Predicting Conversational Reports of a Personal Event

Yvette J. Tenney
Bolt Beranek and Newman Labs
Cambridge, MA

This study concerns topic selection in conversational reports of a personal event, the birth of a baby. Ninety phone calls from 12 fathers and 7 mothers were analyzed in terms of the subject's prior concerns (prenatal questionnaire) and the outcome of events (postpartum questionnaire). Four analyses were conducted. The first showed that subjects were likely to mention topics of high, rather than low, prior concern, and unusual, rather than ordinary, outcome. The second showed that chronologically early topics were discussed before late topics. These findings were compatible with either a memory (i.e., "knowledge telling") or a communication (i.e., "knowledge processing") model of topic selection. Two additional analyses were conducted to evaluate predictions derived from each of these models. The first analysis showed that the conversations also contained a small set of pro forma topics that appeared earlier and more frequently than other topics. The second showed that these topics were more likely to be recipient-initiated. These results suggest that reporters deviated from an optimal retrieval plan to take the recipient into account. The results as a whole support a communication-based, "knowledge processing" (Bereiter & Scardamalia, 1980) model of topic selection.

This study addresses the question of how conversational reports are produced. It is concerned with how people describe salient life events in real conversations. Although research on conversations has focused on how speakers formulate responses to remarks initiated by other speakers (Grice, 1975; Schank, 1977; Schank et al., 1982; Sidner, 1983), a fundamental question that has not been resolved is how a reporter selects conversational material when given the opportunity to introduce any number of topics. The goal of

The author would like to thank Carol Sacerdote and Natalie Dandekar for assisting in various phases of the research, Joan Dolamore for transcribing the conversations, Dedre Gentner, Marilyn Adams, Andee Rubin, Ann Rosebery, editor James Greeno, and reviewer Herbert Clark for helpful comments on the manuscript, and Allan Collins, John Hoenig, and Livia Polanyi for invaluable discussions. An earlier version of this paper appeared in Proceedings of the Seventh Annual Conference of the Cognitive Science Society. Irvine, CA, 1985.

Correspondence and requests for reprints should be sent to Yvette J. Tenney, Bolt Beranek and Newman Labs, 70 Fawcett Street, Cambridge, MA 02238.
the present study is to characterize the selection of topics in terms of a predictive model. Three lines of research contribute to the formulation of a model. These approaches can be characterized by their focus on knowledge acquisition (i.e., encoding), memory retrieval, and communication processes, respectively. Each approach suggests a different question for investigation. A fourth question, concerning the role of the recipient, is relevant to conversations in general.

The first approach, which can be characterized as knowledge based, is represented by the work of several investigators. Gamst (1982) has proposed that "interests, needs, concerns, and point of view" contribute to the selection of topics in dyadic conversations. Collins, Warnock, and Passafiume (1975) have suggested that the selection of topics in tutorial dialogues is affected by the organization of the tutor's knowledge. Voss, Vesonder, and Spilich (1980) asked subjects to produce written, fictional reports of a baseball game. They found that subjects who were highly knowledgeable about baseball introduced topics that differed from those generated by less knowledgeable subjects.

In this view, a conversational model should be concerned with the importance or salience of topics for the individual reporter. Two factors that increase the likelihood that an event will be encoded are the availability of a relevant schema or knowledge structure (Anderson, 1978), and the degree to which the event itself is unusual, surprising, strongly emotional, or consequential (Brown & Kulik, 1977; Pillemer, Rhinehart, & White, 1986; Robinson, 1980). The first factor can be assessed by examining a reporter's concerns prior to the event; the second by questioning the reporter after the event. The first question, therefore, is: Do encoding factors predict topic selection?

The second approach, emphasizing memory retrieval processes, has received attention in discussions of the writing process. Kintsch (1980) has suggested that the writer searches through long-term memory for items that meet the constraints of subject, audience, and discourse type. In this view, an analogous conversational model should be concerned with strategies that facilitate recall. Use of a temporal framework is known to facilitate memory for events. A second question, therefore, is: Does the order of report suggest use of a chronological retrieval strategy?

