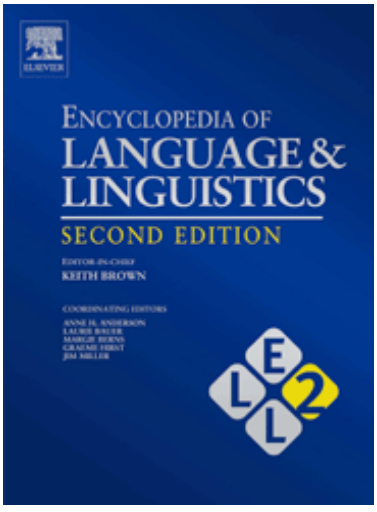

Schober M F (2006), Dialogue and Interaction. In: Keith Brown, (Editor-in-Chief) *Encyclopedia of Language & Linguistics, Second Edition*, volume 3, pp. 564-571. Oxford: Elsevier.

Dialogue and Interaction

M F Schober, New School for Social Research, New York, NY, USA

Dialogue – one-on-one language use with a partner – is arguably the most common context in which people produce and comprehend language. Children learn to use language in interactive situations, and people who do not read or write still communicate in dialogue. Dialogue has processing demands and involves cognitive resources distinct from those involved in monologue or in language use in groups. It thus requires distinct explanatory schemes and research methods, as well as serious attention to insights from other disciplines beyond psycholinguistics.

Processing in dialogue is special in at least two important ways. First, dialogue is a joint activity to which both participants continually contribute. Consider this transcribed example (Tsui, 1994: 38):

C: Do you get satisfaction though?
B: Yes, I reckon you get more satisfaction as you go up the the scale as well.
C: What do you mean, the money scale?
B: No, the job the job.

This ordinary interchange is a masterpiece of give and take as tightly coordinated as dancing or shaking hands. Together this pair coordinates – each shaping the other's utterances – to make sure that C understands what B means by 'scale.' Based on C's evidence of misunderstanding, B amends the initial statement; this shift is an example of how speakers can alter what they say, even mid-utterance, as they get linguistic, paralinguistic, visual, or behavioral evidence of their partners' reactions. This pair also creates dialogue with no overlap and no serious gaps, an impressive millisecond-level feat of timing. B and C must be monitoring the syntax and intonation of each other's speech for when it will be appropriate for them to jump in, and initiating articulation of their own speech a few hundred milliseconds before the other party has actually finished. (Tolerance for overlap varies in different settings and different cultures, but the smoothness of the turn transitions in the example is typical.)

Second, although at first blush one might assume that psychological processes in dialogue are particularly complex, dialogue actually provides constraints on processing that make it *less* mysterious. Instead of creating the lexical items and syntax of an utterance from nowhere, a speaker in dialogue often already has important building blocks available from the processes of comprehending their partner's prior utterances (consider B's use of 'get satisfaction'). The choice of content and timing of an utterance can in fact be so highly constrained by a partner's prior utterance (as in the example, where C's question constrains B to answer, and B's answer leads to a clarification request) that the speaker's production choices are quite limited. Similarly, comprehenders' own prior choices can come back to them in the speaker's utterances, simplifying their own comprehension processes.

Speaker B's repetition 'the the' is an example of the kinds of disfluencies – pauses, *um*s and *uh*s, restarts – that are ubiquitous in dialogue, accounting for anywhere from 6 to 15% of what is said. Approaches that focus on form and content (e.g., Chomsky's) have often ignored these aspects of spoken language as mere performance errors. But they are an essential feature to be explained by a psychological theory of production and comprehension in dialogue. The evidence is that they are informative on multiple levels. In producing them, speakers provide evidence about the problems they are having with producing the primary content of what they are saying [see Clark's (1994, 1996) distinction between primary and secondary speech]; they produce them more frequently, for example, when they are having particular trouble with selecting words, when the upcoming noun phrase is more complex, or when they are trying to hold the floor. For comprehenders, disfluencies and self-corrections can be informative not only about the fact that speakers are having trouble, but in certain highly predictable situations, about what speakers do *not* mean (Arnold *et al*., 2004; Brennan and Schober, 2001).

Although one might be tempted to think of psycholinguistic processing in dialogue as involving only the verbal aspects of the interaction, dialogue is better conceptualized as joint action on a continuum from the purely verbal to the entirely nonverbal (Clark, 1996). Most dialogues fall somewhere in between, involving verbal, paralinguistic, and visual behaviors. When people can see what a partner is doing, an action can stand in for a back channel or explicit confirmation (Brennan, 1990, 2004; Clark and Krych, 2004; Goodwin, 1981), sometimes replacing language entirely. A purely verbal transcript – like our example – may miss important psychological processes involved in responding to a partner's actions.

