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Development of Communicative Competence Through Private and Inner Speech

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One of the most challenging psycholinguistic problems children face when they are acquiring a first language is learning how to use it to communicate. Communicating with speech is complex because it is simultaneously a social, linguistic, and psychological activity. Although most research on children's acquisition of language has focused on the lexical, semantic, and syntactic structures, it is the *discourse* structures of language that are pivotal to communication (Moffett, 1968). Discourse occupies the level of organization of language just above the sentence or clause—the sociolinguistic level where a sentence initiated by one person is met with a responding sentence from another person (Stubbs, 1983). The initiation-response structure of discourse frames and regulates the interpersonal exchange of sentences, as well as the ideas conveyed by them. Conversational activity—the most basic type of discourse—has the capacity to structure communicative interactions because it is conducted according to social conventions, the most obvious of which is the alternation of turns at talking and listening.

Learning to converse involves understanding not only how to produce and comprehend words, phrases, and grammatically well-formed sentences, but also how to initiate and respond to a turn at talk, how to play complementary social roles, how to imagine another person's perspective, and how to formulate and interpret communicative intentions. Initiating and responding to a conversational turn at talk are deceptively complicated activities because they require knowing the more subtle social conventions that prescribe how participants are expected to *think*, such as the obligation speakers have to stick to the topic—that is, to adapt the information in their utterance so that it both responds to the previous turn and initiates the next one. Similarly, formulating and inferring communicative intentions are challenging tasks because they require knowing that a particular intent is conveyed by choosing an appropriate speech *style*—that is, the proper combination of words, syntactic patterns, and prosodic features (Gumperz, 1977). Without these shared conversational conventions, listeners would be unable to follow the flow of ideas or grasp the intended attitudes (e.g., sarcasm, respect, disbelief).

The enormity and complexity of the task of learning to communicate with speech prompts several developmental questions. How do young children learn the social conventions essential to speech communication without being given explicit instruction? What actions do they take on their own or with others to acquire this knowledge? And once they acquire it, what steps do they take to develop and practice the array of psycholinguistic skills that competent communicators need to master? And, of particular interest to this author, how do children develop the uniquely human cognitive skill of imagining someone else's perspective—so that they can adapt their communications accordingly?

I propose that *private* speech and *inner* speech—the psycholinguistic phenomena at the core of Vygotsky's (1934/1962, 1933/1978, 1934/1987) theory of mental development—are key to unlocking the mystery of how communicative competence develops. I submit that by talking aloud to herself rather than to another person (that is, by using *private* speech), a child creates the very special psycholinguistic conditions that enable her to practice, explore, discover, and consciously comprehend the cognitive, pragmatic, and communicative skills that she has been developing implicitly since infancy. Specifically, a child engaged in private speech conversation enacts *all* of the speaking and listening turns herself and, in so doing, puts herself repeatedly in the position of experiencing any communication from both the perspective of the speaker as well as that of the listener. More importantly, however, when she subsequently reflects on these and other conversations—in which her own implicit understanding of the rules of conversation has been embedded—she can make herself *consciously aware* of that implicit knowledge by making it the *topic* of her private speech conversation. Logically, if verbalizing brings ideas into awareness by making them explicit, then verbalizing about one's own activity and knowledge would lead to conscious awareness of that activity and knowledge. Several profound and dramatic events naturally flow from the discovery and repeated application of this consciousness-making activity: a child's private speech activity—previously unconscious and impulsive—is transformed into conscious, purposeful, *communicatively competent* volitional

behavior; private speech dialogs—initially the predominant type of discourse—are supplanted by private speech monologs, which are better suited for individualized planning and analysis; and the multiplicity of private speech voices—inherited from interpersonal dialogs—give way to a single narrative voice capable of guiding the newly emergent "self" that is gradually introduced into subjective experience by consciousness.

Not to be overshadowed, *inner* speech (or subvocalized speech, which is audible only to the speaker) also plays a vital role in the development of communicative competence. I suggest that it is by means of silent inner speech conversations that communicative competence in *private* speech finds its way into *social* speech. Private speech and social speech are separate and, in many ways, incompatible activities. In particular, private speech is vocalized *thinking* as opposed to vocalized *speaking*, rendering it impractical in interpersonal speech settings. With further development, however, private speech is transformed into inner speech, or *silent* thinking, according to Vygotsky (1934/1962, 1934/1987). I propose that a child uses this physically interiorized form of speech to silently interject the planning and analytical functions of speech into her interpersonal conversation, thereby transforming it into conscious, communicatively competent conversation.

The aim of this chapter is to persuade you that this explanation of the development of communicative competence is *plausible*. I hope to accomplish this aim by demonstrating the importance of the role of discourse in communicative development, and by situating my explanation of the discursive development of private speech within the broader context of established knowledge about children's language acquisition, cognitive development, and conversational skill development. I intend to show that, with regard to explaining the development of communicative competence with speech, the most important pieces of the puzzle are already known; what remains to be done is to orient and assemble the pieces in their proper order.

Vygotsky's (1934/1962, 1934/1987) theory of private and inner speech provides the foundation for the main discussion, but it will be necessary to further articulate two specific aspects of his theory that are insufficiently developed. One aspect is the developmental transformation of private speech from an unconscious, impulsive activity into a conscious, purposeful activity. After observing this transition in children's drawing activities, Vygotsky (1934/1962, pp. 16-17; 1934/1987, pp. 70-71) recognized its psychological significance, but did not provide a developmental account of how it happens. To fill this gap, I propose a three-step model of private speech development that attempts to explain the changes in private speech function by means of changes in the discursive structure. This model is formulated as an empirically testable hypothesis. The other aspect I articulate concerns the relationship between inner speech and social speech. Vygotsky emphasized private and inner speech because of their role in *thinking*, but he was also interested in the development of *speaking*, and there are reasons to believe he envisioned a functional connection between inner and social speech after "thinking" develops in private speech (Wertsch, 1979). To address this, I propose a second hypothesis specifying how inner and social speech become structurally and functionally linked.

I begin with an examination of the anatomy of fully developed adult conversational skills as a point of contrast and departure for discussing the development of young children's conversational skills. Then I focus on how these nascent skills serve as the building blocks for communicative competence. Private speech's contribution to the development of conversational skills and communicative competence is then discussed, as is the contribution of inner speech. Finally, I argue that private and inner speech should not be marginalized as mere linguistic "epiphenomena", but instead should be accorded their rightful place as essential stages in the acquisition of language.

I. Communicative Competence in Adults

Learning to talk involves much more than learning how to produce and comprehend the words and phrases of one's native language. In fact, for young children to become competent

communicators, it is not enough that they learn to speak grammatically or even sensibly; they must also learn to speak *appropriately* (Frake, 1977). Appropriateness requires what Hymes (1962) has called an "ethnography of speaking": a specification of what kinds of things to say in what message forms to what kinds of people in what kinds of situations. When a person chooses a message to convey, she does so from a set of appropriate alternatives.

My analysis of communicative competence focuses on four activities that are basic to conversation. Turn-taking, role-play, perspective-taking, and speech communication are separate but interpenetrating activities that blend into one seamless conversational activity with development. Turn-taking serves as the social, behavioral and linguistic anchor for all the other conversational activities. Participants in conversation use the turn-taking structure of discourse in order to play the social roles of speaker and listener; they use the alternating roles of speaker and listener in order to imagine the other person's perspective; and they use the other person's perspective in order to communicate appropriately using speech. Although these activities work together as a package to serve a common function, for the present purpose it is helpful to consider them separately.

