communicate with interlocutors from diverse backgrounds arises from a general competence for recognizing intentions that is achieved through turn-taking itself (Levinson, 2006). But children can also cultivate their conversational flexibility through experience with a variety of interlocutors. Throughout their early lives, children collect language experiences from their caregivers, siblings, peers. Each individual experience is an instance of turn-taking practice in which the child's behavior and understanding is shaped by the current context shared between themselves and their interlocutors. By

aggregating across these experiences, the child can gain a sense of norms, or expectations, for conversation.

One of the first types of conversation that children are exposed to is dyadic interaction with their caregivers (Snow, 1977; Stephens & Matthews, this volume). During these "proto-conversations", caregivers shoulder much of the turn management: they elicit turns from their child by responding to the child's actions with their own contingent utterances (K. Bloom, 1975; K. Bloom, 1984). One-on-one caregiver attention makes dyadic interaction easy for young children in comparison to other conversational situations.

In triadic conversation, for example, children are challenged more to compete for the floor. Children do not master the ability to break into ongoing speech until just before 6;0 (Ervin-Tripp, 1979) and before then may be unsuccessful at getting a word in edgewise during multi-speaker conversation (Dunn & Shatz, 1989). As an alternative, they might rely on less subtle attention-getting tactics such as tugging at hems, turning a caregiver's face with their hands, overlapping, or repeatedly calling attention to themselves. But these efforts are not part of the conventional system for taking turns, and so children shed them as they acquire the skill to break in (E.V. Clark, this volume).

Older siblings and peers also give children a chance to interact with speakers who are not fully skilled in turn management. Older siblings may perceive younger family members as less conversationally competent and adjust their speech accordingly. But they *also* compete for the floor during triadic conversation and so take advantage of their faster turn-timing skills to gain the floor before their younger siblings (Dunn & Shatz, 1989). This is rough for younger siblings, but provides them with strong motivation to develop hardy turn-taking skills – and quickly.

Children also experience different turn-taking between caregivers. In some families, one caregiver is significantly more familiar with the child (e.g., a stay-at-home parent). Conversational differences between caregivers do not show up in the linguistic structure of their speech, but rather in how they engage their children in turn-taking. Less familiar caregivers experience significantly more breakdowns in conversation with their children and use significantly more clarification questions (Mannle & Tomasello, 1987). Their clarification questions are more general than familiar parents' ("hm?" vs. "you want *which* truck?"), which suggests they have a harder time comprehending their children's speech. Less familiar caregivers are also less likely to follow up clarification questions with further clarification requests (Tomasello, Conti-Ramsden, & Ewert, 1990). Children pick up on these differences. One-year-olds are more likely to elaborate on a prior, unacknowledged turn with a caregiver who is more familiar, suggesting that they expect different turn-taking behavior from different caregivers (Tomasello et al., 1990).

In sum, children work harder for successful interaction with siblings, peers, and less familiar caregivers. Their experiences can serve as practice for challenging communicative situations (Gleason, 1975). Under this view, caregivers who spend unequal amounts of time with their children play complementary, and not redundant, roles. Conversation with a diverse set of interlocutors allows children the opportunity to try out their skills in a challenging, but familiar, arena. Children must generalize across their experiences so they can transfer knowledge from one interaction to another. This way they can form expectations for conversational practices, including timing. The mechanisms by which this occurs are not currently clear, but any proposals will also have to account for the local meaning-making and adaptation of interaction that both adults and children are capable of achieving (Levinson, 2006; Wootton, 2007).

Contingency

Contingency is the glue that holds turns together: the update and ratification of common ground, the formulation of feedback and repair, and the construction of coherent interaction all rely on between-turn contingency. Children must master conversational contingency to communicate effectively. This task is challenging both cognitively and pragmatically since it requires the child to continuously assess recent and ongoing interaction for relevant next moves – even when these aren't in the immediate interest or attention of the child. In order to understand the kinds of "input" that children are exposed to, we must first understand how children begin to actively shape conversation through their own contributions.