Dialogue takes place in many different arenas, with many different purposes, media, and kinds of participants. Obviously these dimensions of variability can affect speakers' mental processes, what they

say, and how they coordinate in saying it. So spoken face-to-face dialogue will differ in important ways from telephone dialogue, where visual cues like head nods and looks of confusion are unavailable; typed dialogue in a chat room will differ in important ways from spoken dialogue, which allows different kinds and frequencies of feedback about whether speakers have understood each other; signed dialogue will differ from spoken dialogue. Teasing during small talk at a party will differ in important ways from workplace task-oriented talk or a marital argument. Talk between spouses will differ from talk between strangers on a train; talk between parents and children, bosses and employees, therapists and clients, or native speakers and non-native speakers will also differ in important ways.

What is common across these different arenas is that speakers can use the resources available to them – ability to time utterances precisely, availability of visual information, what they believe is mutually known – to understand each other as precisely as they need to, given their current purposes.

Evidence for Psychological Claims about Dialogue

A psychological perspective on dialogue differs from a linguistic, ethnomethodological, or sociological perspective in that it attempts to account for the mental processes and products of each interlocutor. So beyond characterizing the structure of a conversation based on a transcript, the psycholinguist attempts to understand how ongoing mental mechanisms and behaviors lead to that transcript.

Methodologically, psycholinguists require independent evidence of mental process – evidence, preferably quantifiable, beyond the words themselves. They also require multiple observations sampled from the population of speakers and utterances to be confident about the generalizability of their findings. By examining different pairs of speakers in the same parameterized situation, psycholinguists attempt to account for the range of what people do. This methodological requirement contrasts with the case study approaches of, for example, conversation analysts or the example-based approaches of linguists; such case studies provide important fodder for psycholinguists' studies, but do not constitute psycholinguistic evidence.

Psychologists who study dialogue use two main complementary techniques for uncovering evidence of psychological processes. One technique is observing spontaneously occurring interactions as collected in large-scale corpora. When corpora are large enough to contain a sufficiently large sample of the phenomena of interest, psycholinguists can test hypotheses and quantify results. To pick one example, Fox Tree and Clark (1997) tested the hypothesis that English speakers pronounce the word 'the' as 'thee' (thiy) when they are having trouble formulating an utterance, in particular the noun phrase that follows the determiner. To examine this, the researchers selected 962 noun phrases (NPs) from 50 face-to-face conversations from Svartvik and Quirk's (1980) corpus of British English conversation, collected between 1961 and 1976. Half the NPs included one or more 'thee's, and half contained one or more 'the's and no 'thee's. The finding was clear: 81% of the instances of 'thee' were followed by a suspension of speech, compared to only 7% of the matched sample of 'the's. This quantified distributional analysis allows the reasonable inference that speakers (consciously or not, intentionally or not) signal their production difficulties through the variant pronunciation.

The second main technique is the laboratory experiment, which more fully exploits the precision of measurement of ongoing behavior and the power of experimental manipulation that is the hallmark of the psychological method. The challenge for experimental psycholinguists is to create situations that allow independent validation of interlocutors' mental states and processes without interfering too much with the contingencies of dialogue. Traditional experimental methods require highly precise control and comparability of stimuli, in order to allow researchers to confidently make claims about what causes what. Researchers studying dialogue achieve control in various resourceful ways.

The most common solution has been to examine task-oriented dialogue in 'referential communication tasks' (see Yule [1997] for a review of this task's history from Piaget in the 1920s onward), where the experimental participants must use language in order to accomplish a task together. Crucially, both parties don't have the same knowledge: one has information that the other needs in order to accomplish the task. Performance on the task thus gives independent evidence about what interlocutors intend and what they comprehend. The task can involve the description or manipulation of things like physical objects, abstract figures, photographs, spatial arrangements, or maps.

For example, in a task involving the ordering of photographs, one party is typically selected to be the 'director' or 'instruction giver' – the person who knows the target information. The director's task is to get the other party, the 'matcher' or 'follower,' to arrange his or her photographs in the same order as the director's photographs are arranged. If there is a visual barrier between the two parties, they must rely only on words to accomplish the task; if the interlocutors can see each other's faces, they can

also rely on information about where the other is looking. If they can both see the photographs, then they can also point and gesture. The same sort of division of labor has been set up in tasks like building a pump or Lego figures together, describing a route on a map, describing spatial locations, and various others.