The third approach, focusing on communication processes, also stems from the literature on writing. Flower (1979) has described the task of retrieving information from memory as a necessary, but problematic step in the writing process—necessary because it provides access to relevant and interesting subject matter—problematic, from the point of view of good writing, because the order in which the information occurs to the writer may not be optimal for presentation to a reader. In several studies (e.g., Bereiter & Scardamalia, 1980), a "knowledge telling" strategy, in which information was reported in the order in which it was most easily retrieved, was con-
trasted with a "knowledge processing" strategy, in which information was structured to be easily grasped by the reader.

In this view, an analogous model of conversational reports should be concerned with communication as well as retrieval strategies. Communication strategies facilitate the recipient's comprehension, while retrieval strategies facilitate the reporter's recall. While the two kinds of strategies can be distinguished in theory, in reality they are often confounded. Strategies that facilitate recall, such as organizing information by a chronological framework, also help the recipient keep track of the material that has been presented. Likewise, strategies that enhance communication, such as organizing information according to a domain-specific convention, also aid memory by providing a framework for recall. The method adopted in the present study was to see how closely the order in which reporters presented information conformed to an optimal retrieval plan. A close match would suggest that memory retrieval was the primary process in topic selection. Deviations from an optimal retrieval plan, on the other hand, would suggest that the reporter was taking the recipient into account and not simply "knowledge telling." The third question, therefore, is: Does the reporter deviate from an optimal retrieval strategy to take the recipient into account?

A final question concerned the recipient. An active recipient could simplify the reporter's task in two ways: by asking questions that serve as memory probes, and by eliciting information that is critical to the interaction. In other words, the recipient could facilitate retrieval or communication processes. The fourth question, therefore, is: What is the role of the recipient of the news?

To meet the goal of answering these questions and formulating a model, it was necessary to find a conversational domain that was predictable in advance, yet likely to be associated with varying degrees of concern and a range of possible outcomes. Furthermore, the domain had to lend itself to a chronological ordering of topics. Conversations about the birth of a baby were selected because they met these requirements. The customary phone call in which a friend or relative is informed about the arrival of a baby covers a predictable set of topics. Furthermore, there is likely to be variation in the prior concerns of the reporter. For example, one person may be concerned about the discomfort of labor, the sex of the baby, and who will deliver the baby, while another may attach importance to natural childbirth, photographing the delivery, and finding a suitable name. Also, there is likely to be variability in the outcome of events. Some aspects of each person's experience are likely to be unusual (e.g., an unusually long or short labor), while others are likely to be ordinary (e.g., an uneventful drive to the hospital). In addition, topics can be ordered chronologically. Topics concerning labor and delivery (e.g., use of the birthing room, father's role during labor) naturally precede those concerning the baby and parent-child interactions (e.g., physical features, bonding).
The study was carried out in three stages. In the first stage, one month prior to the expected due date, couples awaiting a baby filled out a questionnaire about their concerns. In the second stage, participants tape recorded phone conversations in which they announced the arrival of the baby. The third stage consisted of a follow-up questionnaire to determine the actual events surrounding the birth.

The first question, concerning encoding factors, led to the expectation that prior concerns and the unusualness of events would be good predictors of topic selection. A number of investigators have shown that a subject's schema or mental model of an event (i.e., prior concerns) influences what is encoded and recalled (Anderson, 1978; Gentner & Stevens, 1983). Others have shown that unusually pleasant or unpleasant events (i.e., unusual outcomes) are retrieved more readily than neutral events (Pillemer et al., 1986; Robinson, 1980), and that aspects of an event that are not predictable in advance (Gibbs & Tenney, 1980), or deviate significantly from the norm (Bower, Black, & Turner, 1979) are likely to be recalled. Although these predictions stem from memory considerations, they can also be formulated in terms of communication requirements. Reporters know that recipients expect to hear facts that are "informative" and "relevant" (Grice, 1975) and therefore want to hear what is unusual and of concern.

The second question, concerning retrieval strategies, led to the prediction that the details of the birth would be retrieved and reported chronologically. This result was expected because chronological recall is a highly effective retrieval strategy. Although this prediction relates to memory demands, it can also be formulated in terms of comprehension requirements. The personal narrative, in which events are described in order of occurrence, is a popular genre presumably because it is easy for the recipient to follow.

The fact that both predictions were derived from memory considerations, but could also be justified in terms of communication requirements, posed a dilemma: If memory processes can account for all the relevant phenomena, then conversational reporting can be characterized as "knowledge telling." If, on the other hand, the needs of the recipient take precedence over memory considerations, then more complicated information-processing strategies must be described. The third and fourth questions, concerning communication strategies and the recipient's role, addressed this issue.