Temporal contingency is fundamental to turn-taking behavior because it associates turns in time. Infants are exposed to temporal contingency in proto-conversations with their caregivers, who elicit and maintain bouts of smiling, vocalization, and babbling. Caregivers respond verbally to non-linguistic "utterances" from their infants, and even treat vegetative productions[1] as if they were contributions (Berger & Cunningham, 1983; Snow, 1977). Eye contact, smiling, and vocalizations give caregivers an impression of joint attention between the infant and themselves. They can build on these cues to create "conversational" structure that looks like cooperative turn-taking (Snow, 1977; Stephens & Matthews, this volume). Caregiver and child also sometimes vocalize in unison, resulting in another joint turn-taking action (Stern et al., 1975). With simultaneous vocalization, the caregiver is still primarily responsible for maintaining the temporal contingency that results in synchronous action. In managing conversational contributions,

1. Burps, hiccups, sneezes, kicks, grunts, sighs, and the like.

caregivers mark their turns with bodily actions. This punctuates the meaning and structure of interaction with their infants (Nomikou & Rohlfing, 2011).

Caregivers who strive for organized social interaction with their infants must establish joint attention. In doing so, they actively seek out infant behaviors that can be interpreted as social participation (K. Bloom, Russell, & Wassenberg, 1987; Tomasello, 1988). Adults can tell the difference between more and less "speech-like" vocalizations, and prefer to elicit the former (K. Bloom, 1974; K. Bloom & Lo, 1990; K. Bloom et al., 1987; Kaye & Fogel, 1980; McDonald & Pien, 1982; Oller, 1981; Weist & Stebbins, 1972).

Do these efforts have any effect on infants? At three months, infants discriminate between social stimulation that is contingent and non-contingent (i.e., randomly-timed). They produce more speech-like vocalizations separated by longer intervals when adult responses are contingently timed to their turns (K. Bloom et al., 1987; Kaye, 1979; Masataka, 1993). The longer intervals between vocalizations suggest that the child is converging toward a "speak-listen" pattern of interaction. Whether the child responds with more speech-like vocalizations depends on the caregiver's utterance. For example, adult responses of 'tsk tsk tsk' (dental clicks), result in a "speak-listen" pattern, but with *fewer* speech-like vocalizations (K. Bloom, 1988).

Paired with an affectually positive interaction, temporal contingency creates a welcome environment for communicative exploration (Kaye, 1979), and by age one, children actively maintain turn-taking games with their caregivers (E. V. Clark, 1982; Ross & Lollis, 1987). These early contingent sequences often lack clear semantic intentionality (L. Bloom, 1983), but the foundation of temporal contingency may aid in the emergence of semantic contingency so that children can make relevant contributions.

Semantic contingency, which links individual turns to each other through meaning, is another fundamental property of turn-taking, for adults and children. Young children are often not granted the floor when they interrupt ongoing conversation. But they are even *less* likely to be granted the floor if they interrupt with a new topic, rather than a completion of the current speaker's utterance or some other anticipation (Ervin-Tripp, 1979). By 3;6 children regularly demonstrate semantic contingency by using their turns at speech to both ratify the prior utterance and add new information (E. V. Clark & Bernicot, 2008).

While monitoring for semantic contingency, children are learning to listen for relevance, which has implications for self-monitoring and self-correction in later development (Revelle et al., 1985; Robinson, 1981; Shatz & O'Reilly, 1990). There is individual variability both in how infants engage in interaction, and how their caregivers initiate it (Kaye, 1979). Caregivers within and across cultures show large differences in their interactive styles (e.g., Kaye & Charney, 1981; Olson-Fulero, 1982; Schieffelin, 1990). The ways that caregivers comment on their children's

speech can contribute to their pragmatic development. For example, explicit clarification feedback and references to others' mental states can give children a leg up on effective communication (Ensor & Hughes, 2008; Matthews, Butcher, Lieven, & Tomasello, 2012; Robinson & Robinson, 1985).

In sum, children's expectations about contingency must be formed around the timing and turn-taking norms of their language communities. When children are able to make their contributions temporally and semantically contingent, they can actively engage their interlocutors in coherent conversation. Future research must address how children come to form models of appropriate timing and relevance between turns. Often, one turn seems to "project" a set of next turns (Schegloff, 1988), but the mechanisms by which children learn these sets of projections need to be further outlined. Questions are essential to interaction, and often project specific response types. Perhaps it is for this reason that much of the recent work on turn-taking has focused on the way children ask and answer questions.