Alternative kinds of referential communication tasks do not use physical objects to externalize what is going on in participants' heads, but have other externally validated evidence of what is intended and understood. For example, in methodological studies of survey interviews, researchers can have independent evidence about what interviewers mean by references in questions and how respondents have interpreted them. If researchers have independent access to the 'truth' about a respondent's life (through official records, through extensive post-survey interviewing, or by having respondents answer on the basis of fictional scenarios), they can then determine when respondents have interpreted a survey term as the interviewers intended. As with other referential communication tasks, corpora from this sort of task can be analyzed for linguistic, paralinguistic, and visual aspects of the interaction.

Referential communication tasks have the advantage of allowing an enormous number of parameters to be manipulated by researchers, while still preserving the relative naturalness of the interaction. Participants, in fact, become very engaged in such tasks, and they often do not realize that their language use is being measured; they simply focus on achieving the task. Researchers can manipulate the physical setting and affordances of a physical task. They can manipulate the conversational goals or agenda that the participants are trying to achieve. They can select different kinds of participants to see how relative levels of task-relevant expertise and mutual knowledge affect the discourse, for example, by selecting experts vs. novices, friends vs. strangers, participants with different levels of task-relevant abilities, or different group membership. Finally, such tasks allow researchers to manipulate the medium of communication: spoken vs. written, face-to-face vs. side-by-side vs. video-mediated vs. telephone; with immediate ongoing feedback of comprehension vs. delay, etc.

Tasks like these have been used to garner evidence for cognitive processes involved in selecting references, comprehending noun phrases and deictic expressions about location; aligning conceptualizations; adapting phonologically and syntactically; and coordinating on the timing of what is said. Corpora (audio, video, transcribed) of language use in referential communication tasks (some available to the broader research community on-line) allow measurement of the language used at various levels of specificity, phonological, lexical, syntactic, paralinguistic, and conceptual. And participants' own interpretations of what they believed happened during the interaction can be solicited after the fact, either through global ratings or by participants' judgments as they watch video or listen to audio recordings of their task performance.

Nonlinguistic aspects of task performance are also examined for evidence they give about the linguistic: the actions performed to succeed at the task, gestures, gaze direction, head nods. The advent of technologies for unobtrusively tracking the timing and positioning of eye gaze within a scene has led to a surge in measurement at a fine grain of detail. As an example of the kind of measurement these technologies allow, consider the study carried out by Metzing and Brennan (2003), in which participants' eye gaze was recorded using a head-mounted eye tracker. The study demonstrates that comprehension is partner-specific: addressees interpret exactly the same phrase differently when it is spoken by different speakers with whom the addressees have different dialogue histories. In the experiment, the participants were first instructed by (confederate) speakers to reposition objects in an array; they did this several times, evolving shared perspectives and terms for critical objects (e.g., 'the shiny cylinder'). Next, in the crucial trial, either the same speaker or a new one referred to the critical objects using either the familiar term or a new, equally good term (e.g., 'the silver pipe') for the same critical object (amid many other references that did not use different terms). When either speaker used the old term, addressees gazed immediately at the object. When a new speaker used the new term, addressees also gazed immediately at the object. But when the old speaker used a new term, addressees experienced interference, delaying their gaze to the target object by looking at other objects first. Metzing and Brennan argue that this partner-specific interference demonstrates that addressees are highly sensitive to the 'breaking of a conceptual pact,' and that the impact of pragmatic factors can occur extremely early in comprehension, rather than as an afterthought or late adjustment.

What has become clear over the years is that seemingly subtle methodological choices affect experimental results in important ways, suggesting that the particulars of dialogue settings really do matter for psycholinguistic theory. One choice is whether or not the study includes a live interlocutor who can respond spontaneously. For example, speakers describing the locations of objects produce descriptions from their own perspective ('on my left') more often when they have a live partner who can give evidence of having

understood them than when speaking into a tape recorder (Schober, 1993). And listeners understand references with greater accuracy when they are being addressed by a live speaker who can respond to their feedback than do eavesdroppers listening in on exactly the same dialogues (Schober and Clark, 1989; see also Kraut *et al*., 1981) or listeners in other non-addressee roles (Wilkes-Gibbs and Clark, 1992).