METHOD

Subjects
Twelve couples, recruited by word of mouth, participated in the study. Seven were expecting their first child, four their second, and one their fourth. The mothers ranged in age from 25–35 ($M = 30.5$), the fathers from 27–41 ($M = 33.4$). All were college graduates; most were living in the Boston area.
Materials
Materials consisted of a prenatal and a postpartum questionnaire concerning 17 topics related to (a) labor and delivery, and (b) the baby and the postpartum period (see Table 1). The prenatal questionnaire consisted of 25 questions (e.g., How anxious are you about possible discomfort to the mother during labor? 1–5 scale). The postpartum questionnaire consisted of 21 questions on the same topics (e.g., How did the degree of discomfort to the mother during labor compare to what you had expected? 1–5 scale; Did the father play an active role in labor and delivery? yes/no).

<table>
<thead>
<tr>
<th>Topic</th>
<th>Prenatal Questionnaire</th>
<th>Postpartum Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor and Delivery:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural childbirth</td>
<td>How important is it to you that your baby be delivered by natural childbirth (no drugs during labor or delivery) if at all possible? (1 = not important, 5 = very)</td>
<td>How did the mother's ability to handle the discomfort compare to what you had expected? (1 = much less, 5 = much more) (U+ = 5, U- = 1)</td>
</tr>
<tr>
<td>Birth attendants</td>
<td>How important is it to you that a particular doctor, nurse or midwife be present for the birth of your baby? (1 = not important, 5 = very)</td>
<td>How satisfied were you with the person who delivered the baby? (1 = not satisfied, 5 = very) (U+ = 5, U- = 1)</td>
</tr>
<tr>
<td>Drive to hospital</td>
<td>How anxious are you about the problem of getting to the hospital? (1 = not anxious, 5 = very)</td>
<td>Did you have difficulty getting to the hospital? (yes, no) (U- = yes)</td>
</tr>
<tr>
<td>Father's role</td>
<td>How important is it to you that the father play an active role in labor and delivery? (1 = not important, 5 = very)</td>
<td>Did the father play an active role in labor and delivery? (yes, no) (U- = yes)</td>
</tr>
<tr>
<td>Health of mother</td>
<td>How anxious are you about the possible effects of a difficult labor on the health of the mother? (1 = not anxious, 5 = very)</td>
<td>How soon before the baby was born did you get to the hospital? (U+ = 1.5 hours or less) (U- = 16 hours or more)</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Topic</th>
<th>Prenatal Questionnaire</th>
<th>Postpartum Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Painfulness of labor</td>
<td>How anxious are you about possible discomfort to the mother during labor? (1 = not anxious, 5 = very)</td>
<td>How did the degree of discomfort to the mother during labor compare to what you had expected? (1 = much more, 5 = much less) (U+ = 5, U− = 1)</td>
</tr>
<tr>
<td>Baby and Postpartum Period:</td>
<td>How strong is your preference for a child of a particular sex? (1 = not strong, 5 = very)</td>
<td>How did you feel about the sex of the baby at first? (1 = very disappointed, 8 = very pleased) (U+ = 8, U− = 1)</td>
</tr>
<tr>
<td>Baby’s Name</td>
<td>How strong are your intuitions (1 = not strong, 5 = very)</td>
<td>When did you decide on the baby’s name (U+ = at least 3 mo. prior) (U− = after delivery)</td>
</tr>
<tr>
<td></td>
<td>At this point, how difficult are you and your spouse finding the task of deciding on a name? for a GIRL baby? (1 = not difficult, 5 = very)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>for a BOY baby? (1 = not difficult, 5 = very)</td>
<td></td>
</tr>
<tr>
<td>Physical features</td>
<td>How important is it to you that your baby show certain desired physical features such as lots of hair or a distinct family resemblance? (1 = not important, 5 = very)</td>
<td>How pleased were you with the appearance of the baby at first? (1 = not pleased, 5 = very) (U+ = 5, U− = 1)</td>
</tr>
<tr>
<td>Health of Baby</td>
<td>How anxious are you about the possibility of discovering that your baby has a health problem? (1 = not anxious, 5 = very)</td>
<td>a) From a medical standpoint how would you rate the baby at birth? (1 = severe symptoms, 3 = normal)</td>
</tr>
<tr>
<td></td>
<td>How anxious are you about the possible effects of a difficult labor and delivery on the health of the baby? (1 = not anxious, 5 = very)</td>
<td>b) Were any health problems evident at birth? (yes, no)</td>
</tr>
<tr>
<td></td>
<td>Did your baby nurse right after birth? (yes, no)</td>
<td>c) Was there a specific reason to be concerned about the baby’s health during labor or delivery? (yes, no) (U+ = a(3) and b(no) and c(no)) (U− = a(1) or a(2))</td>
</tr>
<tr>
<td>Breastfeeding</td>
<td>How important is it to you that your baby be breastfed? (1 = not important, 5 = very)</td>
<td></td>
</tr>
</tbody>
</table>