Asking and answering questions

Questions are well-suited for turn-taking studies since they (a) clearly allocate the next turn (to the answerer), (b) are used pervasively in child-adult interaction to gain joint attention and (c) often drive topics of conversation (Lieven, 1978). Previous work on questions has typically focused on what is asked of children, what children ask of others, and how questions are used to repair breakdowns in conversation.

Question and answer types

Different types of questions emerge at different times in caregiver and child speech. "*Wh-*" questions appear in children's interactions in the approximate order: *where/what*, *why*, *who*, and *when* (E. V. Clark, 2009; Ervin-Tripp, 1970; Ingram & Tyack, 1979). The emergence of questions with different response functions also shows order: questions that require the child to provide a deictic answer (e.g., a point, look, or "there") decrease with age over the first four years, while questions requiring more complex responses or interpretations increase (e.g., *why*, tag, and rhetorical questions; Casillas et al., under review). Children are not equally responsive to different question functions. Before age 4;0 they prefer to answer questions whose form is restricted more than those whose form is more free (e.g., repairs vs. rhetorical questions; Olsen-Fulero, 82; Olsen-Fulero & Conforti, 1983). In forming their questions and answers, children and adults can use non-sentential turns (1):

(1) A: She left for the pharmacy an hour ago.
B: Which one?
A: The one around the corner.
B: Right.

Non-sentential questions and answers are highly frequent in adult-child speech, but children produce non-sentential answers long before they produce non-sentential questions (Ginzburg & Kolliakou, 2009). In sum, children are exposed to a wide variety of question and answer types, but the use of these types is partially determined by age. So, not all types are represented equally in conversation at each stage of development.

Repairs

Breakdown happens often in conversation. When it happens, a repair must be made to get the interaction back on track, and repairs often come in the form of questions and requests for clarification and further information. In conversation between children and adults, repair occurs for disfluencies, ungrammatical utterances, and improperly communicated speech (see, e.g., Filipi, 2009; Forrester, 2008; Gardner & Forrester, 2010; Wootton, 1994, 2007). It is either *self-initiated*, through self-monitoring and correction, or *other-initiated*, often through the use of clarification questions (Cherry, 1979; E. V. Clark, 1982; H. H. Clark & Marshall, 1981; Jefferson, 1974). The three-part turn structure[2] of other-initiated repair sequences enables children to recognize the need for repair and make an attempt at correction (Tarplee, 2010). Children provide ample opportunities for conversational repair since they make errors often, and are likely to be misunderstood, even by their caregivers. Young children's utterances to adults are responded to with clarification questions 20% of the time (Forrester & Cherington, 2009; Ninio, 1986). Children's repairs at this age may appear to be selective because of their memory limitations, incomplete linguistic representations, or their focus on a particular part of the linguistic system (E. V. Clark, 1982; Dodd, 1975; Smith, 1973). When they do make repairs, they almost always end up better approximating the adult form, whether the repair is phonological, morphological, lexical, or syntactic (E. V. Clark, 1982). This suggests that they orient to adult speech in their initiation and realization of repair sequences (E. V. Clark, 1982; Norrick, 1991; Tarplee, 1996). Repair is critical to language learning because it calls children's attention to how they might design utterances for their recipients. When intentions are made maximally transparent in this way, communication is likely to succeed even in difficult situations (e.g., Levinson, 2006).

2. Trouble source (turn 1), initiation of repair (turn 2), and confirmation or further repair (turn 3).

In adult conversation, speakers prefer to repair their own utterances without listener intervention (Schegloff et al., 1977). Because children's speech is error-prone and there is a significant discrepancy between the language skills of caregivers and their children, child-adult conversation might seem to present an exception to this rule. But, this is not the case. Other-initiated self-repair (OISR) differs from self-initiated self-repair (SISR) in that it can provide particulars concerning the placement and character of the error, e.g., "You wanted *which* train?" (Schegloff, 1979; Wooton, 1994). Children alter their repairs differently when they are given more or less information about an error, and caregivers leverage this by using specific requests to pinpoint errors for children as they get older (Anselmi, Tomasello, & Acunzo, 1986; Corrin, 2010; Corsaro, 1977; Gallagher, 1981; Shatz & O'Reilly, 1990). Children perform SISR from their first words onward (E. V. Clark, 1982), which suggests that they do not prefer OISR. Instead, any discrepancy between SISRs and OISRs in child-adult interaction likely has a pragmatic basis in the way that children and caregivers interact (Filipi, 2009).