Another choice is whether a study involves two participants who speak spontaneously and are naïve to the purposes of the study or whether the study involves a confederate who presents scripted utterances. (Obviously, scripting increases the level of experimental control.) Just how important this methodological decision turns out to be can be seen in comparing findings from Brown and Dell (1987) to those of Lockridge and Brennan (2002). Brown and Dell investigated whether speakers are sensitive to what their addressees know as they tell brief narratives. The finding was that speakers seem relatively insensitive, mentioning the instrument of an action (e.g., 'the ice pick' in a stabbing) just as often when they believed the confederate already knew about the instrument as when they believed the confederate did not. In contrast, Lockridge and Brennan carried out the identical study but using a non-confederate partner as the addressee. This time, speakers mentioned the instrument reliably more often when the addressee was ignorant. Confederates hearing the same story again and again may be unable to present subtle cues of comprehension and need for clarification that fully naïve participants present.

Illustrative Findings

A number of robust phenomena have emerged from experimental studies of dialogue (for extensive reviews see Krauss and Fussell, 1996; Schober and Brennan, 2003; Pickering and Garrod, 2004). Many of the phenomena deal with 'partner adaptation': how, when, and whether interlocutors adapt their language use – from the phonological and lexical to the semantic and conceptual – to each other.

To select an illustrative arena of adaptation, how speakers refer to objects changes upon repeated reference with the same partner. Referring expressions tend to become shorter as the addressee gives evidence of having understood them, so that what started out as 'the one that looks like a monk praying' eventually becomes 'the monk' (Clark and Wilkes-Gibbs, 1986; Krauss and Weinheimer, 1964). Repeated tokens of a word also become phonologically shortened (Fowler and Housum, 1987). This happens substantially more in dialogue than in monologue (Krauss and Weinheimer, 1966; McAllister *et al*., 1994), which is consistent with the notion that this change reflects the accumulation of partner-specific knowledge rather than simple repetition (Bard *et al*., 2000).

Referring has been shown to be highly adapted to particular conversational partners. Speakers who can assume their partners share relevant expertise can use shorthand expressions ("Take the Q to Union Square") that they can't use with non-expert partners ("Take the Manhattan-bound Q subway train to the Union Square station") (Fussell and Krauss, 1992; Isaacs and Clark, 1987). Speakers who have evolved the use of a particular referring expression with a partner are surprised when their partner uses a different term, but they do not expect a new partner to use the same term (Brennan and Clark, 1996; Metzing and Brennan, 2003). In general, speakers adapt their referring expressions on the basis of what they take to be mutually known or 'common ground' with their addressees (Clark and Marshall, 1981): what is in their shared perceptual and attentional fields (e.g., Boyle *et al*., 1994), what has been said in the current or previous conversation, and what can be assumed based on the various communities to which both partners belong (families, professions, genders, age groups, nations, ethnicities).

At the level of individual processing, how and when does partner adaptation occur? One can imagine two extreme possibilities and a continuum of possibilities in between. At one end of the continuum, speakers always take their partners' points of view into account from the earliest moments of processing, perfectly tailoring their utterances to their addressees' precise comprehension needs (including appropriate word selection, appropriate syntax, appropriate intonation, appropriate volume, and appropriate timing.). Correspondingly, addressees perfectly take the speaker's point of view as they comprehend. At the other end of the continuum, speakers' and addressees' processing is initially egocentric, suited to what is most convenient for their own processing needs. In the first moments of processing, they do not take their partners into account; it is only some milliseconds or seconds later that they are able to monitor for their partner's intentions and needs, and then adjust accordingly (Horton and Keysar, 1996; Keysar *et al*., 1998a; Keysar *et al*., 1998b).

Neither extreme is fully supported by the experimental evidence. Speakers have notable failures in taking their partners into account, but they also have notable successes, and on some occasions they do seem to take their partners' perspectives even in the initial moments of processing (Hanna and Tanenhaus, 2003; Nadig and Sedivy, 2002). As constraint-based models of individual processing propose, speakers

make use of many sources of information at different stages of language processing; the use of information about one's partner may simply be another constraint, one which sometimes does and sometimes does not override other sources of information.

Another twist to the findings on partner adaptation is that apparent adaptation can mask undetected conceptual misalignment. Studies of survey interviewing have demonstrated that even though respondents usually believe they understand the terms in questions, they can actually interpret ordinary words like *bedroom*, *job*, and *smoking* quite differently than survey interviewers, and quite differently from each other (Conrad and Schober, 2000; Schober and Conrad, 1997; Schober *et al*., 2004). For example, in one study (Suessbrick *et al*., 2000), 10% of respondents who were asked the question 'Have you smoked at least 100 cigarettes in your entire life?' changed their answer when they were given a standard definition for what should count as 'smoking' (any puffs on any tobacco cigarettes, whether or not you bought the cigarette or finished it, but no marijuana). This suggests that using the same term as one's partner does not guarantee that one is conceiving of the referent in the same way.

