12.1 Introduction

Testimony regarding conversation is central to the vast majority of criminal and civil cases litigated in the courts. In some cases, testimony may concern relatively public group discussions such as those that might take place in a corporate boardroom. Witnesses to such group interactions must attempt to remember what was said, as well as who said it and, perhaps, to whom it was said. Some are relatively more private, such as the famous small group conversations among President Richard Nixon, John Dean, and others that became central to the Watergate hearings (Gold, 1974). Others are more private still, occurring between a rape victim and her attacker or between a doctor and patient. Across a variety of circumstances, testimony regarding the specific details of these conversations becomes central to the decisions of the jurors who decide the cases.

When an employee sues for wrongful termination, discussions held in the corporate boardroom (or university committee meeting) can become central evidence of the reasons underlying the termination. Discussions between doctor and patient of issues such as the nature of the patient's symptoms, possible diagnoses, risks and benefits of alternative treatments, or instructions for medication or other treatments become central to cases of malpractice — as do discussions between other professionals and their clients. Criminal defendants are convicted based in part on testimony from witnesses to threats, verbal fights, and other conversational indicators of hostile intentions or the conflictual status of the relationship between the defendant and victim. Such witnesses sometimes overhear the conversations of others and sometimes are central participants. However, in all cases, the quality of jury decisions based on this testimony depends upon the accuracy of witness memories.

Like other witnesses, those reporting memories for conversation can voluntarily choose to lie. Perhaps more commonly, however, their memories are subject to the same honest failures and distortions that plague witness memories for specific persons, locations, objects, and events. It is this latter source of inaccuracy that we will address in this chapter.

Modern scientific theories of memory suggest that human memory systems operate in three general stages: (1) acquisition (or encoding), when information is first transferred into our memory system (2)
12.2 Failures of Encoding

Information must first be successfully encoded in order to be remembered. Three primary factors may cause memory to fail at the stage of encoding: (1) failure to perceive (or in this instance to hear) and to see relevant face and body language, (2) failure to devote sufficient attention to the target information, and (3) failure to understand it correctly.

Perception

Accurate understanding of conversation requires accurate speech perception, as well as accurate perception of facial expressions and body language that may affect interpretation of what is said. A person may fail to encode the nature of a conversational contribution accurately due to personal sensory impairments in hearing or vision (see Davis and Loftus, Chapter 11, this volume, for review) or to environmental interference through such factors as background noise, distance, or blocked vision. Visual cues, such as gestures or lip movements, can compensate for an impaired auditory channel and make message transmission more resilient to the presence of background noise and other auditory disturbances (Auyeung and Graham, 1975; Rogers, 1978). This is particularly important for the hearing impaired, who tend to compensate by lip reading (Davis and Loftus, this volume; Nussbaum and Coupland, 2004; Nussbaum et al., 2000; Villaume et al., 1994).

However, even for unimpaired listeners, nonverbal cues such as gestures, facial expressions, or body movement and posture help the hearer to understand what the speaker is trying to convey and how it is to be understood. Thus, failure to see the speaker is likely to undermine the adequacy of encoding utterances such as those that, for example, use sarcasm, irony, and similar rhetorical means to come with nonverbal signals indicating that the utterance is not to be interpreted literally. Thus, multichannel perception is important for evaluation of the emotional underpinnings of the message and its veracity (see DePaolo et al., 2003). Interpretations of conversational contributions based on availability of, or attention to, a limited number of channels may be completely erroneous. Therefore, when an attempt is made to evaluate the accuracy of memory for conversation, it is of crucial importance to consider the sensory abilities of the witnesses, as well as the environmental challenges to vision and hearing present at the time of the conversation (see Davis and Loftus, Chapter 11, this volume, Davis and Friedman, in press, for reviews).

Attention

The success with which information is encoded is determined by the amount of attention devoted to it, as well as the depth with which it is processed. The more that one attends to something and
more that one thinks about it while attending to it, the more likely it is to be remembered later (see reviews in Davis and Follette, 2001; Schacter, 1999, 2001). Conversational involvement, for example, enhances overall memory for ideas mentioned in the interaction, presumably because it increases attention (Gaeta, 1984). Thus, to understand the conditions under which a particular conversation, or particular person participating in the conversation will be best remembered, one must first consider what determines the amount and direction of attention paid by the observer to the conversation and its participants.

Davis and Follette (2001) reviewed in detail the way in which attention is determined by personal characteristics and states, and contextual features of a target event. First, attention is vulnerable, so it may be impaired by internal or external distractions. The person's internal processing resources may be diminished by such factors as illness, fatigue, age, intoxication, pressing personal concerns, anxiety, and so on, which would limit attention devoted to external events of most kinds, including conversation. Internal distractions such as noise, complexity in the environment, interruptions, etc. can also compromise attention to conversation partners and their utterances.

Second, because attention is selective, greater attention is devoted to aspects of the environment or of a conversation that (see the review in Davis and Follette, 2001)

- Are salient (i.e., stand out and draw attention)
- Are threatening (including physical and emotional threats)
- Are distinctive, unexpected, or unique
- Are interesting
- Are relevant to personal interests, goals, or current concerns
- Are relevant to activated schemas, stereotypes, or expectations
- Elicit powerful emotions

Furthermore, attention tends to go toward what is deemed the essential "core" of the event — or to what is deemed the central point of a conversation (see the review in Davis and Friedman, in press).

Attention may be selectively devoted to topics and to people. Therefore, people deemed most important, interesting, distinctive, etc. tend to draw more attention than others. Among the interpersonal features most extensively investigated is status. Persons of high status are typically relatively novel and relatively important. They are novel because access to higher status persons is often restricted, and thus interaction occurs less frequently; they are more important because higher status persons are often in possession of desired resources or in control of one's outcomes. Typically, lower status individuals tend to be highly vigilant with regard to the behavior and utterances of higher status individuals, in particular when their own outcomes are dependent on the higher status persons (Bertscheid et al., 1978; Fiske and Dipietro, 1996; cf. Eber and Fiske, 1984).

Attention is also affected by expectations associated with conversational norms. One such expectation, for example, derives from the conversational maxim "be relevant" (Grice, 1975), which dictates that conversational contributions should be relevant to the previous content of others' remarks and to the general content and context of the interaction. Davis and Holgates (1984) demonstrated that such an expectation of relevance can result in poor memory for irrelevant (or tangential) contributions. The authors had participants read a supposed debate between two Nevada politicians. Each was asked four questions regarding the deployment of an "MX" missile system in Nevada. The replies of one politician were directly relevant to the questions asked, whereas those of the other were only tangentially relevant. Two sets of questions were used so that the first politician's answers were directly relevant to the first set and tangentially relevant to the second, whereas the reverse was true for the second politician.

Memory (recognition and recall) was clearly impaired for the tangentially relevant replies. In fact, when asked to recall each reply verbatim, subjects often simply wrote "did not answer the question" for tangential replies. Presumably, schematic processing directing attention to material relevant to the question led to superficial processing of the irrelevant content and thus poor memory.

Generally, violations of social norms or strongly held expectations are attention grabbing, and people remember such instances better, primarily because they are trying to resolve the discrepancy between
expectation and reality (see Grasser et al., 1979). For example, one of the implicit expectations in many conversations is that participants follow norms of politeness and modesty, i.e., that they do not engage in unfavorable comments about each other, inappropriate sexual innuendo, or excessive self-praise. To the extent that certain statements violate these norms, their content becomes more memorable than the remainder of the conversation (Pezdek and Prull, 1993; Wyer et al., 1994).

Role-based expectations also guide social perception and memory. Status differences, often associated with social roles, give rise to expectations with regard to how high- and low-status individuals will behave in conversation. Typically, lower status individuals are more polite to higher status individuals, who often command the resources upon which the other is dependent (Ier, 1993). Consistent with the idea that social status induces politeness-related expectations, Kemper and Thissen (1981) found that impolite requests by low-status speakers (which do not fit our expectations) are more likely to be remembered, whereas such requests by high-status speakers are more likely to be forgotten or distorted. Conversely, polite requests by high-status speakers were more memorable than the same requests by low-status speakers (but see Holmgren, 1997, experiments 1 and 2, for more ambiguous results). Similarly, when speakers state a request in ways that are not appropriate for the specific context, the wording of the request is more likely to be remembered compared to when the request is made in an appropriate way (Gibbs, 1987).

Whereas discrepancy between expectation and reality is generally attention grabbing, in other instances expectations may actually facilitate memory for information that is consistent with them. This is primarily true when a person possesses expectations concerning the organization or structure of a particular conversational event. For instance, Gains (1982; study 2) tested the notion that people have expectations with regard to the structure of a dialogue and have better memory for conversations that conform to a generic script. When participants heard a dialogue that did not conform to the script, their memories were poorer compared to those for a dialogue that conformed to their expectations.

The Role of Anxiety and Emotion

Many of the circumstances giving rise to litigation involve intense emotion among participants and witnesses alike. Thus, it is of interest to understand how anxiety and emotion might affect memory for conversation.