218
**TABLE 1 (Continued)**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Prenatal Questionnaire</th>
<th>Postpartum Questionnaire</th>
</tr>
</thead>
</table>
| Bonding             | How anxious are you about the possibility that your baby will have difficulty breastfeeding?  
(1=not anxious, 5=very) | Did you have a period of extended contact with the baby IMMEDIATELY following delivery?  
(yes, no)  
(U+ = yes) |
| Rooming in          | How important is it to you that you be allowed a period of extended contact with the baby immediately following delivery?  
(1=not important, 5=very) | Was the baby in the same room with you or your spouse most of the time while in the hospital?  
(yes, no)  
(U+ = yes) |
| Photographing       | Do you plan to take movies or pictures?  
- a) in the delivery room immediately following the birth?  
(yes, no)  
- b) in the delivery room during the final stages of labor and delivery?  
(yes, no)  
- c) during the early stages of labor?  
(1 = 0 yesses, 2.33 = 1 yes)  
(3.67 = 2 yesses, 5 = 3 yesses) | Were movies or pictures taken?  
- a) in the delivery room immediately following the birth?  
(yes, no)  
- b) in the delivery room during the final stages of labor and delivery?  
(yes, no)  
- c) during the early stages of labor?  
(1 = 0 yesses, 2.33 = 1 yes)  
(3.67 = 2 yesses, 5 = 3 yesses)  
(U+ = b (yes) or c (yes)) |
| Sibling             | How important is it to you that your children be allowed to visit in the hospital?  
(1=not important, 5=very) | Did your children visit in the hospital?  
(yes, no)  
(U+ = yes) |
| Tape recording      | How personally valuable do you think the tape-recorded phone conversations will be to you and your family at a future date?  
(1=not valuable, 5=very) | How comfortable did you feel about having the phone conversations recorded?  
(1 = not comfortable, 5=very)  
(U+ = 5, U− = 1) |

*U+ = unusually pleasant outcome; U− = unusually unpleasant outcome.

**Procedure**

One month prior to the mother’s due date, the experimenter administered the prenatal questionnaire separately to father and mother, and showed the couple how to record their calls. The postpartum questionnaire was administered separately to each parent one month after the birth.
RESULTS

The results were analyzed in terms of the four initial questions.

1. Do Encoding Factors Predict Topic Selection?
To explore the role of encoding factors in topic selection, the salience of individual topics was determined for each subject on the basis of the prenatal and postpartum questionnaires. Salience factors were then used to predict the likelihood that an individual reporter would mention a topic in the course of a conversation.

Assignment of Topics to Salience Categories. The questionnaire results were used to assign each of the 17 topics rated by a subject to one of four salience categories: High Concern-Unusual Outcome, High Concern-Ordinary Outcome, Low Concern-Unusual Outcome, Low Concern-Ordinary Outcome. Degree of concern was determined by the subject’s responses on the prenatal questionnaire; unusualness, by responses on the postpartum questionnaire.

For the prenatal questionnaire, responses were converted into the numbers 1-5, where 5 indicates the greatest concern. Mean concern scores for each topic were calculated for mothers and fathers (see Table 2). A subject’s concern for a topic was categorized as high if the subject’s score was above the mean for fathers or mothers, respectively; and low if it was below.