Nonetheless, coordinating on the use of terms in dialogue has powerful effects. In fact, large-scale linguistic conventions can result from surprisingly few coordinated acts of referring in dialogue. In a clever demonstration, Garrod and Doherty (1994) showed that 10 pairs of strangers describing routes through a maze for each other tended to come up with their own idiosyncratic description schemes. But when the pairs switched partners and carried out the task a second time, the variability reduced; by the fourth and fifth partner switches, the entire set of speakers was using the same description scheme. This melding suggests that group linguistic conventions can emerge extremely quickly, without explicit management, from adaptations by each pair in dialogue.

Levels of Description: The Individual or the Pair?

Because dialogue is an emergent creation by two individuals, there is an inherent tension in determining the appropriate level of description – whether it should focus on the individuals or the pair. It is therefore not surprising that psycholinguistic accounts have different strains that reflect these tensions. Obviously it isn't the case that one level is correct and the other isn't; they simply reflect alternative perspectives on the emergent phenomena under consideration.

One approach starts with observed dyadic phenomena and works backwards, making claims about what psychological processes must be involved (Clark, 1996). From observing dialogue in referential communication tasks, for example, Clark and Wilkes-Gibbs (1986) argued that it makes more sense to conceive of referring as a joint process involving actions by two agents than as an individual process. Rather than forming their referring expressions by minimizing their individual cognitive effort, interlocutors seem to rely on principles of 'mutual responsibility' and 'least collaborative effort.' If one party is having trouble thinking of the right word or phrase, they can rely on the other to jump in and help. If this is so, then some part of people's processing must assess relative effort, if the pair's joint effort is to be minimized.

Another proposal in this vein is that people monitor and calibrate each other's actions at multiple levels during dialogue. Any utterance functions at several levels at once: in asking a question, a speaker (a) says words in order to (b) present a signal to the addressee, in order to (c) get the addressee to recognize the question, in order to (d) get the addressee to answer the question. The addressee can fail to understand at each level of this 'action ladder' (Clark, 1996), and speakers seek evidence of success or closure at each level (see Clark [1996] for further details). The implication for individual processing is that people allocate cognitive resources and mental representations to attend to evidence of comprehension at all these levels. How exactly this sort of account fits in with existing individualist accounts of processing and representation remains to be worked out (Horton and Gerrig, 2005).

The alternate approach starts with individual psycholinguistic processes and representations, and works at figuring out how these work in dialogue (Keysar *et al*., 2004). Following the traditions of individual psycholinguistics, this approach has tended to focus on moment-by-moment processes. A serious claim in this vein is Pickering and Garrod's (2004) argument that conceptual alignment in dialogue is the natural byproduct of individual processing. The idea is that because both parties in dialogue have highly similar language processes, they can use their own production and comprehension processes to activate representations that are functionally the same as the other person's. When one party hears a word uttered by the other, the same phonological, morphological, lexical, syntactic, semantic, and pragmatic information is activated, which automatically leads to conceptual alignment. Under this view costly additional cognitive resources for modeling the partner are unnecessary; sufficient coordination emerges from what goes on in each individual's own processes.

Although these two approaches have been placed in opposition, they may not be inherently contradictory. By emphasizing different aspects of complex phenomena, they give different parts of the picture. The time course of individual processing is just as important at the pair's joint accomplishment; focusing on successes is just as interesting as focusing on failures. Ultimately, the different levels of description will need to be integrated.

Questions and Challenges

The integration of individual and dyadic perspectives is perhaps the greatest challenge that researchers on dialogue face. Technologies like eye-tracking, which can allow greater access to individual processing during more naturalistic interaction, can help to bridge the gap. As more and more data points are collected in more and more domains – face-to-face conversations, on-line chat rooms, telephone conversations, text messaging – broader understanding of the costs and constraints of dialogue in different settings can be developed (Clark and Brennan, 1991; Whittaker, 2003) that will allow broader theories about mental processing and representations of language use in dialogue.