Christiansen and his colleagues have suggested a two-stage process by which stress or arousal affects memory (Christiansen and Safier, 1996). First, in the "preattentive" stage, emotion-evoking stimuli, such as blood or personal threat, trigger an orienting response drawing attention to the emotion-evoking stimuli. In the second stage, active attentional mechanisms engage elaborative encoding focused on the emotional material. This selective attention and elaboration limit processing capacity for peripheral information not central to the emotional aspects of the event. In cases of very strong emotion, the person may become preoccupied by intrusive thoughts regarding the threatening event, further narrowing the focus of attention/processing.

Safier and colleagues (1995) refer to the outcome of the narrowed attention and heightened physiological focus on the source of the emotional arousal as "tunnel memory." Events witnessed under this narrow processing mode will tend to promote better memory for central information -- that is, the details of the emotion-evoking part of the event. In contrast, it will tend to inhibit processing of and memory for peripheral details. The details that are irrelevant or spatially peripheral to the core source of arousal (Easterbrook, 1959; see reviews in Brown, 1993; Christiansen, 1992a; Christiansen and Safier, 1996; Heuer and Reisberg, 1992). This dynamic of selective attention and selective recall is powerfully illustrated with regard to the so-called "weapon focus effect" (Brammer et al., 1990). To the extent that a weapon is present in the situation, individuals tend to focus their attention on this potentially threatening object, but are less attentive and have a poorer memory of other characteristics of the situation.

Beyond the general instance of threat, emotional arousal has often been linked to decreased memory for conversation (Goss et al., 1985; Sillars et al., 1990; Singer, 1939; Stafford and Hech, 1984). However, it appears that in these studies emotion was peripheral with regard to the conversation, so research
participants did have a poor memory for aspects of the conversation that did not produce their emotional state.

Aroused often facilitates the formation of detailed and personally meaningful event memories. That is, the person may be particularly likely to retain a memory (though not necessarily accurate) of the event and peripheral details associated with it. Indeed, MacWhinney and colleagues (1987) showed that episodes causing physiological arousal were more likely to be remembered than episodes that were less arousing (see also Booth et al., 2001). It appears that emotional arousal generally promotes long-term retention of the emotion-arousing event or message (Parkin et al., 1982). This may also explain why jokes and other emotion-eliciting utterances tend to be retained better than neutral utterances (Schmidt, 1994; cf. Keenan et al., 1977). However, as Brown and Kulik (1977) and others have shown with their research on “flashbulb memories,” these very vivid memories can be quite inaccurate. In particular, although the core features of the events can be well retained, memories for peripheral detail (such as where or when it happened) are often quite mistaken.

Notwithstanding the potential of emotion to facilitate memory, it may also be expected to impair memory in some circumstances. Anxiety and other unpleasant emotions, for example, may be responsible for the well-known failure of patients to remember the content of their conversations with physicians (Flahaven, 1985; Ley, 1966, 1979, 1986; Ley and Spelman, 1967). During aspects of physical examinations, for example, patients may invoke distracting strategies to avoid thinking about the unpleasant aspects of the examination. Although these strategies may have the intended benefit, they are likely to prevent patients from paying attention to aspects of their environment. Thus, it would not be wise to present important information to patients during invasive components of examinations. That is not to say that the physician cannot do and say things to reduce anxiety such as explaining the purpose of the examination, what to expect in terms of physical sensations, and so forth. Engaging in conversation for the purpose of relaxing the patient is also warranted. However, the doctor should not assume that those are optimal times to try to impart important information to the patient, especially information upon which the patient needs to act at a later time.

Furthermore, anxiety is known to interfere with successful communication and memory. Physicians and patients are under special stress during discussions of serious or life-threatening diseases. However, physicians appear to have anticipatory anxiety that peaks early in interactions with patients (though it may persist for some time afterward) and patients' anxiety increases later in the consultation and even after an initial consultation about serious news has concluded (Pricek and Eberhardt, 1996). Physician anxiety may interfere with clear expression, attention to content, and noticing cues of confusion that may be present by the patient as the conversation proceeds and the patient becomes more anxious.

Summary: The effects of emotion on memory for events have been widely studied within psychology; however, little research has addressed the relationship of emotion to memory for conversation. Research that has addressed these issues has been correlational in nature and is open to alternative explanations. This dearth of research is particularly unfortunate because emotions are high during incidents such as sexual harassment or rape and fights that degenerate into violence, and in a variety of stressful professional interactions— all situations commonly giving rise to litigation of some form.

Interpretation

Difficulty of Perception

The presence of noise, distraction, personal sensory impairments, or other factors that cause difficulty in simple perception of words has the additional effect of compromising comprehension. That is, even though individuals may understand all the words spoken, they are less likely to understand the overall meaning, draw appropriate inferences from utterances, and integrate the new information with their existing knowledge. The result of this is frequently diminished comprehension and retention (Schneider et al., 2000). Those who have tried to learn a foreign language may have experienced the analogous effect when attempting to process rapid speech in the new language; one must try so hard to understand the
words that the meaning of the entire sentence is lost. This problem often plagues older listeners, particularly in the presence of background noise (see Davis and Loftis, Chapter 11, this volume).

Meaning Depends upon Context

Language comprehension inherently depends on context. Initial understanding of conversational utterances requires integration of verbal and nonverbal cues, as well as background, situational, and relationship contexts (Argyle and Grahama, 1975; Cohen, 1977; Rogers, 1978). For example, the English language is full of words that carry different meanings dependent on the context in which they are used ("true" as fruit vs. "nut" as counterpart of a screw vs. "nut" as delinquent individual). Similarly, phrases and utterances need to be considered within the social and physical context in which they are made in order for a hearer to infer a speaker's intention accurately (Sperber and Wilson, 1995). For adequate understanding to occur, hearers and speakers must share a common understanding of the exact context.

Speakers routinely make assumptions about the kind of information shared between speaker and hearer (Clark and Haviland, 1977). These assumptions are often warranted, perhaps because interactants are in the same room, have had similar experiences, or have communicated before about a particular subject. From this perspective, a speaker's utterances carry with them assumptions about what he thinks a hearer knows already. It is easy to see that in cases in which a speaker's assumptions are incorrect, misunderstandings will occur. Frequently, these misunderstandings are detected and eliminated. However, in other cases, interactants may not notice that they are making different assumptions. To the extent that an utterance is interpretable to them, two people can agree on what was said, yet encode very different interpretations (cf. Fletcher, 1994; see Davis and Friedman, in press, for review).

Features of Speech That Create Difficulty in Understanding

As we are all aware, some speakers are much more difficult to understand than others. Of course, failure initially to understand an utterance correctly will cause memory to fail as well. Thus, it is important to consider the aspects of speech that affect initial understanding.

Generally, linguistically simple statements are understood more easily. Long sentences that include numerous clauses and subordinate clauses require more effort and put great processing demands on the individual. In order to understand such a sentence, a hearer must hold all information extracted from different clauses in working memory long enough to be able to integrate all parts and extract an overall meaning. Thus, listeners — especially older listeners, distressed listeners, and those with otherwise impaired processing capacity — are particularly likely to fail to comprehend complex utterances (see Davis and Loftis, Chapter 11, this volume).

Hearers generally find it easy to understand statements that involve concepts, vocabulary, and information with which they are familiar but struggle if statements take an unfamiliar form or convey new content. This is a common reason why conversations between professionals and their clients often fail. A specific problem in the medical realm is the use of a sophisticated and highly specialized vocabulary that is inaccessible to the layperson. The physician has a special responsibility to communicate in a language that is comprehensible to the patient. If patients have a particularly acquiescent response style, it may be difficult for the doctor to discern that the patient does not understand what he has been told. Under these circumstances, it is useful for the doctor to ask the patient to repeat what he was just told. The physician then must ascertain that the patient actually understands the concepts and does not merely parrot what was said without really understand its meaning. In general, it is desirable if patients paraphrase the information using language meaningful to them rather than incorporating ambiguous language.

High-stakes medical conversations are likely to be about complex topics about which the physician uses terms familiar to the medical community but less so to the lay community. For instance, one study indicated that 73% of women informed about breast cancer did not understand the meaning of the word “median” as in median survival time (Lobel et al., 1999). If the patient does not understand such a term during a high-stress interaction, it is easy to see how physicians could correctly claim they informed patients of the likely survival time of a particular treatment option but the patient could claim that no such discussion occurred.
Ambiguity about the meaning of important words in medical decision making and communication is not limited to statistical terms. Considering that many documents intended for public consumption are written at the sixth-grade level, it is easy to see how terms like "prognosis" and "morbidity" can be misunderstood, unexplained, and not recalled. Even terms that fall within everyday language (e.g., silent and misunderstood in medical interactions. Physicians and patients use terms relating to frequency (frequently, not often, likely, probably, often, etc.) quite differently (Girgis and Sainon-Fisher, 1985). This means, of course, that a complication experienced following a conversation with a physician could take a patient very much by surprise if he and the doctor had different subjective understanding of what was meant by "occasionally." Attempts have been made to quantify the probabilities implied by adjectives used in the medical literature (Kong et al., 1986), but ambiguities still remain. There is no single best way to ensure that patients and physicians mean or understand words or probability estimates of risk, treatment options, or side effects the same way (Danzon and Eberhart, 1991; Nakao and Ashcroft, 1983; Ohnishi et al., 1992; Robertson, 1982; Woloshin et al., 1994). What is clear is that professionals need to engage in extra effort to ensure understanding — as well as to help patients remember vital information and instructions.