Over the course of their first five years, children's self-repairs reflect the linguistic subsystem they are currently acquiring (E. V. Clark, 1982; Salonen & Laakso, 2008). A child's first repairs are often phonological; they add on forgotten word-final consonants or attempt missed consonant clusters (E. V. Clark, 1982; Scollon, 1976; Stokes, 1977). Later on, they also make repairs to morphological, syntactic, and lexical errors. The first morphological repairs in English tend to focus on marking pronoun case (*I* vs. *me*) and then, later, pronoun gender and number.[3] For lexicosyntactic errors, they start adding qualifiers, exchanging pronouns for full NPs, and replacing lexical items altogether (E. V. Clark, 1982).

In other-initiated repair, children hear both specific and non-specific clarification requests from their caregivers – and they hear them often (Corrin, 2010; Corsaro, 1977; Forrester & Cherington, 2009; Shatz & O'Reilly, 1990; Wootton, 1994). Repairs are especially likely to arise following a child's initiation of a new topic (Corrin, 2010; Tomasello et al., 1990). Before they reach 2;0, children recognize and respond to requests for clarification 75% of the time, and their responses nearly always better resemble adult speech (E. V. Clark, 1982; Corrin, 2010; Gallagher, 1977). Few clarifications by children, even young ones, are simply repeats of a prior utterance. Instead, clarifications often involve a reformulation, paired with a partial repeat (E. V. Clark, 1982; Corrin, 2010; Forrester & Cherington, 2009).

After their second birthday, children also begin adding pauses, elongated speech, emphasis, and the use of contrast terms to their repairs (Forrester & Cherington, 2009). Two-year-olds are probed with more specific clarification requests than non-specific requests (one-third of which function as rhetorical

3. Often arising in the detailed side-sequences of pretend play.

questions). They also begin to initiate repair for caregiver speech, using nearly equal amounts of specific and non-specific requests (Forrester, 2008; Shatz & O'Reilly, 1990). At this age, children more often respond to clarifications about their requests than clarifications of their assertions (Shatz & O'Reilly, 1990).

At 3;0, children use repair to call someone to account on their statement of incorrect information, and they may even anticipate troubled portions of conversation (Forrester & Cherington, 2009). For example, children will correct their peers, siblings and caregivers when incorrect labels are used (E. V. Clark, this volume; Matthews, Lieven, & Tomasello, 2010). Overt other-correction is a sign that children are not only monitoring their own speech, but the speech of their interlocutors.

Around this same time children show an increase in syntactic, lexical, and pragmatic self-repairs and a decrease in phonological repairs (E. V. Clark, 1982; Evans, 1985; Salonen & Laakso, 2008). Syntactic repairs arise when children are faced with a difficult upcoming construction (e.g., a passive) or make a syntactic error that prevents them from proceeding linearly with their utterance. Lexical repairs tend to be substitutions of one phrase for another, often so the child can be more precise (E. V. Clark, 1982). By age 4;0, self-repair is usually self-initiated, with skillful use of cut-offs and particles in the repair itself (Salonen & Laakso, 2008). These developments are consistent with adult speech patterns (Schegloff, 1977), though they are sometimes implemented differently. For example, Finnish children use cut-offs less frequently than adults do, instead using the repair particle "eiku" (*no, but*) more often (Salonen & Laakso, 2008).

By age five, children expertly use repair to anticipate and avoid communicative breakdowns. They use the same self-monitoring skills in order to adjust features of their interaction to fit their current social situation (Salonen & Laakso, 2008; Shatz & Gelman, 1973). At this age, children are nearly as proficient as adults are at asking and responding to a range of question types. By mastering these skills, children and their caregivers can use questions to move toward mutual understanding of communicative effectiveness (see, e.g., Matthews et al., 2012; Robinson & Robinson, 1985).