But substantial methodological challenges still remain. So far, much of what has been learned about dialogue has come from task-focused cooperative tasks in the laboratory. To what extent do these findings generalize to other discourse settings? On the one hand, it can be argued that as referring is one of the central components of any dialogue, findings from these studies are relevant to all dialogue; the mechanisms for coordinating on timing and conceptualization are likely to be common across many different settings. On the other hand, it can be argued that the predominance of this sort of task has led to a narrow focus on cooperative dialogue situations involving physical objects and visual co-presence, and to situations in which goals are known and agreed upon in advance. There are presumably other important psychological processes involved in other dialogue settings, and these have been relatively understudied by experimental psycholinguists. What goes on in arguments, socially charged employment interviews, negotiations, and pillow talk can have motivations beyond simple cooperation (although obviously some kind of cooperation is essential for them to continue at all), and a good deal of discourse does not revolve around physical objects that are mutually visible. Note that studies of the affective processes involved in dialogue have largely been left to social psychologists [e.g., work on empathic accuracy (Ickes, 1997), work on marital interaction and relationship success (Gottman, 1998; Gottman and Levinson, 1999)]. But cognitive and affective processes no doubt interact in important ways, and ought to be part of a full psychological theory of language use.

The facts of dialogue stretch the limits of what should be considered language use. Speakers in dialogue can treat any actions by their partners – gestures, gaze movements, physical actions, silences – as meaningful in the same way as their words, and sometimes words are replaced by nonlinguistic behaviors. Although linguistic actions deserve their own accounts, their functional equivalence to other behaviors in dialogue – and speakers' treating them as equivalent – necessarily situates a theory of language use within a theory of joint action.

Focusing on the processes and representations involved in dialogue raises fundamental questions about the processes and representations for language more generally. Is (as most linguists presume) language fundamentally individual, and processing in dialogue a special case? Or is language fundamentally dialogic and interactive, with monologue a special case? If the latter, then it becomes less clear what the study of sentences in isolation, which is at the heart of much modern linguistics, shows. If monitoring one's addressee's comprehension is a central part of language production in dialogue, then how speakers produce language in monologue is actually the more mysterious case; the question becomes what kinds of imaginary partners monologists instantiate, and how this impairs ordinary processing. Similarly, if being able to influence a speaker is a central part of comprehending in dialogue, then comprehension without the ability to influence the message (which is what psycholinguists most often study) is perhaps the more difficult task that requires special explanation.

In any case, the rigorous methods that laboratory researchers use to examine dialogue contribute a new understanding to claims about the centrality of dialogue from some disciplines (Bakhtin, 1981; Schegloff, 1991; Vygotsky, 1962) and assumptions of the peripherality of dialogue from others (Chomsky, 1965). By carefully attending to the generality of claims from case studies, by sampling stimuli and situations, and by adding new tools for measuring moment-by-moment processing, experimentalists attempt to understand the connection between the individual and the collective: how dyadic processes emerge from and shape individual processes. Rather than being a secondary enterprise that focuses on mere performance (instead of the more important competence), the experimental study of language use in dialogue may end up being central to a general understanding of language processing and representation.

See also: Computer-Mediated Communication: Cognitive Science Approach; Conversation Analysis; Pauses and Hesitations: Psycholinguistic Approach; Psycholinguistics: Overview; Spoken Language Production: Psycholinguistic Approach.

Bibliography

Arnold J E, Tanenhaus M K & Altmann R J (2004). 'The old and thee, uh, new: disfluency and reference resolution.' *Psychological Science 15,* 578–582.

Bakhtin M M (1981). *The dialogical imagination.* Holquist M (ed.) Emerson C & Holquist M (trans.). Austin: University of Texas Press.

Bard E G, Anderson A H & Sotillo C (2000). 'Controlling the intelligibility of referring expressions in dialogue.' *Journal of Memory and Language 42,* 1–22.

Boyle E, Anderson A & Newlands A (1994). 'The effects of visibility on dialogue and performance in a cooperative problem solving task.' *Language and Speech 37,* 1–20.

Brennan S E (1990). Seeking and providing evidence for mutual understanding. Ph.D. diss., Stanford University.

Brennan S E (2004). 'How conversation is shaped by visual and spoken evidence.' In Trueswell J C & Tanenhaus M K (eds.) *Approaches to studying world-situated language use: bridging the language-as-product and language-as-action traditions.* Cambridge, MA: MIT Press. 95–130.

Brennan S E & Clark H H (1996). 'Conceptual pacts and lexical choice in conversation.' *Journal of Experimental Psychology: Learning, Memory and Cognition 22,* 482–1493.

Brennan S E & Schober M F (2001). 'How listeners compensate for disfluencies in spontaneous speech.' *Journal of Memory and Language 44,* 274–296.