Turn-taking

Since speaking and listening are reciprocal functions, every turn at speaking (for one person) is complemented obligatorily by a turn at listening (for the other person). Thus, a turn at talk establishes the social roles of speaker and listener. Furthermore, as turns at talk alternate, so do turns at listening. This sets in motion the switching of social roles, necessitating the switching of perspectives. Switching social roles makes the exchange of utterances possible, and switching perspectives makes the exchange of ideas possible. Turn-taking, therefore, is seminal to conversation because it gives birth to conversational exchanges, regulates the flow of conversation, determines the basic social roles that are to be played by each participant at each juncture of the process, and calls forth from each participant the ability to switch roles and to switch mental perspectives.

Stubbs (1983) defines a conversational exchange as a linguistic interaction comprising (minimally) an *initiation* from one speaker and an obligatory *response* from another. The most obvious example is the question-answer pair of utterances. Another is the greeting-greeting pair. The linguistic connection between initiation and response as defined above is simultaneously a syntactic link between two separate sentences and a conversational link between two different speaking turns. Speakers engaged in discourse are different people with different perspectives, however, and so must struggle together to maintain a joint topical focus across utterances.

Developing a shared topic across many utterances requires more from speakers than just an initiation or a response. To fulfill the cultural expectation that a speaker stick to the topic, the person must actually perform *both* tasks on her turn at talk—she must respond appropriately to the prior utterance while initiating the next one. Fashioning an utterance so that it functions simultaneously as a response *and* as an initiation is what glues utterances together into coherent discourse (Hazen and Black, 1989). This is so regardless of whether the speakers are different people engaged in dialog, or just one person "holding forth" in a monolog. A turn at talk is more complicated, therefore, than might appear at first blush. The real challenge of taking turns at talk is not the more obvious behavioral activity of switching roles, but the more subtle intellectual activity of choosing and adapting one's words and voice to fit the situation, the flow of ideas, and the role that one is playing.

Role-Taking

The ability to play roles is acquired in stages. According to Landy (1993), role-play in humans develops in three stages, from role *recipients* to role *takers* to role *players*. The earliest roles are received in the womb and in infancy. Infants assume and assert their received roles of eater, sleeper, crier, etc., in order to satisfy their needs. The more active and cognitively demanding role-taking stage begins when infants can imitate the actions of a role model. Role-taking proceeds from behavior to imagery as children start to identify with the perspective and persona of the roles they imitate. Identification is a process in which one adopts, through mental

representation, a desirable set of characteristics displayed by a role model. In the final stage of competent role-playing, inner thoughts and feelings are externalized as they are transformed from mental images into role-play enactments. People enact roles to get outside of themselves, to experience another person's viewpoint, and to locate their own thoughts and feelings in the form of another (Landy, 1993). Thus, role-play provides a means of experiencing another person's perspective, and gaining objectivity about one's own perspective.

In addition to the obligatory roles of speaker and listener, conversational participants typically assume a social *persona*. Role-playing in this fuller sense of "personhood" is important to the structure of participation in social interaction (Philips, 1972). When people interact verbally, they either implicitly or explicitly choose or are assigned social-personal roles, and signal the role they are enacting by their choice of speech style (Gumperz, 1977). Participants may receive or play other roles as well, depending on the circumstance or the interaction. For example, some roles are conferred upon them by situation or by relationship (e.g., teacher-pupil, parent-child, doctor-patient), while others are chosen at will (e.g., friend-friend). In a courtroom, roles are not only assigned (e.g., plaintiff, defendant, lawyer, judge), but protocol dictates if and when a person may speak, and to whom. Cultural conventions of this kind signal the deep and abiding relationship that exists between discourse and role-play. In sum, communicative competence requires participants to play, imagine, and switch roles. But role is an essential concept in its own right, providing coherence to the personality and the self (Landy, 1993).

Perspective-Taking

Markedly different theories have been advanced over the past few decades to explain the nature of perspective-taking skills. Early research by Selman (1971, 1976) was based on Piaget's (1923/1955) cognitive theory of *decentering*, in which a person's perspective develops along a path from egocentric to sociocentric. Selman's findings suggested five stages, beginning with a stage of egocentric or undifferentiated perspectives, which occurs with children under 5 years of age. Children 5 to 7 years old begin to recognize distinctions between other

perspectives and their own subjective perspective. Between ages 7 to 11 children demonstrate the capacity to assume another person's point of view and understand the connection between another person's perspective and their own. The next stage is characterized by third-person perspectives, wherein pre-adolescents display the ability to dispassionately understand the different points of view of the interactors. The final stage occurs in adolescence and is characterized by an understanding of societal perspectives.

Perspective-taking has also been examined from the viewpoint of discourse. Bakhtin's (1981, 1986) concept of *voice* is useful in understanding how the different perspectives in a discourse are coordinated. Bakhtin argued that an individual has many different ways of speaking or voicing, and that each voice points to a recognizable social perspective. In a heteroglossic world in which many voices are available, speakers choose voices strategically in order to position themselves in desired roles relative to others. Sawyer (1997) proposed that Bakhtin's theory could be fruitfully applied to the development of perspective-taking skills. Sawyer suggests that communicative competence depends on the ability to *dialogize*—to blend multiple voices in a single utterance. The first step might be increased competence at dialogic speech with one other person—an adult caregiver. Through dyadic interactions, a child learns to incorporate the addressee's voice into her own. Group interaction with peers might be the next step, in which multiple voices are negotiated. The final stage would be the ability to negotiate the full spectrum of voices outside of the classroom. Thus, perspective-taking is conceived in terms of the blending of voices within an utterance, resulting in the blending of social perspectives.

Ongoing research on *theory of mind* suggests that humans understand others as intentional agents—with beliefs, desires, and minds similar to one's own (Astington, Harris, and Olson, 1988; Tomasello, Carpenter, Call, Behne, & Moll, 2005; Wellman, Cross, & Watson, 2001; Wimmer & Perner, 1983). Tomasello et al. (2005) propose that both nonhuman primates and humans have the ability to infer goal-directedness in others, and perhaps intentionality as well, but what separates humans is the ability and motivation to *share* intentionality with others

in a *collaborative* effort. They further propose that a full-blown theory of mind depends on the ability to operate with *dialogic cognitive representations*, suggesting the importance of conversational interactions. So, although perspective-taking may have separate developmental roots in cognitive, discursive, and communicative processes, the unity of these processes epitomizes what speech communication is all about: sharing a common frame of reference.

Speech Communication

Turn-taking, role-playing, and perspective-taking lay the foundation and provide the infrastructure for the development of speech communication. Speakers use sentences uttered in conversation as a vehicle for influencing their audience. By formulating and delivering sentences in conventionalized ways, speakers use them to perform communicative acts designed to induce intended effects in their listeners (Dore, 1977a). Although sentences convey their own literal, *semantic* meaning, speakers use these sentences and their literal meaning as objects they can manipulate to create yet another layer of meaning. This is the *pragmatic* conception of language and communication. Pragmatic meaning refers to the communicative intentions of the speaker and the relations of utterances to contexts (Dore, 1977b).

Searle (1969) laid the foundation for the study of acts of communication by translating Austin's (1962) notion of "doing things with words" into the concept of *speech acts*. Searle described a speech act as containing two components: a linguistic proposition and an illocutionary force. The proposition conveys the conceptual content, while the illocutionary force indicates how the utterance should be taken. Dore (1977a) developed the empirically useful concept of *conversational acts* by applying the notion of speech acts to the analysis of spontaneous conversation. He defined a conversational act as an utterance in a person's turn at speaking in a conversation that conveys information *and* expresses an attitude (Dore, 1979). This concept bears a close resemblance to Halliday's (1984) notion of interactional *moves.* Some of the most basic moves or attitudes expressed through conversational acts are: asserting, responding, requesting, and exclaiming.