For the postpartum questionnaire, responses were categorized as indicating either unusual or ordinary outcomes. For scaled, multiple-choice questions, responses were converted to the numbers 1-5, where 5 indicated the most favorable outcome and 1 the least favorable outcome. Outcome scores were categorized as unusual if either of the extremes (1 or 5) were selected. For yes/no questions, the occurrence of a new option in obstetrics (e.g., birthing room, bonding period, sibling visit) or a problem (e.g., difficult ride to hospital) was coded as unusual (see Table 1). The proportion of outcomes that were categorized as unusually pleasant or unpleasant for each topic is shown in Table 2.

Scoring Mention of Topics. To see if the salience ratings predicted the topics that were mentioned by individual reporters, all audible phone conversations were transcribed and scored for mention of each possible topic. Calls in which husband and wife took turns speaking counted as two separate reports. A total of 90 reports was scored, representing all 12 fathers and the 7 mothers who recorded calls.

Each report was scored for mention of each of the 17 topics by the investigator and a second, independent rater. In order not to bias the coding on the basis of outcome, both negative and positive statements about a topic were counted (e.g., mention of use, as well as non-use of drugs counted for
### Summary of Questionnaire Results

<table>
<thead>
<tr>
<th>Topic</th>
<th>Prepregnancy AV Concern (1 to 5)</th>
<th>Mother</th>
<th>Father</th>
<th>Postpregnancy Proportion of Unusual Outcomes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Postpartum Period</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex of baby</td>
<td>2.3</td>
<td>1.5</td>
<td>.56</td>
<td>.00</td>
<td>.56</td>
</tr>
<tr>
<td>Baby's name</td>
<td>2.3</td>
<td>1.9</td>
<td>.21</td>
<td>.26</td>
<td>.47</td>
</tr>
<tr>
<td>Physical features</td>
<td>1.3</td>
<td>1.3</td>
<td>.63</td>
<td>.11</td>
<td>.74</td>
</tr>
<tr>
<td>Baby's health</td>
<td>3.3</td>
<td>2.7</td>
<td>.63</td>
<td>.16</td>
<td>.79</td>
</tr>
<tr>
<td>Breastfeeding</td>
<td>3.2</td>
<td>2.9</td>
<td>.53</td>
<td>-</td>
<td>.53</td>
</tr>
<tr>
<td>Bonding</td>
<td>4.3</td>
<td>3.9</td>
<td>.58</td>
<td>-</td>
<td>.58</td>
</tr>
<tr>
<td>Rooming-in</td>
<td>4.1</td>
<td>3.3</td>
<td>.79</td>
<td>-</td>
<td>.79</td>
</tr>
<tr>
<td>Photographing</td>
<td>3.5</td>
<td>3.3</td>
<td>.74</td>
<td>-</td>
<td>.74</td>
</tr>
<tr>
<td>Sibling visit</td>
<td>5.0</td>
<td>3.6</td>
<td>1.00</td>
<td>-</td>
<td>1.00</td>
</tr>
<tr>
<td>Tape recording</td>
<td>2.3</td>
<td>2.5</td>
<td>.58</td>
<td>.05</td>
<td>.63</td>
</tr>
</tbody>
</table>

The topic of Natural Childbirth. For 4 topics (Sex, Name, Health of Baby, Health of Mother) specific criteria for mention had to be formulated to avoid a ceiling effect. These topics, along with the time of birth, appeared in brief form, in most conservations. Subsequent analyses, reported in a later section, deal with these pro forma topics. For purposes of the present analysis, to avoid a ceiling effect for these topics, the remark was not scored if the reporter simply stated the baby’s sex, mentioned the baby’s name, gave the baby’s weight, or said how many hours the mother spent in labor. Also, the remark was not scored if the reporter said that mother and baby were “fine.” The remarks were tallied, however, if the reporter said anything other than these facts (e.g., “no one has guessed ‘boy,’” “we picked it because it was a nice name,” “five toes on each foot, five fingers on each hand,” “mommy is up and around”). The interrater agreement, meaning the proportion of times the two raters initially agreed that a topic had or had not been mentioned in a particular report, was .98, ranging from .94–1.00 for individual topics. All disagreements were resolved by discussion.

The analyses for all the conversations recorded by a particular subject were translated into a probability score for each topic. For each subject, the likelihood of mentioning each of the 17 topics, either spontaneously or in
response to the recipient, was defined as the proportion of conversations in which the subject mentioned the topic. Thus, a subject who mentioned natural childbirth in three out of six conversations had a likelihood of mention for that topic of .50. The likelihoods for all the topics that fell into the same salience category for a particular subject were averaged together. Table 3 shows the likelihood of mentioning topics in each of the four salience categories averaged across subjects.