In addition to knowing how to disclose high-stakes information, it is important for physicians to anticipate what patients want to know. Because of the high levels of affect likely to be present for the patient, they may not be as good at communicating their desires for information. In a study of cancer patients' experiences at receiving news of a cancer diagnosis, patients were less interested in the diagnosis than the prognosis. Although 14% of patients felt diagnosis was the most important part of cancer diagnosis, more (18%) felt treatment options were most important and fully 52% wanted prognostic information. More than half the patients wanted to discuss life expectancy, though only 29% of physicians actually did so. Certainly, recall of these conversations would more likely be reported as unsatisfying, and the possibility of the patient retaining his understanding of what the prognosis is (even if it is incorrect) would be higher than if the physician supplied the information initially.

Schematic Processing

Schemas refer to units of knowledge that people have about recurring objects, situations, social categories, persons, or topics. Whether ordering a meal at a restaurant or going to the doctor, people have a clear conception of the kinds of people involved and the way in which these interactions typically proceed. This knowledge not only gives rise to specific expectations but also helps people to understand the events and people that they encounter. Ambiguous events are usually interpreted so that they are consistent with the schema for a particular situation (Tronsanto and Johnson, 1972). Similarly, schemas help to fill in the gaps (Bower et al., 1979) in what is directly perceived with schema-based assumptions about what is also likely to be true (see the review by Davis and Loftus, in press).

People often compensate for lost words (missed or not clearly understood), for example, by filling in words they expect would typically fill all such gaps. This is particularly likely to occur when the person has very strong expectations, when he is distracted and not processing carefully, or when his hearing is poor. This is particularly characteristic of elderly listeners, who rely on expectations for content as well as knowledge of syntax and semantics to fill in gaps (Nussbaum et al., 2006).

Specific schemas for other persons or the circumstances of an interaction also affect expectations, which in turn determine which elements of an interaction are most likely to be noticed and how they will be interpreted when ambiguity exists. Consider a new mother whose 10-month-old child is just beginning to walk and is heading toward a toy she clearly does not see. The mother, noting the child is about to trip, grabs the child by the hand just as the child falls. The child cries out in pain and is unable to move his arm. Upon taking the child to the pediatrician, the new mother worries that the physician will think she abused the child, although all she did was stop him from falling.

During the conversation with the physician, she is tense, nervous, and defensive when the doctor asks her if the child is meeting his developmental milestones, a routine question. The doctor also tells the mother that one must be very careful when placing pressure on the arm of children under the age of six because they can become easily dislocated. Though the physician never overtly questions about child abuse, the new mother feels a dislike for the doctor and ultimately tells her friends that the doctor is suspicious.
and condescending during interactions with her. From the doctor's point of view, a mild dislocation (radial head subluxation) of the elbow is common. He was never suspicious of child abuse and simply provided information to a new mother about an action and condition commonly referred to as "nursemaid elbow." The mother's expectation created a confirmatory bias in her assessment of the doctor's suspicion. In recalling the conversation to others, she then highlights the "evidence" that the doctor was suspicious.

In this case of nursemaid elbow, one can just as easily see how a physician with an expectation of abuse based on a stereotype or pre-existing suspicion could read the nervous new mother's body language and verbal defensiveness as evidence for the abuse hypothesis. Research supports the possibility that the physician could selectively recall evidence from the conversation to support his hypothesis that there was reason for concern about possible abuse (Sande et al., 1986).

**Personal Determinants of Understanding**

Personal difficulties may exist that compromise understanding in conversation, many of which have been studied in the context of medical interactions. For example, beyond patients suffering age-related cognitive impairments or dementias, people who are acutely or subclinically cognitively impaired tend to encode or retrieve information improperly. Acute impairment may be due to such factors as mild disorientation secondary to illness or even medication toxicity. Medication-induced acute impairments may come from drug interactions or may have developed because the patient is taking drugs improperly. The patient may also inadequately metabolize the drugs, resulting in toxicities due to higher than anticipated blood levels of medications. In both instances, patients often try to cover up early signs of cognitive decline by being overly acquiescent. It is easy to understand how a doctor could report informing such a patient about the side effects of a drug while the patient denies being told of any such effects.

### 12.3 Failures of Retention

**Memory of the Fact of the Conversation**

Perhaps the most fundamental aspect of memory for conversation is memory for whether the conversation took place at all. Like memory for all information, memory for the very fact of a conversation can fail. Unfortunately, this form of failure of memory for conversation plays an integral role in a common crime against the elderly known as the "where's the check?" scam (Schacter, 2001). Essentially, perpetrators of this scam convince elderly targets that they have already agreed in some way to give the perpetrator a check. In some cases, the perpetrator may simply claim that the elderly target promised to send the check in an earlier conversation, say it has not arrived as agreed, and remind the person to send it. In others, the perpetrator may say he has received the agreed-upon check, but that it was written for more than necessary. He then asks the elderly target to send a replacement check for the lesser amount.

Perpetrators of such scams often pretend their elderly targets to assess their memory by calling in advance to collect personal information. When the perpetrator later calls back to initiate the scam, he first determines whether the older targets remember the previous conversation and thus whether they would be likely to remember other events. If not, the perpetrator proceeds to make his false claim. Many older people expect their memories to be poor and would not be surprised to hear that they had forgotten a phone call or conversation or the details of past financial agreements or transactions. Thus, they are easily convinced that they had previously written (and then forgotten writing) a check or that they agreed to donate to a particular cause.

**Memory of What Is Said**

**How Much Is Remembered?**

Most of what is said in conversation is lost. Stafford and colleagues (1987) found that immediately after a mundane conversation, participants could recall only about 10%. After 1 month, this number dropped to 4%. What we retain from a conversation is primarily the gist of what was perceived as its core.
poor retention of what is said contributes to poor outcomes of professional interactions that are later discussed in the court — prominently, those between doctors and patients. It has long been noted, for example, that patients are unable to recall about half of what they have been told by their physicians (DeMatteo, 1965; Ley, 1966, 1979, 1986; Ley and Spelman, 1967).

Gender effects have also been noted to affect recall of medical information. One should be cautious about how changing cultural influences could alter these findings over time; however, it appears that, especially for women, medical information presented by a female physician with high degrees of expressiveness produces the most recall of information (Bush, 1985). Similar effects were present for males, but to a lesser degree. High degrees of nonverbal expressiveness in opposite sex dyads may actually interfere with recall for both sexes.

Memory of Exact Content vs. Inferred Meaning

Often the exact wording of a statement is critically important in forensic contexts. For example, the statement “I’m going to kill the son of a bitch!” may constitute a clear threat, whereas “The son of a bitch doesn’t deserve to live!” might be taken as a statement of opinion. The two, however, would often be understood as equivalent and consequently remembered equivalently later — particularly if the person in question ended up dead.

Memory for exact wording is often poor. That is, only minutes after an utterance is made, a conversation partner may be unable to recall its exact wording. He miners routinely extract the basic idea underlying an utterance and forget the linguistic surface form (Bock and Brewer, 1974; Brewer and Hay, 1984; Grenner and Manchester, 1975; see Fletcher, 1994, for a review). They process “between the lines,” remembering not precisely what was said but, rather, what was pragmatically implied or what appears to make most sense in a given situation (Harris and Men, 1976; Hilton, 1985).

For practical purposes, specific wording is often irrelevant because the same propositional content (or meaning) can be expressed in a variety of different ways and because hearers primarily care about the message that is conveyed. Language comprehension and, ultimately, memory for utterances are geared toward inferring what another person has said, not the utterances alone. As is readily apparent, this may cause problems in contexts in which the specific wording used has great legal relevance or when the hearer has inferred and remembered the wrong meaning (see Davis and Friedmann, in press, for review).

This meaning-driven or gist-based memory applies not only to individual utterances, but also to the entire episode of a conversation. People may not recall any details of what was said or even who said what, but rather may remember the gist of what the conversation was about. Specifically, individuals may recall the general kinds of opinions or beliefs that the participants in a conversation expressed but no longer remember any specific statements. This type of memory is much more abstract and primarily a reflection of how a person interpreted and experienced a situation. For example, a witness may report hearing a “fight” between two persons, one of whom is later found dead, but the witness may be unable to report any of the content. This interpretation could have resulted from other cues such as tone of voice, volume, body language, and so on, perhaps in the absence of ever having heard the actual content. More dangerously, the label “fight” may be the result of “reconstructive” memory processes (or “hindsight” biases) resulting from the witness’s post hoc discovery of the death.

Unfortunately, listeners may later confidently report that they remember exactly what the speaker said and, often in fact, they remember only the gist of what was said (for example, see Neisser, 1976). This situation arose for a local instructor, whose students accused her of calling them stupid in class. As is characteristic of any qualified college instructor, she was very careful to avoid any insults or inappropriate language in her interactions with students. One day, she dismissed the class early because students had quite obviously failed to do the readings and were unprepared for the scheduled in-class discussion. The instructor, who had expressed her dissatisfaction with this situation before dismissing the class, later was astonished to find out that students reported she had called them “stupid.” In hindsight, however, one can understand this disagreement in terms of interpretation-based or gist-based processing, not the part of the students. They interpreted the instructor’s behavior to mean she thought they were stupid and, later, confidently “remembered” that stupid was exactly what she said.
This example illustrates the principle that subsequent memory for an utterance can only be as accurate as the inference initially drawn by the hearer. It is easy to see how the combination of loss of linguistic form combined with inference drawing or interpretation can create a number of problems so that the hearer does not interpret an utterance in line with what the speaker intended to say or remembers primarily what the speaker only implied but did not say.