In describing conversational acts, Dore (1977a) argued that the primary determinant of the illocutionary force behind an utterance is the speaker's *communicative intention*. This is an intention to induce in a listener two particular effects: 1) that the listener recognize the conversational act conveyed by the utterance; and 2) that the listener recognize what the speaker expects her to *do* or *believe* as a consequence of recognizing the conversational act. Thus, if one person were to say to another: "*Gee, it sure is cold in this room*", the speaker would have successfully produced the first effect if the listener recognized that the speaker was asserting a description and an evaluation of their surroundings; the speaker would have successfully produced the second effect if the listener responded by closing the window. This model shows how conversational initiations set up expectations for conversational responses.

Focusing momentarily on a single turn at talk, this model helps explain how responding and initiating can be blended into one utterance, thereby maintaining a joint topical focus between the participants. I propose that responding and initiating with a single utterance involves the coordination of no fewer than three separate perspectives: 1) the viewpoint expressed by the prior speaker's communicative *intention* (and expectation of response), which the current speaker infers from the prior speaker's conversational act; 2) the viewpoint expressed by the current speaker's gut *reaction* after recognizing the prior speaker's communicative intention (and expectation of response); and 3) the current speaker's *prospective* viewpoint, which expresses the decision about how to formally respond. All of these viewpoints are merged into the current speaker's next utterance in the form of a communicative intention and conversational initiation.

In summary, communicative competence is the product of a complex interplay of turn-taking, role-play, perspective-taking, and communicative activity with speech.

II. Development of the Conversational Skills Underlying Communicative Competence

The Cultural Origins of Human Cognition

Tomasello (1999) proposed that the development of human cognition has been shaped by a very special biological mechanism: cultural transmission. Cultural transmission is an evolutionary process that enables individual organisms to take advantage of the already existing knowledge and skills of other individuals. Human artifacts and tools—especially language—were designed by their human creators to serve multiple purposes and be viewed from multiple perspectives by their users. A child learning to use language to communicate, therefore, must understand the multi-functional and multi-perspectival design of human language because it embodies the ways that many generations of a particular social group have found it useful to categorize, seriate, conceptualize, and construe the world for the purposes of communication.

Development of Conversational Skills from Birth to 2 Years of Age

Tomasello (1999) reported that infants under 9 months of age—and nonhuman primates—are skillful at many cognitive tasks: object permanence, cognitive mapping, perceptual categorization, estimating small quantities, and mentally rotating objects. Human neonates and nonhuman primates also are able to recognize that others are animate beings that behave differently from physical objects (Tomasello, 1999; Tomasello et al., 2005). But even at this tender age, human infants show a proclivity toward being "tuned in" to other people's emotions in at least two ways that animals do not. First, very young infants appear to express and share basic emotions with their caregivers in face-to-face social interactions that Trevarthen (1979) has described as *protoconversations* because they have a clear turn-taking structure. Second, neonates show a tendency to mimic the head and mouth movements of adult caregivers, suggesting an early beginning to the process of imitation.

Prior to 9 months, infants tend to interact dyadically, whether it is with an object or with another person. But between 9 and 10 months of age, infants begin to interact triadically by sharing goals and perceptions about some object with another person, indicating they have some understanding that other people pursue goals. The ability to understand others as

intentional agents who pursue goals, and whose attention to objects may be shared, followed into, or directed (Tomasello, 1995), is of great value to the development of communicative skills. Cognitively, being able to make the inference that others act intentionally enables infants to make sense of the relation between direction of gaze (behavior) and attention (mental state), when direction of gaze is all that is apparent from observing another person's behavior.

At 12-14 months of age, infants begin to engage in *joint attentional behaviors* with an adult (Tomasello, 1999; Tomasello et al., 2005). These interactions represent a new level in the ontogeny of shared intentionality in which infants understand that actors can choose among different means, or plans, to achieve a goal. This deeper understanding is apparently linked to the uniquely human motivation to share intentionality jointly during collaborative activity (Tomasello et al., 2005).

By the end of their first year, infants are ready to participate in the cultural world in some profoundly new ways, particularly by engaging in new forms of cultural learning. Ontogenetically, the first and most important of these is *imitative* learning (Tomasello, 1999). Infants begin to behaviorally reproduce adults' intentional actions directed toward objects. For example, if a child sees an adult manipulate a novel toy in a particular way, she learns through imitation to do the same thing in a parallel way—she just substitutes herself in the role of the adult. Imitation involves not only copying the physical actions, but also drawing relevant inferences about the intentions underlying those actions. What a child is unable to do at this stage is to comprehend and reproduce an adult's intention when she *herself* is the object of the adult's attention. In this case, reciprocal imitation is called for—the child must not only substitute herself in the adult's role, she must also substitute the adult for herself as the target of the intentional act. Tomasello calls this process *role-reversal* imitation, and suggests that it provides a cognitive basis for perspective-taking. Role-reversal imitation does not develop until the preschool years, however.

The joint attentional behaviors that appear at the end of the first year develop during the second year into joint attentional "scenes"—social interactions in which a child and adult jointly

attend to some third thing, and to one another's attention to that third thing, for an extended time period (Tomasello, 1999). Such scenes provide young children an opportunity to closely monitor adults' attention to objects. Bruner (1981, 1983) argued that young children acquire linguistic symbols by first participating in social interactions that they understand nonlinguistically, and that pragmatic skills thus acquired are a prerequisite for syntactic development. His findings have been corroborated by many other studies (Bates, 1975, 1976; Bates, Benigni, Bretherton, Camaioni and Volterra, 1977; Freedle and Lewis, 1977). Research on the conversational skills of children under two years of age provides additional empirical support for the claim that early nonlinguistic social interactions with adult caregivers prepare children for acquiring linguistic abilities (Camaioni, 1979; Keenan, 1974, 1975; Keenan and Klein, 1975; Keenan and Shieffelin, 1976; Scollon, 1976). Throughout this early period, children rely heavily on the adult to do most of the work of keeping the interaction going.

By 18 months, most children have acquired a vocabulary of about 50 words. Many new words and their meanings are acquired through "naming" rituals, which are parent-child conversations that parents orchestrate when their child first utters something resembling a word (Ninio & Bruner, 1976). Parents induct the child into the world of conversation by pointing to objects, naming them, inviting repetition, and by correcting the child's attempts at repeating them. Once a child has acquired a basic stock of words, the challenge of using them to communicate begins. Dore (1975) has shown that early one-word communications are actually *holophrases* that convey the meaning of a whole sentence rather than the conventional meaning of a single word. According to Vygotsky (1934/1962, 1934/1987), the momentous convergence of thought and speech that occurs when a child formulates her first words sets in motion a new psychological process. The vocal and semantic aspects of speech develop in opposite directions, articulating one another in the process. As the vocal aspect develops from part to whole (word to sentence to discourse), the semantic aspect develops from whole to part (discourse-meaning to sentence-meaning to word-meaning). This process eventually results in a

child understanding individual words not only in terms of their dictionary meanings, but also in terms of their grammatical function in a sentence and their topical function in a conversation.