Brown P M & Dell G S (1987). 'Adapting production to comprehension: the explicit mention of instruments.' *Cognitive Psychology 19,* 441–472.

Chomsky N (1965). *Aspects of the theory of syntax.* Cambridge, MA: MIT Press.

Clark H H (1994). 'Managing problems in speaking.' *Speech Communication 15,* 243–250.

Clark H H (1996). *Using language.* Cambridge: Cambridge University Press.

Clark H H & Krych M A (2004). 'Speaking while monitoring addressees for understanding.' *Journal of Memory and Language 50,* 62–81.

Clark H H & Marshall C R (1981). 'Definite reference and mutual knowledge.' In Joshi A K, Webber B L & Sag I A (eds.) *Elements of discourse understanding.* Cambridge: Cambridge University Press. 10–63.

Clark H H & Wilkes-Gibbs D (1986). 'Referring as a collaborative process.' *Cognition 22,* 1–39.

Conrad F G & Schober M F (2000). 'Clarifying question meaning in a household telephone survey.' *Public Opinion Quarterly 64,* 1–28.

Fowler C & Housom J (1987). 'Talkers' signalling of 'new' and 'old' words in speech and listeners' perception and use of the distinction.' *Journal of Memory and Language 26,* 489–504.

Fox Tree J E & Clark H H (1997). 'Pronouncing "the" as "thee" to signal problems in speaking.' *Cognition 62,* 151–167.

Fussell S E & Krauss R M (1992). 'Coordination of knowledge in communication: effects of speakers' assumptions about what others know.' *Journal of Personality and Social Psychology 62,* 378–391.

Garrod S & Doherty G (1994). 'Conversation, coordination and convention: an empirical investigation of how groups establish linguistic conventions.' *Cognition 53,* 181–215.

Goodwin C (1981). *Conversational organization: interaction between speakers and hearers.* New York: Academic Press.

Gottman J M (1998). 'Psychology and the study of marital processes.' *Annual Review of Psychology 49,* 169–197.

Gottman J M & Levenson R W (1999). 'How stable is marital interaction over time?' *Family Process 38,* 159–165.

Hanna J E & Tanenhaus M K (2004). 'Pragmatic effects on reference resolution in a collaborative task: evidence from eye movements.' *Cognitive Science 28,* 105–115.

Horton W S & Gerrig R J (2005). 'Conversational common ground and memory processes in language production.' *Discourse Processes 40,* in press.

Horton W & Keysar B (1996). 'When do speakers take into account common ground?' *Cognition 59,* 91–117.

Ickes W (ed.) (1997). *Empathic accuracy.* New York: Guilford Press.

Isaacs E A & Clark H H (1987). 'References in conversation between experts and novices.' *Journal of Experimental Psychology: General 116(1),* 26–37.

Keysar B (1997). 'Unconfounding common ground.' *Discourse Processes 24,* 253–270.

Keysar B, Barr D J, Balin J A & Brauner J S (2000). 'Taking perspective in conversation: the role of mutual knowledge in comprehension.' *Psychological Science 11,* 32–38.

Keysar B, Barr D J & Balin J A (1998a). 'Definite reference and mutual knowledge: process models of common ground in comprehension.' *Journal of Memory and Language 39,* 1–20.

Keysar B, Barr D J & Horton W S (1998b). 'The egocentric basis of language use: insights from a processing approach.' *Current directions in psychological science, 7,* 46–50.

Krauss R M & Fussell S R (1996). 'Social psychological models of interpersonal communication.' In Higgins E T & Kruglanski A (eds.) *Social psychology: handbook of basic principles.* New York: Guilford Press. 655–701.

Krauss R & Weinheimer S (1964). 'Changes in reference phrases as a function of frequency of usage in social interaction.' *Psychonomic Science 1,* 113–114.

Krauss R & Weinheimer S (1966). 'Concurrent feedback, confirmation, and the encoding of referents in verbal communication.' *Journal of Personality and Social Psychology 4,* 343–346.

Kraut R, Lewis S & Swezey L (1982). 'Listener responsiveness and the coordination of conversation.' *Journal of Personality and Social Psychology 43,* 718–731.