The prevalence and importance of such inferences was illustrated by Fulero and Einkel (1991), who found that juror inferences from the actual content of expert testimony strongly affected verdicts. The authors presented three versions of a trial in which expert testimony regarding insanity was presented. In one version, the expert presented only diagnostic information that the patient suffered from delusional paranoid disorder. In the second version, the expert testified regarding the diagnosis and, in addition, testified that because of the delusions associated with the disorder, the patient would be unable to consider the consequences of his behavior or to appreciate the wrongfulness of his acts. Finally, in the third version, the expert testified to the preceding facts and further stated the conclusion that the defendant was insane at the time of the crime. No differences in verdict were obtained among the three levels of testimony, in part because jurors tended to infer the final determination of insanity in all conditions and/or to remember falsely that the expert had stated that conclusion even when he had not.

The importance of conversation-based inferences has also been extensively discussed in the literature on false confessions. Kassin (1997) noted that judges typically exclude confessions elicited through explicit threats and promises, but they commonly admit confessions elicited through implied threats and promises. Kassin and McNall (1991) directly tested whether certain interrogation practices were interpreted as threats or promises of leniency. The interrogation techniques they focused on were "maximization" (in which the interrogator overstates the seriousness of the offense and the magnitude of charges, and makes false or exaggerated claims regarding the strength of evidence against the defendant) and "minimization" (in which the interrogator offers sympathy or excuses for the accused, perhaps blaming the victim or someone else, and thus minimizes the seriousness of the crime).

Participants read one of five versions of an interrogation. The interrogator (1) explicitly promised leniency if the defendant confessed, (2) explicitly threatened harshness if he did not confess, (3) used minimization techniques, (4) used maximization techniques, or (5) did none of these. Participants then estimated the likely sentence to be imposed on the suspect. Results indicated that (1) minimization and actual promises of leniency led to equivalently lenient expectations of punishment and (2) maximization and explicit threats of harshness led to equivalently harsh expectations of punishment. That is, observers inferred the promises or threats that were never explicitly made. Thus, Kassin (1997) concluded that common interrogation tactics essentially violate the intent of the law by using pragmatic implication to accomplish what they are forbidden to do explicitly.

Which Contributions Are Remembered?

Which conversational contributions will be remembered depends on a complex web of factors. To illustrate this point, Hirst and Gluck (1999) conducted a study comparing the testimony of John Dean before the Senate subcommittee on the Watergate affair in 1973 with transcripts of White House recordings of 1972 conversations among Richard Nixon, H.R. Haldeman, and John Dean. The tape of the conversations were an unpublished transcription prepared by the impeachment inquiry staff for the House Judiciary Committee at the time of the Watergate Hearings (National Archives, 1996) which contained a more complete transcription than the previously published White House Transcripts (Gold, 1974).

From these, the authors selected the transcription of the September 15 meeting of Nixon, Haldeman, and Dean involving a review of events related to Watergate. Each person's contributions to the original conversation were coded as narration, facilitating remarks (merging), and monitoring (evaluating and correcting). The authors found a number of interesting relationships between conversational role and the content of Dean's statement to the Watergate subcommittee. Although there are many potential explanations of the results, the authors suggest that the observed patterns may reflect the influence of schematic-processing and conversational roles (Hirst and Gluck, 1999).
Perhaps the largest observed difference was in memory for Dean's contributions versus those of others. Whereas Dean offered 54% of the narrations in the meeting, 71% of the narratives offered in his statement as the subcommittee were his own. The authors attributed this difference to the greater relevance of Dean's contributions in his pre-existing knowledge and beliefs regarding the Watergate events, along with personal motivations such as a need for self-importance.

The authors also predicted that because Dean's schematic organization would dictate what he chose to tell the others and what he attempted to elicit from them, Dean would be more likely later to recall and report these schema-consistent narratives than those reflected in answers to others' less schema-relevant questions and narratives. Indeed, Dean's memory for conversational contributions due to his own initiatives was superior to that resulting from the initiatives of others. The narratives elicited from Dean by Haldeman and Nixon were more likely to remain unstated than to appear in Dean's statement. On the other hand, the narratives elicited by Dean from Haldeman and Nixon were more likely to make it into the statement than remain unstated.

Hest and Gluck (1999) concluded that narrative responses to others' questions make it into subsequent recollection only if they can be assimilated into existing schemata. Presumably, Dean thought his responses to questions from Nixon and Haldeman were relatively unimportant and thus failed to assimilate them into his pre-existing schema. In contrast, their answers to Dean's chosen questions, which he undoubtedly considered relevant, were easily assimilated; he probably knew the details about the events following Watergate extremely well. Thus, nothing Nixon or Haldeman could do — narrating the events or asking Dean questions — could alter Dean's perspective on the events.

One might have expected that power relationships would have an effect on memory such that Dean would be more likely to remember something said by a powerful person than a less powerful individual. In contrast, Dean's memory appeared to be affected by a combination of perceived expertise and authority. That is, he correctly believed he possessed the greatest expertise about the events that had transpired since the Watergate break-in. However, Dean realized that Nixon had the authority to decide future actions concerning Watergate and that Nixon's belief concerning how the Watergate situation would unfold in the future would affect those decisions. From this perspective, it is not surprising that Dean remembered his own narratives better than those offered by Nixon, but that he remembered Nixon's presuppositions and plans for the future better than his own.

Thus, a complex interplay between one's goals, existing knowledge structures, schematic perceptions of the issues and persons involved, the relationship between parties, and much more determines the focus of attention within a given conversational interaction and therefore determines what is later remembered.

Beyond the factors described here, conversational memory for specific utterances is highly affected by the function that these utterances play in a conversation. Studies show that utterances high in interactive content are highly memorable in the sense that individuals are highly successful in recognizing the exact surface form of the utterances (Keenan et al., 1977; MacWhinney et al., 1982). In this research, interactive content was defined as pragmatic information that conveyed a great deal about the communicative situation as well as the speaker and his "intention, beliefs, and his relations to the listener" (Keenan et al., 1977, p. 550). Concretely, this category includes, but is not limited to, statements of personal opinions, evaluations, jokes, profanity, and sexually suggestive language (see also Bates et al., 1978; Pezdek and Traub, 1993). Consistent with our review of the role of attention for conversational memory, Kintsch and Bates (1977) hold that the specific wording of utterances is encoded and remembered to the extent that it draws attention to itself.

Source Monitoring in Memory for Conversations: Who Said What to Whom, under What Circumstances?

Memory researchers have examined errors in source memory or source monitoring across a number of domains. Source memory refers to memory for the context in which a target object or item of information was encountered, whereas source misattribution (i.e., failure of source monitoring) occurs when a person...
has some form of memory that is misattributed to an incorrect time, place, person, or other context. Such errors are considered to result from failure to bind the contextual and target information together successfully during encoding, as well as from lack of careful attempts to monitor the source of information accurately at retrieval (see reviews in Davis and Follette, 2001; Johnson et al., 1993; Koutstaal and Schacter, 2001; Meier and Broder, 2002; Schacter, 2001).

In the context of conversation, several kinds of source memory are of interest, including:

- Who said what?
- To whom was something said?
- Did one actually say what one had considered, imagined, or planned to say?
- In which conversation (of a number of possible conversations) did a particular exchange take place?
- When or where did a particular exchange take place?
- In what order within a conversation or interaction did a particular exchange take place?
- What other participants or witnesses were present, if any?
- What other features of the context or previous utterances would alter the meaning of the target utterance?
- Was information acquired from a particular conversational source or from some other medium?
- When planning a particular conversational contribution, has one said these things to this person before?

The last of these is simply a problem of source monitoring that can create negative reactions to a speaker who repeats information all too often. However, the remaining nine are relevant in legal settings. Of these, some have been investigated empirically, whereas others remain unexplored. We will discuss each, however, pointing to its relevance in forensic contexts and reviewing empirical research when it is available.

**Memory of Who Said What**

On June 8th, 2002, a drug dealer named Jack Costos was shot and killed by a masked intruder in his home. As part of the investigation, police interviewed a group of Costos' customers who had recently spent an evening together playing cards and using drugs and alcohol. The group included three Caucasians, two Hispanics, and four African Americans. Tyler Jackson — one of the African Americans — was identified as a suspect by police.

Generally, the group members disliked Costos and were prone to criticizing him in their discussions. Upon questioning the group members, police focused their questions on Tyler. Two Caucasian members of the group told police that they remembered hearing Tyler say that he wanted to "waste" Costos on the night of the recent party, which was only 2 days before the murder. Did Tyler indeed make such a threat, or could this testimony have been an honest mistake of memory? Several aspects of the situation suggest that it might have been. We explore them as we consider some of the documented influences on memory for who said what in conversations.