**Topic Mention as a Function of Salience.** The likelihood data were analyzed in a two-way analysis of variance with concern (high, low) and outcome (unusual, ordinary) as within-subject factors. The results revealed a significant main effect of concern, $F(1, 18) = 6.70, p < .05$, a significant main effect of outcome, $F(1, 18) = 5.22, p < .05$, and no interaction between concern and outcome, $F(1, 18) < 1, p > .05$.

An analysis in which items were the random variable was also performed. For each of the 17 topics, the average likelihood of mention was calculated for that topic when it appeared in each of the four concern x outcome categories. (For the topic of Natural Childbirth, for example, likelihood scores were first averaged across all subjects who fell into the category of Strong Concern-Unusual Outcome for that topic, then across subjects in each of the other three salience categories.) Three of the topics (Father’s Role, Drive to Hospital, Sibling Visit) had to be excluded because there was no variability in outcome. The results supported those of the first analysis in showing a significant main effect of concern, $F(1, 13) = 8.79, p < .05$ and a significant main effect of outcome, $F(1, 13) = 22.83, p < .001$. This time the interaction between concern and outcome was also significant, $F(1, 13) = 5.70, p < .05$. Since the interaction was not consistently reliable, it was not considered further.

The results showed that reporters mentioned topics of prior concern and unusual outcome more frequently than topics of low concern and ordinary outcome. These findings support the notion that the salience of the information in memory plays a role in topic selection. However, they are also compatible with the alternative, Gricean view that reporters talk about topics that are relevant and informative (i.e., newsworthy).
2. Does the Order of Report Suggest Use of a Chronological Retrieval Strategy?

The purpose of this analysis was to see if chronologically early topics (i.e., those concerning labor and delivery) were discussed earlier in the conversation than were chronologically late topics (i.e., those concerning the baby and the postpartum period), as would be expected if subjects were using a chronological retrieval strategy.

Scoring First Mention of Topics. In addition to deciding whether or not each topic had been mentioned at least once in a conversation, the two raters independently noted the line in which the topic was first mentioned. The interrater reliability for line number of first mention was .96.

First Mention of Chronologically Early versus Late Topics. For each reporter, the average line number was calculated across conversations for the first mention of chronologically early versus late topics. (One subject, who had only one conversation, was eliminated from the analysis because there were no early topics.)

The average line number was 17.30 for early (i.e., prenatal) topics and 23.99 for late (i.e., postpartum) topics, suggesting that subjects discussed the event chronologically. A t test for repeated measures revealed that this difference was statistically significant, \( t(17) = 4.02, p < .001 \). These results would be expected if subjects were retrieving salient information systematically from memory. However, they would also be expected if subjects were producing a narrative in accordance with a genre.

3. Does the Reporter Deviate from an Optimal Retrieval Strategy to Take the Recipient into Account?

The results described thus far, showing that prior concerns and the unusualness of the event predicted mention of topics and that topics were reported chronologically, could be described either in terms of a memory or a communication model. These models are difficult to separate empirically because topics that are worthy of reporting are also likely to be memorable. The converse, that memorable topics are newsworthy, is also likely to be true, although not all memorable topics will be appropriate in all circumstances. Two additional analyses were carried out to try to tease apart the implications of the models.

First, the order in which information was presented in the report was examined more closely. One noticeable feature of the conversations was that the openings frequently consisted of information typically found in printed birth announcements: "It's a boy/girl named _____, weight _____, born at _____ o'clock." From a communication point of view, it is not surprising that the facts about the baby are mentioned first. Phone conversations generally begin with an announcement of the purpose of the call (Schegloff,
1968), and in this case the purpose is to announce the birth of the baby. Once the news is out, it is likely that a recipient would want to know certain chronologically "late" facts (i.e., basic information about the baby) before the chronologically "early" details of labor and delivery.

From the standpoint of memory, however, there would be little reason for a reporter to use both an announcement convention and a chronological framework for recalling an event, since a chronological strategy would subsume the information contained in the announcement. The memory and communication models differ, therefore, in the predicted order of topics. In particular, a pro forma announcement at the start of the conversation would provide evidence that the reporter was, in fact, accommodating to the recipient's needs.