Repair shows up time and again in debates of language learning, since it may play a pivotal role in giving children indirect negative feedback about their productions (Chouinard & Clark, 2003; Tarplee, 2010, cf. Morgan, Bonamo, & Travis, 1995). With the exception of some studies referenced above, direct links between repair and language learning outcomes are still in need of attention. Upcoming work on this will have to account for the fact that the kinds of repair initiated by children and their caregivers changes over the course of their development. Additionally, future cross-linguistic studies of how questions are asked and answered (including repairs) will be critical to understanding the universal importance of repair and question-asking for language learning.

Timely turn-taking

One aspect of turn-taking that does not often elicit overt repair is the timing of turns. It is not easy to take turns on time! Across the world's languages, inter-speaker gaps usually speed by to the tune of 250 ms or less (Stivers et al., 2009). In order for speakers to take turns with such rapidity, we must have at least two processes underlying real-time conversational structure. We must (a) project when a current turn is going to end so that we know when the floor will be open, and (b) simultaneously plan some of what our response will be (Sacks et al., 1974).

By adult standards, children's gaps are unusually long. In peer conversation, three-year-olds have average gap lengths of 1.5 seconds (Lieberman & Garvey, 1977) and take over 2.0 seconds to respond to questions. But they are faster in conversation with skilled interlocutors – in response to their mothers' questions, three-year-olds have average gap lengths of only 0.75 seconds (Casillas et al., under review). Gap durations shorten with age, and at each stage of development, children's ability to take turns on time depends on how many speakers are involved in the conversation, how skilled their interlocutors are, and the types of utterances they are responding to (Casillas et al., under review; Dunn & Shatz, 1989; Ervin-Tripp, 1979). If children are not able to plan their responses quickly enough, or if they have to rely on pauses to know when to come in, their gaps will appear more delayed. Thus, when children consistently take turns on time, it is a sign that they are able to effectively perform both projection and utterance planning.

Earlier in their development, children may rely on turn-final cues such as pauses to determine when to come in. Their linguistic skills may not be advanced enough to reliably anticipate the end of an ongoing utterance (Garvey & Berninger, 1981; Gearhart & Newman, 1977). At this stage, they sometimes use overlap in ways uncommon for adult-adult conversation (Corrin, 2010).

So what does it take to come in on time? Effective turn-end anticipation involves the integration of semantic, syntactic, pragmatic, and prosodic information (Corrin, 2010; Gallagher & Craig, 1982; Wells & Macfarlane, 1998), not to mention non-verbal cues such as gaze, posture, and gesture (Kendon, 1967; Kendon, 2004).[4] Even for adults, there has been little work that focuses directly on the linguistic and non-linguistic cues that listeners use to project upcoming turn-end boundaries (cf. de Ruiter, Mitterer, & Enfield, 2006; Tice & Henetz, 2011). Rather than using experimental manipulation and precise temporal measurements, many prior studies have focused on *overlap* as a measure of anticipation (Gallagher & Craig, 1982). In Example (2) below, B initiates his response right at the boundary of A's first plausible turn-ending. Since there is no pause in A's turn for B to react to, we can infer that B's precise timing was due to his anticipation of A's possible turn-ending:

4. Though of course we can get by without visual cues on the telephone (as can children, by 6;0, Ervin-Tripp, 1979).

(2) Example of overlap (overlapped portions are underlined)
A: I have two kids <u>from my first</u> marriage
B: <u>no kidding!</u>

Since it takes time to carry out an action (e.g., starting to say a word), overlap at the beginning of a phrasal boundary indicates that the speaker anticipated that boundary. Because the speaker has at least a partial response prepared, we can also infer that he has planned it while listening to the prior turn.