**Social Categorization and Source Confusion**

One factor of considerable potential importance for Tyler Jackson's case is the fact that he was one of a group of four African Americans present at the party, whereas his two accusers were Caucasian. A large body of literature has shown that when we try to remember which specific person in a group conversation has said something, we are particularly likely to attribute one person's statement mistakenly to another member of the same social category. In this case, the two Caucasian witnesses could have confused Tyler with one of the other three African American participants.

According to the source-monitoring framework proposed by Johnson and her colleagues (Johnson et al., 1993), source monitoring is more likely to be accurate when the original memory is highly elaborated and differentiated (or distinct) from other memories (see also Koutstaal and Schacter, 2001). Thus, source differentiation is encouraged by encoding conditions that encourage deep and elaborative processing and impaired by those making it more difficult to distinguish information associated with one source from
that associated with another (such as two sources that are similar rather than different). Regarding
conversational partners, one factor that can impair this ability to distinguish source–information con-
nections is similarity in speaker characteristics and, in particular, similarity in the social category mem-
bership of the speaker — and, in Tyler Jackson’s case, similarity of race.

The popular “who said what” paradigm in social psychology has been widely used to demonstrate
this phenomenon (Taylor et al., 1978). This line of research has shown that when asked to remember
which of several speakers contributed a particular statement to a discussion, participants are more likely
to misattribution the statements of one member of a social category (race, gender, age, physical attractive-
ness, hometown, clothing color, educational status, and many more) to another person from the same
category than to someone from a different category (see the review in Klauer and Wegner, 1998). Justice
Ruth Bader Ginsburg recognized this tendency to confuse members of the same social category in her
complaint that attorneys arguing before the Supreme Court commonly confuse her with the other female
justice, Sandra Day O’Connor (The New York Times, October 5, 1997). Although misattributions of statements
between members of the same social category are common, the incidence of such confusions is affected by personal and situational factors that influence (1) the
depth with which the characteristics of the speakers and their statements are originally processed, (2)
the salience of social categories at encoding, or (3) use of heuristic versus controlled decision criteria at
retrieval. Thus, for example, category-based source confusions are more common when the person is
fixed with distraction or heavy processing demands at encoding than when he is encouraged to use
elaborative encoding strategies. Source confusions are more common among persons for whom the social
category in question is salient and who tend to think in stereotypical terms regarding the category, as
well as in situations that encourage category-based thinking (such as when one’s own category is in
competition with the other). Finally, source confusions are encouraged by heuristic strategies at retrieval
(such as guesses based on which statement would be more likely to fit a member of a specific category,
rather than careful, controlled attempts to retrieve associations between source and content; see reviews
in Brewer et al., 1995; Gawronski et al., 2003; Klauer and Wegner, 1998; Klauer et al., 2002). With respect to the Castor case, source confusion between members of Tyler Jackson’s (the defendant’s)
race would have been more likely to several factors, including (1) widespread use of drugs and
alcohol, which would have rendered deep and elaborate encoding more difficult, and (2) the fact that
Castor was discussed (and “dissed”) by other members of the group, which would have rendered any
threat made against him similar to other negative statements and complaints.

The impact of age. Older persons are generally more susceptible to failures of source memory (see
reviews in Davis and Loftus, Chapter 11, this volume; Glisky, 2001; Koutstaal and Schacter, 2001). Thus,
it is not surprising that they are similarly more susceptible to source misattributions in conversation.
This has been demonstrated in straightforward learning paradigms in which the person is tested on which of
two speakers presented each word or item of information (Bayen and Murmane, 1996; Ferguson et al.,
1992; Hashtroudi et al., 1994; McIntyre and Craik, 1987; Schacter et al., 1991), as well as in memory for
who says what in conversation (Brown et al., 1995; Mather et al., 1999), and for which witness offers
which testimony in a videotaped mock trial (Fitzgerald, 2000). Furthermore, older adults have more
difficulty remembering whether an item was merely thought about or spoken out loud (Hashtroudi et al.,
1989), although this has not yet been demonstrated in a conversational context.

One thing that appears to enhance source-monitoring difficulties for older adults is similarity between
sources. Thus, older persons are more susceptible to category-based source confusion than younger adults.
For example, Ferguson and colleagues (1992) showed that, although older adults had poorer source
memory than younger adults for information offered by two female speakers, they did not differ from
young adults in source memory for those offered by a male and a female speaker.

The Influence of Schematic Processing

Conversational source misattributions are often the result of our expectations regarding what a person
is, or is not, likely to say, just as our schemas for particular persons, social categories, or social situations
lead us to expect specific characteristics, appearance, behaviors, sequences of events, and so on, they also
lead us to expect certain kinds of conversational contributions from particular sources under particular circumstances.

Mather and colleagues (1999) examined the extent to which older and younger people rely on schematic knowledge to attribute statements to sources. Participants watched a videotaped discussion and later attempted to remember which persons made which statements. These researchers also investigated the extent to which focusing upon oneself rather than on the speaker during encoding (thereby inducing shallow processing of speaker content) led to more schema-based source errors.

Indeed, older as well as younger participants made source errors and both were particularly likely to attribute statements mistakenly to a source who, based on his category membership, would be expected to make such a statement. For example, the statement “I work out almost every day” was disproportionately misattributed to a person described as an athlete when it was actually made by a different speaker (i.e., a speaker-inconsistent statement was attributed to render it speaker consistent). Older participants made more stereotype-consistent errors in misattributing speaker-inconsistent statements than younger adults (but not more errors attributing speaker-consistent statements). The extent to which they did so was related to scores on neurological tests assessing frontal and medial-temporal area functioning of the brain (see Davis and Loftus, this volume, for further discussion of the relationship of brain functioning to source monitoring failures). Furthermore, self-focused participants made more schema-consistent source misattributions—an effect that was stronger for older participants.

Similar schematic influences on speaker source memory were obtained by Spaniol and Bayen (2002), who showed that schematic effects were most likely among those with poorer overall memory, and by Gawronski et al. (2003), who showed that persons with stronger stereotypic associations (as measured by the implicit attitudes test; Greenwald et al., 1998) made more stereotype-consistent source errors.

Generally, schematic influences on memory tend to be greater under conditions that encourage shallow or heuristic processing, including when veridical memory is poorer, when processing demands are high in comparison to processing resources, or when processing capacity is restricted in some way—all conditions more likely to occur for older adults, who are more likely to engage in schematic processing of a wide variety of stimuli (Bayen et al. 2000; Davis and Loftus, Chapter 11, this volume; Davis and Loftus, in press; Hess, 1999; Hess and Shagass, 1990; Sherman and Bessenoff, 1999; Spaniol and Bayen, 2002).

Tyler Jackson's accusers may well have been affected by schematic processing when trying to recall whether, and by whom, any threats against Costos were made. Tyler was a large and muscular man who was known to anger easily and start fights. Thus, he would have seemed like the type of person who would make a threat (and even carry it out). In addition, because the police seemed to be targeting Jackson in their interviews, he would readily come to mind as a potential source of threat—thus creating the perfect conditions for misattribution to him of any threats that may have occurred.

**Differential Source Monitoring for Varying Conversational Roles**

Several investigators have asked the question of whether a person is better able to distinguish between (1) what he has said versus what another has said or (2) things two other sources have said. Raye and Johnson (1980), for example, had individuals play the role of speaker (one of two speakers alternating contributions), recorder (a person matched with each speaker who was to write down that speaker's contributions), or listener. When later asked to identify which contributions came from which speaker, speakers did better than did the other participants who did not differ. In a second experiment, the authors added the role of director, which involved requesting information from each speaker. Again, speakers did better than the other roles—such directors did worst of all. Apparently, the additional processing demands for the director impaired encoding.

In an elaboration of the Ray and Johnson (1980) design, Brown and colleagues (1995) attempted to examine the full range of source judgments relevant to a more naturalistic conversation, including which speaker asked a question and which answered the question (oneself or one of three other participants). The exchange was structured so that each person played each role (inquirer, respondent, listener) an equal number of times. Generally, source memory was best for the respondent role—primarily due to greater success at self-identifications by responders. Strangely, for the other active role of inquirer, source
memory was poor and was no better among the inquirers than among the respondents or listeners. Similarly, respondents were no better than listeners at identifying who the inquirer had been. After 1 week, memory for the inquirer role had dropped to chance. Apparently, people are not good at remembering who asked questions but do better than chance at memory for who answered them. Finally, as in other areas, source memory among older participants was poorer than among younger participants.

**Unconscious Plagiarism (Cryptonnesia)**

One of the most frequently studied conversational source misattributions has been the phenomenon dubbed *unconscious plagiarism or cryptonnesia*, whereby another’s ideas are mistakenly remembered as one’s own. Although deliberate instances of plagiarism are common (particularly in academic settings, for example), far more common are instances in which people in everyday life encounter ideas that later occur to them in a different context, but with no memory of the original source.