Development of Conversational Skills from 2-6 Years of Age

Children become fairly competent turn-takers by the age of 2 (Ervin-Tripp, 1979). Like adults, they recognize the many subtle cues that speakers unconsciously give to indicate that their speaking turn is completed (Sacks, Schegloff, and Jefferson, 1974). The preschool years are also important for the development of social role-play. Sociodramatic play constitutes a major period in child development, according to recent neo-Vygotskian research, as explicated by Karpov (2005). The Russian followers of Vygotsky have found that when adults introduce children to sociodramatic play by showing them how to use objects symbolically, children are eager to imitate and explore the full range of social roles and relations. Sociodramatic play is important to development because it provides opportunities for children to learn to negotiate, cooperate, coordinate their actions, and be friendly and helpful to others (Karpov, 2005).

Children also hone their perspective-taking skills during the preschool years. Earlier research by Flavell, Botkin, Fry, Wright, and Jarvis (1968) explored Piaget's (1923/1955) hypothesis that children operate with knowledge structures that prevent them from knowing there are other viewpoints, and therefore prevent them from imagining the roles of others in conversation. They found that the capacity to fully meet another person's communicative needs by taking that person's role is not mastered until around age 9, however. More recently, research on theory of mind has shown that children become aware during the preschool years that other people are mental agents like themselves who have beliefs, thoughts, and desires that differ from their own (e.g., Astington, Harris, and Olson, 1988; Wellman, Cross, & Watson, 2001; Wimmer & Perner, 1983). Ages 3-4 are considered a critical point in development because that is when most children pass the "false-belief" test, indicating they realize others may hold a wrong belief (Wellman, Cross, & Watson, 2001; Wimmer & Perner, 1983). Understanding false beliefs, which has become the acid test for distinguishing between fledgling

and “full blown” theory of mind, has also been linked to language ability (de Villiers & de Villiers, 2003; Perner & Ruffman, 2005; Ruffman, Slade, Rowlandson, Rumsey, & Garnham, 2003).

Regarding speech communication, Nelson and Greundel (1979) demonstrated that very young children use *scripted* knowledge of the sequence of routine events to assist them in learning appropriate linguistic forms, such as temporal terms. They found that children are able to sustain a dialog and a shared topic if they are familiar with the context, which serves as a frame for their knowledge. According to Goffman (1974), *frames* are temporary situational definitions shared by participants in conversation that provide a means for participants to interpret one another’s actions. One of the major tasks of the preschool period is to make explicit the implicit pragmatic rules for framing conversational interactions (Sawyer, 1997), and knowledge of stable, routine events may help prepare children for this task.

But in linguistic interactions with a competent adult, young children still follow rather than lead. For example, in a conversation between a 2-year-old and an adult, the most simple and frequent type of exchange consists of the child’s action followed by the adult’s verbal comment (Camaioni, 1979). The child’s nonverbal initiation may take the form of pointing or drawing attention to an object, but only rarely is speech used to focus attention. By age 3, children begin to use speech to initiate a joint attentional focus. This type of interactional sequence consists of a child’s verbal expression followed by an adult’s verbal comment (Camaioni, 1979). In both of these two-turn interactional sequences, children seem to initiate the conversation, but it is actually the adult’s verbal comment that creates the state of mutual involvement. Four-year-olds are more accomplished at using speech to initiate or accompany a shared action or attention focus (Camaioni, 1979), indicating a developmental change from an interaction based largely on sharing actions or attention to a conversation based primarily on the exchange of linguistic acts. Four-year-olds can also produce a few instances of a third type of sequence with adults consisting of three conversational turns: 1) the adult’s question; 2) the child’s answer; and 3) the

adult's comment on the answer. This type of exchange is characteristic of teacher-pupil interaction and is the model for formal instruction (Sinclair and Coulthard, 1975).

Sawyer (1997) advanced the theory that pretend play with peers is the dominant context of language learning from age 3 to age 6. Before age 3, children learn language primarily in the context of a dyadic interaction with a communicatively competent adult, whereas preschoolers learn language primarily in the context of pretend play with equally knowledgeable peers. Sawyer observed that peer interaction seems to draw forth from children a more advanced dialogical ability than interaction with an adult. Three-year-olds in the preschool classroom interact with one another without a clear understanding of status or role, and must learn additional pragmatic skills to help them frame the shared interaction—and their own role in it—for their peers. Without help from adults, children must do their own verbal work to create a state of intersubjectivity (Goncu, 1993). Most adult conversation is unscripted, spontaneous, and improvised, and pretend play introduces young children to the art of improvisation with language. Sawyer (1997) found that children's improvisational peer play in the preschool classroom contributes to the development of pragmatic skills with language through children's outright verbalization of critical components of the interaction, particularly the play frame.

Disagreements, misunderstandings, and didactic interactions also supply a rich source of information about other people's pragmatic knowledge (Tomasello, 1999). According to Dore (1982), participants in conversation continually attempt to hold one another *accountable* for what they say (and do) by pointing out ambiguities, possibilities, and mismatches between talk and action. These "accountability practices" challenge participants' understanding of the pragmatic rules governing their interaction. They also demonstrate that learning to communicate appropriately is not a process that issues entirely from within the learner; the community also plays a powerful role in children's development of pragmatic knowledge.

Finally, this period encompasses a change from parallel play and collective monolog to complementary play and communicatively competent dialog, according to Sawyer (1997). He

also claims that children can conduct conversations that are not only dialogical in *form* (with a clear turn-taking structure), but also dialogical in *content* (with a shared topic). By age 6, children have also learned to represent and construct narratives (Galda, 1984, Scarlett and Wolf, 1979).

III. Private Speech's Contribution to Communicative Competence

I propose that it is at this juncture in a child's acquisition of language that private speech becomes extremely relevant. In her quest to master the process of speech communication, a child needs to totally immerse herself in the process, and the most natural way to do that is to converse with *herself*. There is ample evidence that young children employ private speech abundantly in their pretend play. Krafft and Berk (1998) found that over 45% of the speech corpus produced by 3- to 5-year-old children at play in the preschool classroom consisted of utterances addressed to one's self. Earlier, Gillingham and Berk (1995) had found steady, high rates of private speech by children between the ages of 2-and-a-half and 6 who were studied in a play environment in a laboratory setting. These recent findings are quite consistent with Piaget's (1923/1955) initial report that 45% of the speech of the 6- to 7-year-olds he studied during free-play consisted of egocentric speech. Children in the preschool classroom also engage in a significant amount of *solitary* pretend play that may further promote the production of private speech in older preschoolers. Several studies have revealed that solitary play is as prominent as social play right up to the age of 6 (see Hartup, 1983, for review).

Before I go further, I need to address a basic theoretical premise—namely, that private and inner speech should be considered *conversational* speech forms. Also, I must clarify a basic methodological issue—namely, how the pragmatic and conversational functions of private speech can be examined empirically.

The Conversational Nature of Private and Inner Speech

Vygotsky (1934/1962, 1934/1987) asserted that private speech is an offshoot of early social speech, and therefore begins its developmental journey (as an intellectual function) starting with the same vocalized, fully expanded linguistic structure as social speech. The two

speech forms, he wrote, “are both social, though their functions differ” (1934/1962, p. 19). There are also several passages in which he uses the words “conversing” and “conversation” when referring to private speech, but I believe the more compelling statements from Vygotsky are those he made in connection with the differences between dialog and monolog. Following Moffett (1968), a *monolog* is defined as an extended turn at conversation in which a single speaker “holds forth” for many sentences. Monolog is the form of private speech that most interested Vygotsky because of its powerful potential for self-regulation. He considered dialog the psychologically simpler form because its collaborative character often involves immediate, unpremeditated utterances that flow in a chain reaction, as in the case of replies and “repartee”. Monolog, in contrast, is more highly developed and psychologically complex because, linguistically, it lacks collaborative, situational, and contextual supports, and requires more conscious and elaborate planning.