Overlap occurs in children's speech to adults and other children. Four-year-old speakers can time their overlapped utterances nearly perfectly (Miura, 1993; Wells & Corrin, 2004) and by 6;0, they expertly manage overlap by recycling and repairing overlapped speech to ensure communicative clarity (Ervin-Tripp, 1979; Filipi, 2009; Gallagher & Craig, 1982; Jefferson, 1973; McTear, 1985). Overlap can be non-verbal, just as a headshake can serve as an answer to a question. Non-verbal overlap is common in child-child conversation, and children attend to these non-verbal cues of overlap and turn-timing (Corrin, 2010; Craig & Gallagher, 1982; Ervin-Tripp, 1979; Gallagher & Craig, 1982; Kendon, 1967, 2004; Wells & Corrin, 2004).

To anticipate upcoming turn-end boundaries, adults attend to syntactic, prosodic, and non-verbal cues, the most critical of which might be lexical and syntactic information (de Ruiter et al., 2006). Children's timing by age 4;0 is within the range of adult norms (Casillas et al., under review), but we do not know what cues children rely on to anticipate upcoming turn-end boundaries at this age. Perhaps children rely on different cues than adults do. Because children show early prosodic competency (see, e.g., Byers-Heinlein et al., 2008; Mehler et al., 1996), one idea is that they rely more on prosodic information than adults do (Casillas & Frank, 2012), but this has yet to be definitively shown.

Besides knowing *when* to come in, children must plan *what* to say in order to take turns on time. In planning a response, children depend on their budding linguistic systems. Children's delay in responding relates to the difficulty of the question they are faced with and the speech they decide to produce (Casillas et al., under review; Garvey & Berninger, 1981). When adults anticipate a longer-than-appropriate delay in their responses, they use fillers such as *uh* or *um*. By their second birthdays, children show sensitivity to these fillers as indicators of uncertainty or newness (Kidd, White, & Aslin, 2011). Also around this time, fillers emerge in children's spontaneous speech, often first appearing in unconventional forms (e.g., the repetition of words, as in, "but but but but but"). So, even

for young children, fillers serve as a timely way to secure the floor when a delay is anticipated (Casillas, in press). By the time children are three- and four years old, they use conventional fillers regularly, but their distribution is still different from what adults do; adults are more likely to use *um* before longer delays and *uh* before shorter ones (H. H. Clark & FoxTree, 2002; Hudson Kam & Edwards, 2008).

Children's timing varies with question and answer difficulty, but it also improves depending on how accommodating the interlocutor is (Casillas et al., under review; Garvey & Berninger, 1981). By 4;0, children's responses are within the range of adult conversational timing, at least for question-answer pairs (Casillas et al., under review). At this age, it is clear from children's temporal and semantic contingency skills that they are continuously monitoring their own speech and the speech of others while staying attentive to shifts in communicative styles across speakers (e.g., younger siblings, peers, etc.; E. V. Clark, 1982; Ervin-Tripp, 1979; Olsen-Fulero & Conforti, 1983).

When children master the timing of their turns, they can then more easily break into ongoing speech to make contributions. Their knowledge of timing can help them assess an interlocutor's response, not just for content, but also for cues to certainty, hesitation, givenness, and upcoming material (Brennan & Williams, 1995; Roberts, Francis, & Morgan, 2006; Smith & Clark, 1993). This adds new dimensionality to their understanding of the interaction. To gain better insight into the development of children's turn-timing, future work should continue accounting for local effects of timing (e.g., accommodation and processing difficulty), strategic use of fillers, and common threads between the timing of verbal and non-verbal responses from the first year onward. Each of these aspects are critical to understanding how children come to have timing expectations in conversation with others, enabling them to anticipate when it is their turn to speak.

Summary

Turn-taking, which takes root in early infant-caregiver interactions, develops rapidly over the first five years of a child's life. The average five-year-old has an advanced set of turn-taking skills that allow them to interact successfully with adults and children of every age. By 6;0 they can even have rich telephone conversations – incredible, considering the degraded audio quality, lack of visual cues, and potential for distraction. These skills are founded on the idea of contingency, which is played out temporally in minimal gaps between turns, and played out semantically in relevant connections from one turn to the next. Children are first exposed to temporal contingency, but gradually move into mastery of semantic contingency, aided along the way by clarification requests from their caregivers, siblings, and peers. In conversation with different speakers, children experience different roles and amounts of conversational responsibility. They can draw upon these varied experiences to build an internal model of turn-taking and emerge after preschool as skilled, flexible conversationalists.

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