The issue of plagiarism is often adjudicated in formal academic contexts — as well as in the press — when scientists or authors are accused of plagiarizing the work of others. Witness the recent flood of discussion in the press and on the Internet regarding historian Doris Kearns Goodwin’s book, *The Fitzgeralds and the Kennedys*, as a plagiarism of Lynne McTaggart’s previous work, *Kathleen Kennedy: Her Life and Times* (A brief Google search as of 2/23/2003 produced 239 entries.) Although Goodwin claimed her plagiarism was “inadvertent” in that she simply forgot to footnote correctly, other well-known authors have responded to accusations of plagiarism with claims of lack of awareness of the source of the material — in other words, with claims of unconscious plagiarism. For example, George H. Daniels, in his published explanation of plagiarized passages in his book, *Science in American Society*, explained that he had an unusually good memory and must have unconsciously memorized passages from other sources, which he later included in his book with (ironically) no memory of where they had come from (Daniels, 1972).

Although this phenomenon initially appeared difficult to study in the laboratory, Brown and Murphey (1989) developed just such a procedure for studying cryptonnesia in group discussions. Groups of four people were asked to produce examples of a particular concept or category, taking turns announcing their contributions. Even while working in this initial group context, many subjects offered contributions already stated by another group member. Then, on a delayed test, subjects were asked to offer new examples of the original categories, but were very explicitly told not to use any previously offered by any member of the group. Despite such instructions, many subjects nevertheless offered “plagiarized” responses from the group session, even though they truly believed them to be new (as reflected in ratings of confidence that the new contribution was a novel contribution of their own invention).

Plagiarism was greater under conditions that would tend to reduce overall memory (including successful binding of source and content), including situations in which the original generation sequences were more complex, the items came from the presumably more difficult orthographic (e.g., “name a word beginning with BE”) rather than semantic (e.g., “name a fruit”) categories, and for responses generated by the person responding immediately prior to the subject (presumably self-focused concern regarding one’s own turn would be greatest at this point and reduce “binding” of the source and content of the contribution).

Subsequent work has further documented this tendency toward unconscious plagiarism and has also shown that such cryptonnesia tends to become greater (Sink et al., 1999; Brown and Halliday, 1991; Brown et al., 1992; Macrae et al., 1999; Marsh and Bower, 1993; Marsh and Landau, 1993):

- With increasing delay between the original group interaction and the subsequent attempt to generate novel contributions.
- When the original information comes from a high-rather than low-credibility source.
- For contributions from a member of one’s own set (presumably a more similar and therefore more easily confused source).
- When participants are distracted during the original generation of ideas.
- When retrieval occurs in a context different from that of the original task.
- For older participants.
Cryptomnesia is less under conditions encouraging deeper processing. Essentially, with the addition of source credibility as a factor, unconscious plagiarism tends to be most likely under the same conditions that promote other source memory errors.

Foley and her colleagues (Foley and Ratner, 1998; Foley et al., 2002; Ratner et al., 2002) studied children's source-monitoring errors for collaborative activities. Children commonly suffered from source memory errors, in that they often remembered actions performed by others as if they had performed them themselves. These researchers offered evidence that the processes of imagining or planning activities that are actually performed by others simultaneously induce false memories of performing the action oneself and facilitate learning of the activity.

**Memory for Medium: Did You Tell Me This or Did I Read It Somewhere?**

Closely related to the issue of who told us something is that of whether information came from a conversational source or from another medium, such as television, radio, or printed material. This was the central issue in a malpractice case against Dr. Randolph Hicks. Mr. James Ball alleged that Dr. Hicks prescribed an aspirin daily to reduce Mr. Ball's high risk of cardiovascular incidents such as stroke or heart attack. Mr. Ball was obese and diabetic, with an unfavorable lipid profile and a history of blood clots in his leg. However, Mr. Ball also had a history of bleeding stomach ulcers. Mr. Ball began taking a full 325-mg aspirin daily and, within 2 months, suffered a near-fatal stomach bleed requiring resectioning of his stomach.

Dr. Hicks denied that he had recommended aspirin to Mr. Ball. His office notes for the visit in question indicated that he had discussed options for controlling risk with Mr. Ball, and that he had prescribed Lipitor™ (a statin) — not aspirin. Mr. Ball agreed that he had been given the prescription for Lipitor™, but insisted that he had also been told to take an aspirin daily, as well as to make lifestyle and diet changes.

Thus, clearly in this situation, the potential for failures of memory exist on each side.

Recommendations for use of aspirin are offered in multiple sources in our culture, ranging from television ads to printed media such as health magazines to conversations with friends and professionals. Therefore, a primary concern for this case was the potential for Mr. Ball to have confused the source of the aspirin recommendation. He could have heard such a recommendation from friends or family aware of his risk profile or read it in any number of printed sources. Mr. Ball also accurately remembered that he and the doctor had discussed a number of measures for reducing his risks. Would it not seem reasonable — and even likely — that they would have discussed such a widely known measure as taking aspirin?

Dr. Hicks, on the other hand, would clearly believe that he would never prescribe aspirin to a patient with a history of bleeding stomach ulcers. That is, his knowledge of what he should not do and what he routinely does not do would make it difficult for him to believe that he had done it in a specific instance. However, was the history of bleeding ulcers salient for him at the time of his discussion with Mr. Ball? Dr. Hicks is a cardiologist and was not the treating physician for the ulcers. Thus, although the information was in Mr. Ball's records, these records were extensive, and the ulcer was not specifically the focus of discussion on the day in question. Therefore, an issue arose concerning whether Dr. Hicks in fact remembered the ulcer at the time at which he discussed measures Mr. Ball should take. If not, he might well have mentioned the possibility of aspirin (although most likely a smaller dose than Mr. Ball actually took).

**Memory for Target: To Whom Was It Said?**

Failure to remember whom one has said something is commonly the source of interpersonal as well as legal difficulties. We may get in trouble with our spouses, parents, or close friends for failure to convey important gossip — even as we clearly remember having told them. Often, such difficulties are generated by failure to remember whom we actually did tell. Perhaps remembering that we have already told several people, we mistakenly remember that our spouse was one of them. This problem is compounded by the fact that we have often planned to tell the persons in question, perhaps even planning how and when to tell them. As we will discuss in the next subsection, it is common to remember falsely that one said something that one had actually only planned to say.
In legal settings, the issue of to whom one has said something most commonly becomes relevant with respect to delivery of instructions, warnings, or information crucial to an impending decision. As noted earlier, accurate source monitoring is much more difficult when attempting to distinguish between very similar incidents than when attempting to do so for those that are dissimilar. Unfortunately, across a wide range of circumstances, professionals are faced with a series of interactions that are very similar in nature. For example, doctors, lawyers, therapists, financial consultants, real estate agents, professors, military officers, salespersons, and countless others interact with a large number of clients and co-workers each day. The kinds of interactions, instructions, orders, and so on exchanged with others are often quite similar for many (if not most) of their conversational partners across the days, weeks, months, or even years of their professional lives. This sometimes extreme similarity across interactions with many parties presents a formidable challenge for memory of to whom one has given what information (as well as when, where, or under what circumstances it may have been given). Nonetheless, the content of a specific professional interaction with a specific person is often crucial for cases such as those involving malpractice, fraud, wrongful termination, and others.

The case of Larry Wilkes illustrated just such a difficulty. Larry Wilkes was a stockbroker employed by his brokerage for 5 years before he was fired for failure to execute a sell order allegedly given by his boss, Carlton Stackerton. Less than 1 week before the incident in question, Stackerton had been transferred to Larry’s office; he supervised 20 employees, including Larry and 15 other male employees within roughly 5 years of Larry’s age. Larry was of average height, with brown hair cut in a short professional style, and thus looked similar to a number of his co-workers.

Stackerton claimed to have come to Larry’s desk and given him a verbal order to sell 10,000 shares of Microsoft stock for one of the firm’s clients. This sell order was never carried out, and within the weeks that followed Microsoft fell sharply in value, leaving the client with a considerable loss. When the failure to sell was discovered by the client about 3 months later, Larry was fired for failure to carry out the sell order, which his boss confidently remembered giving to him. Larry, of course, denied having received such an order and filed suit for wrongful termination.

This situation highlights several important common issues of memory. Most relevant for our current point is the issue of to whom Stackerton actually gave the sell order (assuming that he did give it to someone). Stackerton had no need to remember the target of the specific sell order in question until approximately 3 months later. Thus, in the period between when he came to the brokerage and when he needed to remember the specific Microsoft sell order for the specific client, countless orders had been given to all of the 20 brokers whom he supervised. This similarity between incidents, combined with the passage of considerable time, would have seriously compromised his ability to remember the one in question accurately.

However, another issue was of considerable importance in considering the accuracy of Stackerton’s memory for the target of his sell order. That is, he had been in that office for less than 1 week and was only beginning to become acquainted with the individual brokers. Larry Wilkes was similar in appearance, age, style of dress, and hairstyle to several other brokers. Therefore, a question arose concerning whether Stackerton could have confused which of the young men to whom he had actually given the order (and, of course, no others were likely to admit voluntarily to the mistake and be fired instead). Indeed, research on eyewitness identification would suggest that similarity between innocent foils and the target suspect will tend to enhance the likelihood of a false identification.