Scoring Announcement Topics. To test the hypothesis that reporters began their reports with a pro forma announcement, a new topic, Time of Birth, was scored and four of the original topics—Sex, Name, Health of Baby, and Health of Mother—were rescored using a different set of criteria. (For clarity, the five rescored topics are referred to as "announcement topics," and the original 17, as "narrative topics.") The selection of these particular announcement topics was made on the basis of their appearance in printed birth announcements, as well as in messages that were left with a third party when the intended recipient was not available. There were two such cases. One was a message left with someone in a church office late at night. The message consisted entirely of the baby's sex, name, weight, and time of birth. Another was a message left by a husband on his own mother's answering machine. The message consisted of the baby's sex, name, weight, and the mother's condition ("doing fine"). The announcement topics, therefore, can be thought of as the quintessential childbirth message. This time in the scoring, stating the baby's sex counted for the topic Sex (brief), telling the baby's name counted for Name (brief), giving the baby's weight or saying that the baby was "fine" or "beautiful" counted for Health of Baby (brief), and mentioning the duration of labor or the fact that the mother was "fine" or "tired" counted for Health of Mother (brief). Since none of these statements had counted as contributing to any of the original topics, there was no overlap in the scoring of announcement and narrative topics.

In approximately one-third of the conversations, the recipient had already talked to the other spouse, or to someone else who could have provided basic information about the baby. Therefore, the scoring of announcement topics was restricted to the 64 conversations in which the recipient was hearing the news for the first time. For each of these "first-hearing" conversations, the first mention of each announcement topic was noted and the line number was recorded. Since the scoring was straightforward, a single rater (the investigator) was used.
Prevalence and Placement of Announcement Topics. If a small set of topics serves as a pro forma introduction, then those topics should be mentioned in more conversations and at an earlier point than should other topics. To test this prediction, the likelihood of mentioning each announcement topic, as defined above, was calculated for each subject by determining the proportion of “first-hearing” conversations in which the topic was mentioned. The average line number for the first mention of each topic was also calculated. The likelihoods and line numbers were then averaged across all announcement topics for each subject. Averages for each subject were similarly obtained for the narrative topics.

As predicted, announcement topics were more likely to be mentioned and were mentioned sooner than were narrative topics (see Table 4). Every subject showed these effects, \( t(16) = 13.89, p < .001 \) and \( t(16) = 6.55, p < .001 \), for likelihoods and line numbers, respectively. These findings suggest that subjects began their reports with a pro forma birth announcement, as would be expected in a communication model of topic selection.

4. What is the Role of the Recipient?
The recipient’s role in shaping the conversations was assessed by examining the frequency and placement of recipient-initiated topics. A preponderance of recipient-initiated topics at the start of the conversation would suggest that the recipient had a strong need for particular kinds of information. A preponderance at the end of the conversation would suggest the recipient was helping the reporter to think of additional topics.

Scoring Topic Initiation. The reporter’s first mention of each topic in a conversation was classified as recipient-or reporter-initiated, depending on whether or not a question or comment from the recipient had preceded the reporter’s remark. Narrative and announcement topics were scored separately. (Because announcement topics were of interest, only the 64 “first-hearing” conversations were analyzed.) For narrative topics, the recipient’s remark had to meet the same criteria for mention that were applied to the
reporter’s remarks and that distinguished the narrative topics from the announcement topics. Therefore, if the recipient asked, “Did the mother have any tearing?” and the reporter (i.e., the baby’s father) responded by describing the mother’s symptoms, the reporter’s remark was categorized as Recipient-Initiated: Health of Mother. If on the other hand the recipient simply asked “How is the mother?” and the reporter described the mother’s symptoms, then the reporter’s remark was scored as Reporter-Initiated: Health of Mother. The interrater agreement for topic initiator for the narrative topics was .97.

Announcement topics were scored in the following way. If the reporter spontaneously reported that the mother was fine, the topic was coded as Reporter-Initiated: Health of Mother (brief). If, on the other hand, the recipient asked, “How is the mother?” and the reporter responded, “fine,” the topic mention was coded as Recipient-Initiated: Health of Mother (brief). Because the scoring of announcement topics was straightforward, a single rater performed the task.