Wertsch (1980) argued that Vygotsky’s account of strategic verbal thinking and the ontogenesis of self-regulatory abilities make sense only if private and inner speech are regarded as forms of dialog; in fact, to regard them otherwise would be inconsistent and incompatible with Vygotsky’s theoretical stance. Wertsch also pointed out that, if it is acceptable and useful to apply a dialogical analysis to the development of children’s *social* speech, then it is “difficult to defend” (1980, p. 161) applying a *non-dialogical* analysis to private and inner speech.

Besides theory, there is empirical evidence to support the assertion that private speech takes the form of conversation. Despite the paucity of research on this topic (see Feigenbaum, 2002), investigators have found rich and abundant examples of children engaging in private speech dialogs and monologs. Six intensive case studies of the nighttime monologs of a 2-year-old girl named Emily (see Nelson, 1989) revealed, among other things, that Emily used her private speech to re-envoice conversations that happened during the day (Dore, 1989). In a longitudinal study, Smolucha (1992) investigated the social origins of private speech as it first emerges in pretend play during infancy. Her discourse analysis of mother-child speech related

maternal forms of communication to infants' regulatory capacities. She found that early private and social speech are not well differentiated from one another. Self-regulatory utterances could not be easily associated with either form of speech and appeared to hover between them, depending on the availability of a listener to define the conversational context.

Ramirez (1992) also studied the intermediate forms of speech between social and private, but with a small group of 4- to 5-year-old children whose language facility greatly surpassed that of the infants in Smolucha's study. He examined the gradual passage from social dialogs to private dialogs, as well as the conversational mixing and matching of private and social utterances that occurred along the way. The results revealed that children begin by conversing socially with one another, but gradually end up conversing only with themselves. Ramirez presents fascinating examples of intermediate forms of conversation, as when the private utterance of one child is met in response by the social utterance of another. More importantly, his dialogical analysis provided some confirmation that, among the more mature speakers, their private speech utterances were conversationally connected and coherent.

Lastly, in a study I conducted (Feigenbaum, 1992) in a laboratory setting with thirty children who were 4, 6, and 8 years of age, the *narrative* structure of private speech utterances was examined. (Although *monolog* and *narrative* can be defined differently, here I use the terms interchangeably). A discourse analysis of the subset of private speech utterances serving a self-regulatory function indicated that almost all of them were integrated into lengthy private speech narratives as early as age 4. To be considered part of a narrative sequence, utterances had to be related by a common topic of conversation.

The empirical findings and theoretical arguments presented above are sufficiently compelling, I hope, to support the claim that private and inner speech are conversational.

The Pragmatic Functions of Private Speech

A review of the published private speech literature since the seminal paper by Kohlberg, Yaeger, and Hjertholm (1968) shows that, collectively, researchers have studied over 60

different functions of private speech (Feigenbaum, 2004). These functions are based on analyses of the semantic content of private speech. But there has been criticism of the position that semantic content alone is a sufficient basis to assign meanings to utterances (see Diaz, 1992, for review). Private speech utterances also function pragmatically, and therefore possess meanings that are conferred upon them as a function of their context of use. If this were not so, then they would be unable to function communicatively in conversation. Diaz (1986) argued that attempts to categorize the semantic/pragmatic *functions* of private speech should be separated methodologically from categorizing the *form* and *content.* The failure to distinguish these aspects has led to serious confusions about whether to code utterances as "descriptions of own activity" or "self-guiding comments", and "task-relevant" or "task-irrelevant" (Diaz, 1992).

Luria (1961) was the first to investigate the self-regulating potential of the impulsive and rhythmic aspect of private speech—as opposed to the semantic aspect. He showed that the rhythmic pattern of motor impulses involved in producing speech regulated the segmentation of a concurrent motor action. Extending this work, Meacham, Harris, and Blaschko (1973) demonstrated that manual rhythms can be entrained by speech rhythms. This inaugurated two lines of research on children's verbalizations and self-regulatory behaviors—one in which the verbalizations are provided by the experimenter (i.e., verbal conditioning), and one in which the speech is produced spontaneously by the children (see Fuson, 1979, for review). Illustrative of the former approach is the work of Bem (1967) and Meichenbaum and Goodman (1969), who measured the effects of speech on repetitive motor tasks. But spontaneously produced private speech has been the focus of most research on private speech and self-regulation (see Berk, 1992, for review). Besides, behavioral conditioning is more an aspect of the *first signal system* described by Pavlov, whereas Vygotsky was interested in the operation of the *second signal system*, in which the distinctively human semantic aspect of speech predominates (Zivin, 1979). For these reasons, the semantic properties of spontaneous private speech have been the main

focus of study. But without a method to distinguish the semantic from the pragmatic functions, analyses of speech-behavior relationships have become problematic, as Diaz (1992) has noted.

I suggest that the most appropriate method for empirically determining the pragmatic functions of private speech is conversational analysis. Dore's (1977a, p. 143) decision procedure is exemplary. First, an utterance's literal, *semantic* meaning is determined. Then, based on the context of conversation, the typical or conventional *pragmatic* meaning is determined. Any *implied* conversational functions, based on relations with other utterances units in the same sequence, are determined next. Finally, any other implied conversational functions, based on *intonational stress* or on relations to ongoing activity, to objects, etc., are determined. Because Dore's methodology systematizes the analysis of the semantic and pragmatic functions of an utterance, it is well suited to the programmatic study of private speech conversation.

The Developmental Transformation of Private Speech into a Conscious Activity

In group sociodramatic play, children typically enact the different roles using *social* speech; when a single preschooler engages in sociodramatic play by *herself*, however, she enacts the dialogs among the imagined characters all by herself using *private* speech. She produces private fantasy-play dialogs by altering her voice, by appropriately switching turns at talk when she switches roles, and by fashioning utterances using speech styles appropriate to her imagined characters and their social interaction (Feigenbaum, 1992, 2004). Thus, private speech is not merely an accompaniment to pretend play, it actually *constitutes* much of the play activity. Invested in these dialogs is the child's understanding of the linguistic coordination that exists between one utterance and another, the social relationship that exists between one role and another, and the cognitive and communicative connection that exists between one mind and another. As a product of her own thinking and activity, private speech dialogs contain material that could later furnish a child with insights into herself and what she knows about conversation.

According to Roger Brown (1968), most children know all about transformational-generative grammar by the time they are ready to begin school; they know about the different

parts of speech, subject-verb agreement, and conjugations and verb tenses. Of course, all of this knowledge is *implicit*. I would add to this picture children's implicit knowledge of conversation: they know the rules for formulating and interpreting communicative intentions, they know about coordinating participant perspectives, and they know about sticking to the topic. How is this rich implicit knowledge acquired? Research on the role of *implicit learning* in the acquisition of grammar has shown that children (and adults) can inductively infer the rules of an artificial grammar merely by being exposed to some well-formed examples (Reber, 1989). Implicit learners are successful at "incidentally" apprehending the underlying rules without any explicit instruction; in fact, explicit instruction turns out to be detrimental to making accurate inferences. Possessing implicit knowledge suggests that children know much more than they are aware of. On this point, Vygotsky (1934/1962, 1934/1987) noted that children use verbal forms for a relatively long time before they learn the mental operations corresponding to them.