Finally, the complexity of the daily activities at the brokerage presented a further barrier to accurate memory for a particular order. The brokerage was a highly active and successful business, involving a high rate of client interactions and processing of orders. The records for the day in question indicated that over 100 orders were processed on that day. Memory research would suggest that the greater the complexity of the environment in which the alleged specific order took place, the more difficult it would have been for Stackerton to bind the memory of that order successfully with memory of to whom it had been directed. The overall similarity of many instances of sell orders combined with the fast rate at which they occurred, in the context of generally complex circumstances, would present a particularly powerful mix of forces known to impair source memory.
Similar issues of similarity between many instances of interactions with clients or co-workers and similarities in appearance or other features of the clients or co-workers commonly arise in memory-based litigation across many contexts. For example, a traffic cop might be asked such questions as:

"How many traffic tickets have you given in the last 2 months since you issued this one to my client?"

"So how is it that you specifically remember the exact words my client said to you that you think meant he was resisting arrest?"

"Are you sure that it wasn't Mr. __, whom you arrested that same day, who said this?"

Similarly, specific instructions or warnings to a particular patient on a particular occasion become crucial to medical malpractice litigation; whether or not specific positive and negative information regarding potential investments was conveyed to a particular client becomes crucial to litigation against financial advisors; or whether or not all pertinent information was conveyed to a specific investor, buyer, or other becomes pertinent to allegations of fraud. In all such cases, if notes or other records are not available, the professional must rely on the specific memory for a specific instance of a type of conversation that occurs on a regular basis — a situation in which accurate source monitoring is notoriously difficult.

Faced with such a task, the professional often falls back on script-based knowledge of what he typically does in such a situation. The doctor, for example, may commonly issue standard instructions for specific ailments, drugs, or postprocedure care, and thus assume (and perhaps falsely remember) that he did so for the particular patient in question. In most instances, the "memory" that one performed a highly routine behavior in a specific instance will be accurate simply because the established routine makes it likely that the behavior occurred in the specific instance.

However, behavior is rarely fully uniform. The doctor can plan to give an instruction or warning but forget to do so. He can be interrupted by a nurse or the patient and fail to return to the interrupted task. In some instances, he can simply forget to provide the information to the specific patient. By the time the omission causes injury and the issue is raised with the doctor, he has seen countless other similar patients with similar problems. Without notes specifying the content of the interaction in question, it is highly unlikely that the doctor can accurately remember the conversation in question and whether he actually said the particular thing to the particular patient.

**Reality Monitoring: Did I Say It or Just Think about Saying It?**

In many contexts, ranging from household conversations to professional interactions with clients, trouble arises when one party claims to have said something the other swears never to have heard. Larry Wilkes' case of wrongful termination against his broker is one instance of such trouble. However, in addition to the issues of memory raised for his case, another issue is relevant. That is, did Stackerton actually issue the sell order, or did he simply plan to, only to become distracted by other events and forget?

A similar issue arose for a local psychologist, Dr. Barkley, recently sued by the wife of a client, Mr. Bremer, who became violent and almost killed her. Unlike many such cases in which the therapist agrees that no warning was given but disputes the contention that evidence from therapy supported the prediction of dangerousness, the therapist in this case claimed that he did warn the wife, Mrs. Bremer, on the other hand, adamantly denied that she was ever given any warning. Did he actually warn her? Did he intend to warn her and later falsely remember that he actually did? Although we can never know what actually happened, several interesting aspects of the case parallel factors known to promote false memories of having said the (in reality) unsaid.

Parks (1997) conducted a series of very clever studies designed to study false memories of having "said the unsaid." He began with a study in which participants were shown a series of phrases. Each phrase was followed by a command to say it out loud or not. For the second study, participants were asked a series of questions, which they were asked to answer out loud or not. For the third study, subjects were asked a series of questions in a public polling situation, but for some questions the participant was interrupted before having a chance to answer. Finally, for the fourth study, subjects participated in a debate. They were led to plan to use a particular point, but ultimately were prevented from doing so. Thus, in each experiment subjects were led to think of a particular phrase, answer, or debate point.
However, they were prevented from saying some, but allowed to say others. The question of interest was whether subjects would later "remember" having said the things that they had actually only thought of saying. Indeed, participants often reported with great confidence that they had actually said things which they actually had only thought.

Just as in these research examples, participants in real-life conversations routinely think of things to say that may never actually be said. Perhaps most often, failure to carry out conversational intentions is the result of some form of distraction or diversion. The phone rings, another person appears and interrupts, or one's conversation partner changes the flow of the conversation away from the topic that one had planned. For one reason or another, the statements that one has imagined never come about.

Each of the participants in the preceding two example cases was faced with exactly the kind of interruptions that could have prevented them from carrying out their intentions. The stockbroker, Mr. Stockeleton, lived in the midst of a multitasking environment in which he was fielding questions from clients and subordinates, keeping track of the markets and the office transactions, giving instructions to subordinates, and receiving their reports. In that context, he could well lose track of which things he had said or done and which he had planned but had not yet carried out.

The therapist, Dr. Barkley, reported that Mrs. Bremner (his client's wife) was extremely agitated during his discussion with her and that he had trouble getting his points across due to her constant interruptions and topic shifts. In such a case, either party's memory could easily fail. Mrs. Bremner, who was obviously very upset and full of anxiety, could well have failed to pay sufficient attention to what she was told to remember accurately later. On the other hand, Dr. Barkley was continually poised in his attempts to tell Mrs. Bremner the information he intended to convey. Just like the debate participants in Parks' (1997) study who were prevented from making the points they planned, Dr. Barkley may well have falsely remembered giving his intended warning to Mrs. Bremner, but was never allowed to deliver.

Interruptions pose a substantial problem for professional interactions such as those between doctors and their patients. Indeed, Beckman and Frankel (1994) showed that doctors interrupted their patients within the first 18 seconds of the start of an interview. More recent findings suggest that interruptions are still a problem but that physicians in the newer study waited until 23 seconds to interrupt (Marvel et al., 1999). One result of interruptions is that, like Mr. Stockeleton or Dr. Barkley, the patients failed to tell the doctor the things they had planned. They did not get to explain their complaints fully and when the patients were able to raise them, these topics emerged late in visits with less time available to assess the concerns. If patients present with an explicit agenda but are interrupted before completing their story, it is easy to understand why there might be confusion about whether an important clinical topic was or was not actually covered. Later, the patient may complain of a misdiagnosis, fully believing that he had informed the doctor of all relevant symptoms, when in reality his plans had been disrupted by the doctor's interruptions or by time pressures that prevented much of the discussion the patient had planned (Liang et al., 2002).

Memory of Time and Space: Where, When, and in Which Conversation Did This Exchange Take Place?

Studies of autobiographical memory have shown that memory for when something happened is far less accurate than memory for what happened (Larsen et al., 1996; Wegner, 1986, 1996). Nevertheless, memory for when something (in this case a conversation) happened is often crucial — as illustrated by the case of John Shinn.

John Shinn was accused of embezzling over $200,000 from the manufacturer for whom he had worked for the last 6 years. John was identified as a likely suspect because he had access to company computers and financial transactions and was among the employees suffering the most obvious financial problems. The theft remained undiscovered for 6 months. When it was discovered, the investigation quickly focused upon six employees who had the means to commit the crime, and in short order narrowed to John. In large part, the investigation turned to focus on John due to the testimony of a single witness who reported a conversation with John that was alleged to have taken place prior to the theft. John's co-worker, Lilly Baker, testified that John had discussed his financial problems with her on several occasions and that he
had told her within a few weeks prior to the theft that he had a plan that would solve all of his financial problems. Lilly alleged that when she asked what it was, John had refused to tell her, saying that he did not want to talk about it until it actually worked out.

John agreed that he had had such a conversation with Lilly Baker, but disagreed about the timing. He testified that the conversation took place approximately 3 months after the theft and that it referred to a real estate transaction he was attempting to arrange with a friend. This transaction was expected to result in substantial profit for both but failed to materialize. John's friend verified their joint attempts to arrange the transaction and the time frame in which they were working on it. Eventually, the charges against John were dropped because the police were unable to prove he had taken the money. Meanwhile, however, John lost his job, and his reputation in the community suffered permanent damage as a result of media coverage and widespread knowledge of the accusation.

Lilly Baker sincerely believed she remembered the timing of her conversation with John accurately. She was a highly credible witness, one who led the police to devote considerable energy to their investigation of John as their primary suspect. What could have caused Lilly Baker's memory for the timing of their conversation to fail? We suggest that in this case, poor general memory for timing, combined with schema-based reconstructive memory processes, might account for her failure.

Generally, memory for events that take place within a relatively distant past (in this case several months past), and when there is nothing distinctive about the timing that associates the target event with others that can clearly be placed in time (such as an event occurring on one's wedding anniversary). Furthermore, memory for past events can be distorted by knowledge acquired after the fact. In other words, memory is reconstructed so that it seems consistent with what is currently known to be true (see the review in Davis and Follette, 2001). Studies concerned with the retrospective bias have shown that reports of past attitudes or behaviors are biased by current attitudes or recently acquired information (Dawes, 1991; Levine, 1997).