Lockridge C B & Brennan S E (2002). 'Addressees' needs influence speakers' early syntactic choices.' *Psychonomic Bulletin and Review 9,* 550–557.
McAllister J, Potts A & Mason K (1994). 'Word duration in monologue and dialogue speech.' *Language and Speech 37,* 393–405.
Metzing C & Brennan S E (2003). 'When conceptual pacts are broken: partner-specific effects in the comprehension of referring expressions.' *Journal of Memory and Language 49,* 201–213.
Nadig A S & Sedivy J C (2002). 'Evidence of perspective-taking constraints in children's on-line reference resolution.' *Psychological Science 13,* 329–336.
Pickering M J & Garrod S (2004). 'Toward a mechanistic psychology of dialogue.' *Behavioral and Brain Sciences 27,* 169–190.
Schegloff E A (1982). 'Discourse as an interactional achievement: some uses of uh-huh and other things that come between sentences.' In Tannen D (ed.) *Analyzing discourse: text and talk. Georgetown University Roundtable on Languages and Linguistics 1981.* Washington, DC: Georgetown University Press. 71–93.
Schegloff E A (1984). 'On some gestures' relation to talk.' In Atkinson J M & Heritage J (eds.) *Structures of social action: studies in conversation analysis.* Cambridge: Cambridge University Press.
Schegloff E A (1987). 'Some sources of misunderstanding in talk-in-interaction.' *Linguistics 25,* 201–218.
Schegloff E A (1988). 'Discourse as an interactional achievement II: an exercise in conversation analysis.' In Tannen D (ed.) *Linguistics in context: connecting observation and understanding.* Norwood, NJ: Ablex. 135–158.
Schegloff E A (1991). 'Conversation analysis and socially shared cognition.' In Resnick L B, Levine J M & Teasley S D (eds.) *Perspectives on socially shared cognition.* Washington, DC: American Psychological Association. 150–171.
Schober M F (1993). 'Spatial perspective-taking in conversation.' *Cognition 47,* 1–24.
Schober M F & Bloom J E (2004). 'Discourse cues that respondents have misunderstood survey questions.' *Discourse Processes 38,* 287–308.
Schober M F & Brennan S E (2003). 'Processes of interactive spoken discourse: the role of the partner.' In Graesser A C, Gernsbacher M A & Goldman S R (eds.) *Handbook of Discourse Processes.* Mahwah, NJ: Lawrence Erlbaum Associates. 123–164.
Schober M F & Clark H H (1989). 'Understanding by addressees and overhearers.' *Cognitive Psychology 21,* 211–232.
Schober M F & Conrad F G (1997). 'Does conversational interviewing reduce survey measurement error?' *Public Opinion Quarterly 61,* 576–602.
Schober M F, Conrad F G & Fricker S S (2004). 'Misunderstanding standardized language in research interviews.' *Applied Cognitive Psychology 18,* 169–188.
Suessbrick A L, Schober M F & Conrad F G (2000). 'Different respondents interpret ordinary questions quite differently.' In *Proceedings of the American Statistical Association, Section on Survey Research Methods.* Alexandria, VA: American Statistical Association.
Svartvik J & Quirk R (1980). *A corpus of English conversation.* Lund, Sweden: Gleerup.
Todorov T (1984). *Mikhail Bakhtin: the dialogical principle.* Minneapolis, MN: University of Minnesota Press.
Tsui A B M (1994). *English conversation.* Oxford: Oxford University Press.
Vygotsky L S (1962). *Thought and language.* (Mateka L & Titunik I R (trans.). Cambridge, MA: Harvard University Press.
Whittaker S (2003). 'Theories and methods in mediated communication.' In Graesser AC, Gernsbacher M A & Goldman S R (eds.) *Handbook of discourse processes.* Mahwah, NJ: Lawrence Erlbaum Associates. 243–286.
Wilkes-Gibbs D & Clark H H (1992). 'Coordinating beliefs in conversation.' *Journal of Memory and Language 31,* 183–194.
Yule G (1997). *Referential communication tasks.* Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Dictionaries

H Béjoint, Université Lyon 2, Lyon, France

Dictionaries are reference works designed to give information on the lexical units of a language: their spelling, pronunciation, etymology, morphology, meanings, connotations, register restrictions, collocations, syntagmatic behaviour, etc. (*see* **Lexicography: Overview**). They have several characteristics that make them useful tools for translators. Like all reference works, they are made up of independent entries, which are short concentrates of information. Those entries are arranged according to a code (traditionally alphabetical order) that is accessible to all without preparation, so that the dictionary can be consulted quickly and easily. In addition, the information contained in each entry is presented in such a way that the users normally have no difficulty finding what they need: every entry contains the same items of information, which are always ordered in the same way. What makes dictionaries special among reference works is the fact that they are linguistic tools: the entries are lexical units, the information in the