Piaget and Inhelder (1963/1977) claimed that mastery of any logical operation is achieved when a learner is able to mentally reverse directions through the logic. In the case of dialogical operations, *reversibility* involves knowing each perspective from the vantage point of the other—the speaker's point of view as a listener, and the listener's point of view as a speaker—and coordinating these perspectives. For Vygotsky (1934/1962, 1934/1987), mastery of private speech is achieved when a child becomes *consciously* aware of her speech activity; without awareness, she cannot willfully apply it to a task. He claimed that private speech begins as a vehicle for emotional expression and tension release, but soon becomes an instrument for conscious understanding—a tool for analyzing and planning the solution to problems. Although he *described* the developmental transition from unconscious to conscious private speech, he provided no developmental explanation of it. The closest he came to explaining this transition was in terms of a change in the *temporal* relation between private speech and the action to which it refers (Vygotsky, 1934/1962, p.17; 1934/1987, pp.70-71). He proposed that private speech initially follows an action, serving to comment upon the completed action. Gradually, it is

produced simultaneously with an action, serving as a means for describing the action and perhaps influencing its course. Finally, a child shifts private speech to the beginning of an action, where it serves a deliberate planning and self-regulatory function. Although there is evidence to support a functional transformation (Feigenbaum, 1992), little empirical proof has been found to support the claim of a temporal shift. Instead, indications are that most private speech utterances tend to occur simultaneously with action—including many that serve a self-regulatory function (Berk, 1992).

I wager that Vygotsky would have offered a different account of this development if he had had available to him a theory of discourse and an empirical method of analyzing conversation. With such tools, I believe he would have tried to account for the changes in the *discourse functions* of private speech by looking for changes in its *discourse structure*. Unfortunately, those tools did not exist then, and he articulated no such theory. Wertsch (1979), however, recognized the need for further theoretical articulation when he argued that private speech should not be viewed as a single, undifferentiated, unchanging phenomenon, but as a process that passes through a developmental hierarchy of stages. The stages of private speech development that I propose as an explanation for communicative competence and conscious understanding were suggested to me by data I collected from children who were 4, 6, and 8 years of age. I investigated the discourse development of self-regulatory private speech to see when individual utterances begin to coalesce into lengthy narratives (Feigenbaum, 1992). When the mean length of a narrative (i.e., the number of sentences per narrative) was computed, an interesting developmental pattern was revealed. The mean length of 6.8 sentences found at age 4 was followed by a decrease to 5.5 sentences at age 6, and a more than two-fold increase to 13.6 sentences per narrative by age 8. These data suggest that private speech conversation may undergo some restructuring at around age 6, which later results in the ability to construct lengthy monologs. The much greater incidence of *social* speech among the 6-year-olds, compared to the other two age groups, adds further weight to this conjecture.

The instigation for transforming private speech comes, I believe, from the inadequacy of a child's attempts to use private speech dialog as a tool for self-regulation. Monolog is a more effective form of discourse than dialog for developing an analysis by oneself, but it requires a child to stop alternating speaking turns and, instead, adopt a single *viewpoint* and *persona* to guide the activity, manifested objectively by a single *voice*. Thus, the transition to monolog involves replacing speaking turns with chains of sentences that function as one long speaking turn conducted by one person using one representative voice. This means a child must discover the mental "glue" that binds sentences together in conversation. Using Bakhtin's (1981, 1986) concept of dialogizing, competence at conversation involves the shifting of conversational voices (and their associated roles and viewpoints) from *between* utterances (and people) to *within* utterances (and individuals). Thus, the transformation of private speech may require the rebuilding of private speech conversation from the ground up—on a new, more secure cognitive footing. This footing is a personal, individualized narrative voice with its own perspective and persona, which also has associated with it a coordinated (but subvocalized) chorus of other voices, perspectives, and personas. Fernyhough (1996) proposed a similar mental restructuring when he described children's internalization of dialogs with adults. He argued that children form a cognitive representation not just of adults' verbal instructions, but of the intersubjective dialog as well. Using this mental representation of dialog, children are then able to juxtapose their own understanding of an interaction with their simulation of adults' verbal directives, a process that results in the coordination of mental perspectives.

I suggest that a child consciously masters the communicative process by taking advantage of the *instrumental* functions of private speech. At first, private speech is an end in itself (fantasy-play), but later becomes the means to another end—planning, problem-solving, and self-regulation. Most research has focused on the *self-regulatory* functions of private speech (e.g., see Berk, 1992; Fernyhough and Fradley, 2005; Matuga, 2004; Winsler, De León, Wallace, Carlton, & Willson-Quayle, 2003). But little is known about how these functions come

into being. We do have evidence that children increasingly incorporate *question/answer/comment* exchanges into their narratives to help them solve problems (Feigenbaum, 1992). I propose that a child adapts these very same conversational exchanges to *interrogate herself* in order to become conscious of her own implicit knowledge about conversation, communication, and herself. The following two illustrative examples of this introspective type of exchange (which I gathered anecdotally) were produced by two different preadolescent girls: *"What was I supposed to do? Tell the teacher? Yeah, that'd go over big."* and *"Why am I acting like such a baby? I don't care what he thinks. From now on, I'm just gonna ignore him."* I believe such exchanges are routine, and occupy an important place in our inner lives, particularly in the formation, exploration, and development of the self.

Hypothesis 1: Development of the Discourse Structure of Private Speech

The transition from dialog to monolog consists of three stages: 1a) fantasy-play dialogs—conversational exchanges of several turns at talk in which multiple voices are displayed; 1b) partially formed monologs—a single turn at talk consisting of a linguistic response to a nonlinguistic initiation in which only one voice is displayed; and 1c) fully formed monologs—a single but lengthy turn at talk consisting of multiple sentences unified by a common topic in which only one voice is displayed.

Fantasy-play dialogs can be re-enactments of previous play episodes or newly improvised dialogs. Exchanges typically extend to several turns, and utterances function appropriately with respect to roles and voices. Utterances also function pragmatically to help constitute the play frame in the same way as interpersonal utterances do. But subjectively, children are unaware of the rules of conversational coherence that underlie these dialogs. The need to know these rules so that private speech can be a more effective tool of thought prompts children to re-build and fully comprehend private speech discourse.

The second stage is characterized by the beginning of this rebuilding process in which the character and structure of a conversational *response* is fully learned. Partially formed

monologs consist of linguistic responses to nonlinguistic initiations. Typically, these are verbal ejaculations produced in response to actions or objects that grab a child's attention or interest, or provoke an emotional reaction, such as "*Wow, what a great toy!*" and *"This puzzle is hard!"*. I suggest that the reconstitution of private speech conversation follows a very similar path to the one that children followed when they first began to talk, but now the roles have reversed. Recall that, at age 2, the exchange with an adult consisted of the child's action followed by the *adult's* verbal comment (Camaioni, 1979). Now it is the child who is commenting in response to her own action. I believe this is what Vygotsky (1934/1962, 1934/1987) was referring to with children's drawing activities when he described speech as an "afterthought" that is used to comment upon the completed action. I also believe that mastering this response marks the true beginning of dialogical thinking, for it establishes *verbalization* as a conscious response to any kind of mental event. Gazzaniga (1988) proposes that this same response in split-brain adults is attributable to the normal activity of the *left-brain interpreter*—the brain module controlling speech production.