In this case, Lilly's discovery in hindsight that the crime had been committed could have led her to reconstruct the timing of her conversation with John to be consistent with her crime-relevant stereotypical knowledge of motives. Commonly held crime schemas dictate that among the most typical motives for embezzlement is being in debt (Vanous and Davis, 2001). By the time that Lilly learned of the crime, she knew that John was severely in debt and that the timing fit the prototype model of an embezzler in her mind. When she was questioned by the police about who among those who could have committed the crime might have a motive, John immediately leapt to mind. For her story to fit, however, the conversation in which John told her he had a plan for solving his financial problems would have had to take place before the crime, not several months after.

Both parties agreed that the conversations they had regarding John's financial problems occurred in the context of casual on-the-job coffee break chats. Thus, no distinctive events associated with the conversation existed to help locate them clearly in time. Given an unclear memory for the real timing of the conversation, Lilly may well have unwittingly reconstructed her memory for the timing of the conversation to fit her current knowledge of the crime and her hypothesis regarding who might have committed it.

**Memory of Order: Which of These Things Was Said When? What Was the Last Thing We Decided Upon?**

Memory for the sequence of events is often poor (see, for example, Schmitter-Edgecombe and Simpson, 2001). This problem is found in memory for single events, in which the sequence of specific actions within the event may be an issue (who hit whom first, for example). However, the problem can become particularly acute for sequences of events ranging over longer time spans, such as those typically involved in complex civil litigation.

A particular problem of memory for order arises when one fails to remember which of a number of alternatives discussed during a conversation was the final choice. For example, two friends may each end up in a different restaurant (or in the same restaurant but at a different time) because several alternatives were discussed, and one person remembered the final choice differently than the other. The first author
experienced an unfortunate incident in a musical performance in which musicians' memories for the final outcome of a discussion of whether to take a particular repeat in the music differed. This problem involves two failures of source monitoring: one for the sequence of the discussion (in which minds may be repeatedly changed and changed back again) and one for the association of a particular alternative with the final decision to choose it. Both create the potential for serious misunderstanding and, perhaps, unfortunate outcomes — such as failure to meet for dinner or the cacophony created by musicians' divergent memories for the final performance decision.

This problem arose in a more serious manner in another case involving a stockbroker, Jesse Chandris, who bought 156,000 shares of a stock that his client claimed he was not authorized to buy. The stock later plummeted, resulting in a loss of over half a million dollars for the client. Chandris and his client, William Stokes, agreed that they had discussed the potential purchase, but their memories for the final decision of whether to purchase diverged. Stokes insisted his final instruction was not to buy, but Chandris insisted it was to buy. Why would their memories diverge so completely?

Both agreed that they had discussed the purchase extensively, and both agreed that the pros and cons were closely balanced, making the decision difficult. Both also agreed that Stokes had changed his mind several times during the course of the conversation, instructing Chandris to buy and not to buy at various points. The sole disagreement was over the direction of the final decision.

Clearly, each person's memory was colored by motivation and self-interest, as many memories are. Furthermore, at least Stokes' memory may have been affected by the hindsight bias (Arkes et al., 1981). Once an outcome is known, victims of this hindsight bias tend to overestimate, in retrospect, how likely that particular outcome was to occur. blissfully ignorant of their own hindsight biases, they also fail accurately to remember their own judgments or behavior before the outcome was known. Instead, they recall that they were wiser ("I knew it would fall in value all along") and more confident ("...and I was sure of it") and that their behavior was more consistent with that knowledge ("I told you not to buy that stock") before the event than was actually the case (see reviews by Davis, 1994; Hawkins and Hastie, 1990). Thus, Stokes may well have fallen victim to the hindsight bias in his memory for his final instructions to Chandris.

Memory of Other Participants: Who Else Was There?

The case of Lydia Barnes and her sexual harassment claim against her boss, Tony Simpson, illustrates the importance of memory for other witnesses and participants in conversation. Ms. Barnes claimed that her boss harassed her over a period of many months, through continual sexual innuendo, requests for dates and sexual favors, and implied linkage of her compliance with job advancement. Prominent among the evidence she claimed to support her allegation was a statement Ms. Barnes allegedly made in front of witnesses to the effect that she should remember "who buttered [her] bread" as she walked away from him after rebuffing a whispered advance. This alleged witnessed incident was crucial because the other reported incidents were not witnessed and boiled down to "he said" versus "she said."

Ms. Barnes claimed that two co-workers had been working nearby and turned their heads as Mr. Simpson yelled his bread-buttering threat after her as she walked away from him. Although neither had reason to fear for their jobs at the time of their testimony, each co-worker claimed to have no memory of this incident. How, in this instance, can we assume that memory failed?

Other people who witness or participate in a conversation are, in source-monitoring terms, part of the context in which the focal event takes place. In order for such contextual features to be successfully "bound" to memory of the focal event, they must receive adequate encoding and processing. Ms. Barnes may well have been so focused upon Mr. Simpson and her emotional reactions to his advances and threat that she failed to adequately attend to the identities of the coworkers who witnessed the exchange. As noted earlier, highly emotional events may lead to tunnel memory in which memory for the central core of the event is enhanced, but at the expense of more peripheral aspects of the context in which it occurs (cf. Sofer et al., 1993). Unfortunately for Ms. Barnes, the conspicuous failure of her two co-workers to verify her report of this crucial threatening exchange undermined her credibility with the jury.
Memory of Context: What Else Happened that Would Define What Was Meant?

A final sense in which memory for context can be crucial is memory for contextual features of an interaction that in essence determine the actual meaning of an utterance or conversational exchange. As noted earlier, the full meaning of a conversational contribution is revealed not only in the words, but in the tone of voice, body language, and facial expression of the speaker, as well as the immediate and historical context of each person and the dyad, and the external circumstances of the encounter. Therefore, full and accurate memory for the meaning of a verbal conversational exchange must reflect awareness of the complete personal and situational context in which it occurred.

This problem was exemplified in testimony surrounding an accusation of sexual harassment against Professor Janice Hill. A female student accused Dr. Hill of sexual harassment via the content of her course in that Dr. Hill covered sexual topics in her seminar, which was required of students in the graduate program. The student further testified that she had witnessed Dr. Hill making "rude and demeaning" comments regarding a male student's body.

When asked for the details of this commentary, the student testified that she had seen the professor touch the hair on the student's chest and sideburns and make insulting statements regarding the rapidity with which he was aging. The student was unable to offer any testimony regarding the general context of these alleged remarks other than that they occurred at a department party at a faculty home.

Further investigation revealed that the student in question had graduated 3 years earlier and was 5 years older than the professor. The two had become friends and worked together on consulting jobs outside academia. The student initiated the exchange of age-related insults, whereupon the professor responded by asking whether she should be talking, given the amount of gray in his sideburns and the hair protruding from his shirt and touching the gray hair to illustrate. The entire exchange was part of a general teasing and bantering session among the student in question, the professor, and other students. Given this relational and situational context, which was verified by other student participants, the professor's behavior took on quite a different meaning from that originally alleged by the complaining student.

Clearly, responses must be interpreted in light of what they are responses to, as illustrated in the previous example. However, this issue can be relevant in a variety of ways in forensic contexts. For example, Bruck and colleagues (1999) recently explored the way in which a target utterance may be shaped by previous conversational contributions of others, who fail to remember the manner in which they triggered their partner's responses. Specifically, they explored mother's memories for interviews they conducted with their own preschool children. As expected, mothers' memories for meaning were superior to those for exact wording or structure. However, they had difficulty with two forms of source monitoring: (1) whether the child's statements had been spontaneous or prompted and (2) whether they or their child had offered particular utterances.

Both of these issues are crucial to understanding testimony regarding such issues as child sexual abuse, when mothers can be expected to question their children repeatedly about the events in question. Failure to remember the way in which their own questions and suggestions may have prompted the child's reports can contribute to their own certainty of the existence of foul play as well as increase belief in the crime by police or jurors.

12.4 Summary and Overall Conclusions

As we have illustrated with a variety of case examples, testimony regarding the content of conversations is central to a vast array of criminal and civil cases litigated in our judicial system. Notwithstanding the centrality of memory for conversation, memory researchers have largely neglected basic research in this area and memory experts have rarely been asked to testify regarding the determinants of accuracy in memory for conversation. Although basic memory research offers a rich source of hypotheses regarding the determinants of memory for conversation, it remains for future research to explore the ways in which the principles governing memory for conversation converge (or not) with those governing memory for other events. Meanwhile, it is clear that memory for conversations can and does fail for most, if not all,
of the reasons that memory for other events fails. Thus, memory experts can be helpful to trial attorneys facing with potentially inaccurate witness testimony regarding the contents or context of conversation.

Checklist of Sources of Failure of Memory for Conversation

<table>
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<tr>
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<th>Considerations</th>
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<td>Impairments of hearing or vision</td>
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<td>Perception</td>
<td>Complex or distracting circumstances</td>
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<td></td>
<td>Insufficient loudness</td>
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<td>Blocked vision</td>
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<td>Attention</td>
<td>Disturbing environment</td>
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<td>Internal states impairing attention</td>
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<td></td>
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<td>Expectations</td>
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<td>· Expectancy-consistent events</td>
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<td>· Expectancy-inconsistent events</td>
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<td>Situational circumstances interfering with processing</td>
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<td>Misattributing utterances to other sources</td>
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<td>Misremembering imagined events as actual events</td>
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References