In the third stage, children introduce conversational *initiations* into their fledgling private speech monologs. Similar to their role at age 3 (Camaioni, 1979), children now learn to actively initiate a conversation using a verbal expression rather than merely receiving the role from an adult. They also learn to respond verbally to their own initiation. After this second role reversal, children are finally in a competent position to perceive the communicative process from all sides—speaker, listener, initiator, and respondent. At this point, private speech can become an effective instrument for reflecting upon one's implicit experience and knowledge, making that information explicit and conscious. Therefore, this stage represents a milestone in a child's acquisition of communicative competence, marking the beginning of her ability to competently and consciously narrate and regulate her own activity. Having mastered the art of responding and initiating with one sentence, a child can create lengthy chains of monolog.

Surprisingly, private speech dialogs are not unique to humans. African Grey parrots also demonstrate the ability to produce private speech conversation. Alex, the unusual and talented

African Grey, has demonstrated that birds can use language creatively, and can reason in ways comparable to nonhuman primates (Pepperberg, 1999). When alone at night, Alex spoke voluminously to himself, engaging in sound-play, practicing verbal labels he was being taught, and engaging in dialogs with himself. More importantly, he re-enacted question-answer dialogs previously held with trainers, and even created imaginary dialogs that included simulations of his trainers' voices (Pepperberg, 1999). Another Grey parrot, a juvenile named Kyaaro, reportedly reproduced an entire five-utterance conversational exchange in his private speech that included the voices of two different trainers and an electronic synthesizer, as well as his own voice. At the time, his linguistic level was far less sophisticated than that of Alex (Pepperberg, 1999). This evidence suggests that these birds make use of private speech for learning and rehearsal in ways similar to human children. Their reproduction of entire dialogs in private speech is also similar to children's pretend-play private speech conversations, right down to the distinctive voices that alternate with each speaking turn. But there is no evidence to support the notion that Alex understood how utterances cohere in conversation, or that he used private speech to explore his own knowledge. His private speech dialogs appear to have the same qualities as those characterizing the first stage of the dialog-to-monolog transition I outlined above.

To recap, I have proposed an empirically testable hypothesis to account for some of the key objective and subjective developments that occur in children's private speech. My account presumes that children, in an unconscious effort to convert their private speech conversation into a problem-solving tool, pull it apart both physically and mentally and begin to rebuild it. I proposed that the second stage in this transformation involves learning the respondent role. Actively playing this conversational role (rather than receiving it from an adult) yields a new perspective and results in role competence. The same thing occurs in the third stage when learning the initiator role. At each stage, children use private speech to conduct a conversational exchange in which they experience not only the reciprocity of roles and perspectives, but also the contingencies of initiation and response. To put the entire package together, however, so

that all the perspectives and voices can be understood consciously in relation to one another, children verbally interrogate themselves and, in so doing, become aware of themselves, their activities, and their knowledge. They develop their own individual perspective, persona, and voice, which become the means for consciously narrating, analyzing and planning their activities.

To test this hypothesis in the laboratory, studies could be designed for children between 4-8 years of age that use a combination of play-oriented and task-oriented activities to elicit a wide range of private speech functions and structures. From videotapes of the children's activity, the stream of speech could be transcribed and analyzed into utterance units, each of which could be further analyzed to determine its private or social function—a practice increasingly employed in private speech studies. My own research (Feigenbaum, 1992) carried utterance analysis a step further by tagging each utterance as having either a "playful" (i.e., impulsive, expressive, imaginative) or "planful" (i.e., self-regulatory, analytical, problem-solving) cognitive function. Results of that analysis showed that the playful uses predominated between ages 4-6, while the planful uses predominated between ages 7-8. To test the proposed hypothesis that there is a similar development with age in the conversational structures of private speech, utterance analysis must go further and incorporate conversational qualities. First, conversational analysis could be used to determine if an utterance is part of a conversational sequence. Then, to identify the *type* of sequence—dialog or monolog—the following properties could be assessed: number of voices, number of turns at talk, number of utterances per turn, number of initiations and responses, and topical focus. Based on such an analysis, the kind of evidence supporting a claim that *pretend-play dialogs* predominate in younger children would be: a disproportionately higher number of conversational exchanges at ages 4-6 that consist of multiple voices, multiple turns at talk employing multiple utterances, multiple initiations and responses, and a play-related topical focus. Similarly, the kind of evidence supporting a claim that *fully-formed monologs* predominate in older children would be: a disproportionately higher number of conversational

exchanges at ages 7-8 consisting of a single voice, a single turn at talk employing multiple utterances, multiple initiations and responses, and a task-related topical focus. Finally, the kind of evidence supporting the developmental argument that the ability to solve problems with speech depends on the emergence of monologs would be a significant increase in the proportion of *partially-formed monologs* in children 6 years of age.

IV. Inner Speech's Contribution to Communicative Competence

Thus far, I have explained how children arrive at an understanding of communicative competence in the mode of *private* speech, but not in *social* speech. I propose that the path to social speech is through *inner* speech. Communicative competence and language fluency are fully achieved only after children transform their private speech narratives into inner speech narratives, and learn to insert them effectively into their social speech conversation.

The notion that private speech does not actually disappear but "goes underground" was one of Vygotsky's (1934/1962, 1934/1987) most brilliant ideas. He claimed that private speech is physically transformed at around 7 to 8 years of age into a subvocal, physically interiorized form of speaking—a *tool* for *thinking*. The inner voice becomes the vehicle for silently and rapidly carrying out the linguistic and intellectual functions that were previously performed by vocalized private speech. According to Vygotsky, inner speech is the result of a special psycholinguistic process of abbreviation called *predication.* Initially, private speech utterances are grammatically complete. But as a child develops her ability to think aloud, she learns to focus her awareness on the *topic* of her conversation, and consequently continues to voice only those words that move the topic along. Eventually, private speech is thinned down to only those words that serve to direct or develop the topic of conversation (typically, words belonging to the grammatical predicate). The syntax becomes fragmented, and the remaining words are condensed, amalgamated, and compacted, reducing private speech to a mere incoherent whisper. But subjectively, these sounds are the carriers of intensely meaningful conversation. It is in this

rarified and distilled form of conversation that “thinking” is transferred to the plane of inner speech activity, where it becomes internalized as a psychological tool.

Regarding predication, Vygotsky (1934/1962, 1934/1987) made a theoretical distinction between the *grammatical* subject and predicate of a sentence and the *psychological* subject and predicate of a communication. The psychological subject of a communication is the background, or given, information while the psychological predicate is the topical, or new, information, but the location of the topical information within a sentence may not necessarily coincide with the grammatical predicate. Because any word in a sentence can serve as the locus for topical information—depending on the context of use—children must learn which words in a sentence are necessary to communicate and which are not. This process challenges children to further parse their knowledge of conversation by further articulating the linguistic and semantic representations of their utterances, so as to relate individual word meanings to the topic of conversation. Mastery of this skill marks not only the end of the development of communicative competence in the form of private speech, but also, ironically, the end of private speech itself.

Few studies have attempted to verify Vygotsky’s claims about inner speech, and the findings are mixed (Berk, 1992). Regarding subvocalization, there is solid electromyographic (EMG) evidence to substantiate the physical existence of inner speech activity in adults (Garrity, 1977; Jorgensen, Lee, and Agabon, 2003). As for abbreviation, the available evidence suggests that it begins much earlier than Vygotsky (1934/1962, 1934/1987) predicted. Goudena (1992) reported a large proportion of abbreviated private speech in youngsters 3 to 4 years old, and I replicated this finding with 4-year-olds and extended it to older children as well (Feigenbaum, 1992). I also observed that syntactic fragmentation was significantly higher in private speech than in social speech, and that this difference remained stable between ages 4 and 8. Although not statistically significant, a reduction of roughly one word per utterance was observed from age 4 to age 8. Winsler et al. (2003) reported a similarly small, but statistically significant, reduction in word count over a six-month period in 32 preschoolers. Goudena (1992) examined

predication in young children's private speech but did not find evidence of increasing abbreviation of the syntactic subjects of sentences with age. However, his study did not control for psychological subject and predicate.

Vygotsky's (1934/1962, 1934/1987) theory of the social-private-inner pathway of *thinking* must be articulated and extended in order to complete his theory of *speaking*. Wertsch (1979) anticipated this need when he postulated that developments in private speech are likely to impact other areas of language development: "It would be very strange indeed if private speech were a separate function that had no influence on the development of social speech" (1979, p. 97). Vygotsky did not explicitly link inner and social speech, so his theory of private and inner speech does not encompass all he intended in his more general theory of psychological development. While the emphasis on thinking is understandable, I suggest that a more accurate rendition of the stages in his theory of *speaking* would be: social-private-inner-social. Extending his theory in this way opens the door to explaining how communicative competence occurs in social speech.

Inner speech is presumed to be functionally identical to private speech. It is also ideally suited as a tool for solving everyday problems that require rapid and silent thinking. Research has shown that inner speech occurs in the process of learning to *write* (e.g., Fijalkow, 1989), and is useful in *reading* by facilitating the storage and integration of successive ideas in a text (Daneman and Newson, 1992). There is also evidence that inner speech assists intellectually with the complex activity of *planning sentences* to be uttered in conversation. Programmatic investigations by Eisler (1968) on the hesitation pauses and sentence-planning of speakers engaged in social conversation suggest that inner speech is directly implicated in the production of social speech. Eisler's findings provide some initial support for my second hypothesis.

Hypothesis 2: Interjection of Inner Conversation into Interpersonal Conversation

The interjection of inner conversation into interpersonal conversation occurs when speaking or listening to others requires some thought; specifically: 2a) the planning functions of

inner conversation are most likely to be interjected into interpersonal conversation during the planning phase of speaking; 2b) the analytical functions of inner conversation are most likely to be interjected into interpersonal conversation during the interpretive phase of listening; and 2c) the interweaving of the personal (inner) and interpersonal (social) lines of speech has the developmental effect of transforming children's "naïve" interpersonal conversation into conscious, communicatively competent conversation.

The duration of hesitation pauses in adult speakers' spontaneous conversation has been shown through careful study to be related to the executive cognitive processes involved in sentence-planning (Goldman-Eisler, 1951, 1958). Hesitation pauses are a variation in the normal pattern of breathing during speech production. Pauses that interrupt the smooth flow of speech reliably indicate central nervous system activity related to producing socially adapted speech. Eisler (1968) proposed two stages in the generation of speech: *inner* speech, in which the content to be verbalized is conceived and formulated, and *external* speech, in which the linguistic and phonetic execution of the inner-speech plan is realized. In spontaneous speech, the inner speech stage is characterized by a dynamic symbiosis in which lexical, semantic, and syntactic operations dovetail, interact, and react to feedback before a speech plan is formulated.

In a related series of studies, Eisler (1968) closely scrutinized the hesitation pauses of simultaneous translators and found that these speakers choose ready-made models of sentences that are selected in one piece rather than construct sentences anew from individual lexical items. The use of existing syntactic structures to translate from one language to another explains the fluency of speakers regardless of the complexity of the syntactic structures involved. But this fluency is present only so long as the syntactic structures in the target language are the same as the ones presented in the initial language. When translators in the study encountered the need to choose a different sentence schema from the one presented, the decision to reject the structure as received and choose an alternative syntactic form resulted in

pronounced hesitation pauses in the production of the target sentence. Eisler attributed these hesitation pauses to the time needed for inner speech activity to be completed.

But what role do inner conversations play with respect to the *listener*? It is reasonable to assume that the listener would need the analytical functions of inner speech to make sense of complicated communications. Therefore, inner speech conversations ought to be active during the interpretive phase of listening. To investigate this, completely different methods from those used by Eisler (1968) would be required. I have suggested elsewhere (Feigenbaum, 2004) an experimental paradigm for studying inner speech activity using EMG in conjunction with videotaped recordings that would enable investigators to precisely determine if and when inner speech is active in the course of interpersonal conversation.

V. Conclusion

The problem of learning to communicate through speech may seem a daunting task, but children begin preparing for the challenge early in their infancy. With the help of adult caregivers and routine events that provide the earliest forms of contextual support for children's budding conversational abilities, children enter their preschool years with sufficient implicit knowledge and familiarity of the syntactic, semantic, and pragmatic aspects of language interaction to begin negotiating linguistically with peers. Improvised conversations with peers during pretend play provide a child with additional opportunities to learn the subtle pragmatic conventions that frame communicative interactions. But collaborating and verbalizing with peers is not enough for a child to gain sufficient insight into her own communicative abilities and practices so as to understand others as mental agents like herself, or to fully comprehend the relationship that exists between one conversational turn at talk and another, or between one sentence and another. For this insight and knowledge, I propose that a child turns to *herself* for help.

Verbalizing is an activity that brings ideas into conscious awareness by making them explicit. Ideas formulated in words can also be communicated and developed by means of conversational exchanges, such as question-answer formats. The key to communicative

competence is gaining conscious awareness of the entire objective process of conversation, including the participant structure, role expectations, and the rules for formulating and inferring conversational topics. Because a child's initial knowledge of this process is *implicit*, how does she make it *explicit*? I propose that she uses private speech to expand the *content* of her conscious awareness--so that it extends to her own activity and implicit knowledge—by gradually making them the *topic* of her conversations. Eventually, these self-reflective conversations become subvocalized, enabling her to bring conscious awareness to her social speech--and all of her other activities.

My proposal that conscious awareness and communicative competence develop first in private speech and only later in social speech helps to account for some paradoxical findings. One set of research results suggests that competence at the communicative skills of role-playing (Tomasello, 1999), perspective-taking (Wellman, Cross, & Watson, 2001; Wimmer & Perner, 1983), and topic-structuring (Sawyer, 1997) is achieved during the *preschool* years (ages 3 to 6), and another set of findings suggests that competence at role-playing (Flavell et al., 1968), perspective-taking (Selman, 1971, 1976), and topic-structuring (Boggs, 1990) is achieved during the *preadolescent* years (ages 7 to 11). If children first become knowledgeable about conversational coherence in the preschool years through the restructuring of their private speech discourse, but are unable to put that knowledge to immediate use in their social speech for lack of a silent mental tool for verbal planning and analysis, then the time taken up by the process of creating that tool could account for the delayed appearance of communicative competence in social speech in the preadolescent years.

If this interpretation of Vygotsky's theory is correct, then researchers of children's conversational development would want to bring the two lines—social speech and private speech—together, in one common frame. Conversational analyses of social speech development could then be compared with conversational analyses of private speech development at successive ages to determine if the two are keeping step with one another, or are following

different paths. More sharply focused assessments of children's role-playing, perspective-taking, and topic-structuring abilities might also be developed so that comparisons of these skills at successive ages can be made with greater precision. This would include devising tests that can distinguish between implicit and explicit knowledge of communication. And perhaps language acquisition researchers and private speech researchers, who have generally conducted their investigations in isolation from one another, would join forces—and begin to speak and think about children's language acquisition and mental development with a unified voice and a unified theory.

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