Proportion of Recipient-initiated Announcement and Narrative Topics. The average proportion of topic mentions rated as recipient-initiated, as shown in Table 4, was .490 for announcement topics and .325 for narrative topics. This difference, though small, was statistically significant \( t(16) = 2.74, p < .02 \). The fact that recipients initiated more topics in the beginning, when they were most curious, than at the end, when topics were becoming scarce, suggests that recipients’ questions were aimed at gathering information rather than at helping the reporter to remember more.

DISCUSSION

This study was concerned with a problem in discourse production: Given all the possible topics that could be mentioned in describing a personal event, what determines which ones will be mentioned and how they will be organized? To answer these questions, real conversations about a personal event, the birth of a baby, were investigated. The goal of the study was to characterize the conversations in terms of a predictive model. Two possible models of topic selection were examined, a memory and a communication model. These models have been described by others in connection with the writing process and are thought to characterize novice and expert writers, respectively (Bereiter & Scardamalia, 1980; Flower, 1979).

In the memory, or “knowledge telling” model, the reporter selects topics from memory and presents them in the order that they are recalled. In the communication, or “knowledge processing” model, the reporter structures the information to meet the needs of the recipient and therefore has to use more than a simple retrieval strategy. In both models, there is a link between
the input (i.e., the salience of the information in memory) and the output (i.e., the content of the conversation). The two models differ, however, in the complexity they ascribe to that link. The memory model suggests a close link between input and output. The communication model suggests a more complex link, with social considerations and genre constraints mediating between input and output.

The first set of findings—that reporters talked about prior concerns and unusual outcomes—confirmed that there is a link between the salience of events in memory, and the presence of topics in conversations, as both models suggest. This result can be illustrated by considering the salience of topics for a typical subject in the study, a 27 year-old husband who had just become a father for the first time.

The narrative topics divided into salience categories for this subject are as follows (two topics were excluded, sibling was not relevant; painfulness was halfway between High and Low Concern):

*High Concern—Unusual Outcome:* Health of Baby, Physical Features, Bonding, Rooming-in

*High Concern—Ordinary Outcome:* Health of Mother, Drive to Hospital, Birth Attendant, Natural Childbirth, Taping Calls

*Low Concern—Unusual Outcome:* Photographing, Father's Role

*Low Concern—Ordinary Outcome:* Sex of Baby, Name, Birthing Room, Breastfeeding

The speaker's average likelihood of mention for these categories, over two conversations, was .50, .50, .25, and .13, respectively, illustrating the trend toward decreasing mention with decreasing salience of topics.

What was not clear from this kind of result, however, was the extent to which factors other than the salience of the information in memory influenced the selection of topics. Further analysis was needed, therefore, to clarify the role of memory and communication factors in topic selection and to test predictions derived from each of the models. One set of predictions that differentiates the memory and communication models concerns the order in which topics are reported. If the memory model is correct, the order should follow a familiar retrieval strategy, such as a chronological recall plan. If the communication model is correct, the order should be more complex, reflecting recipient needs and genre characteristics.

A second prediction on which the two models differ concerns the likelihood of recipient-initiated topics at different points in the conversation. The memory model predicts more recipient-initiated topics at the end of the conversation, when the speaker has exhausted the most salient topics, than at the beginning, when the speaker has a large selection of potential topics. The communication model, on the other hand, predicts more listener-initiated topics at the beginning, when the recipient is eager to hear the news, than at the end, when much of the recipient's curiosity has been satisfied.
The results supported a communication model over a memory model. The reporter deviated from a chronological retrieval strategy to satisfy the recipient's curiosity about the outcome of the event. The recipient encouraged this practice by asking questions about the baby and the mother at the start of the conversation. While such a nonchronological ordering of topics is strange from the point of view of memory retrieval, it makes perfect sense from the point of view of a communication task in which participants are trying to build a shared pool of information (Bracewell, Frederiksen, & Frederiksen, 1982; Clark & Wilkes-Gibbs, 1986).

These results can be illustrated by considering one of the conversational reports produced by the 27 year-old father (see Table 5). In this conversation the subject spoke first to his father and then to his mother. Table 6 shows the topics that were mentioned by the subject, the line number for the first mention of each topic, the topic category (announcement vs. narrative-early vs. narrative-late) and the topic initiator (reporter vs. recipient). As shown in Table 6, announcement topics were introduced earlier in the conversation than were narrative topics and were more likely to be recipient-initiated.

The need to structure the available information to meet communication goals makes writing a difficult task, even for adults (Bereiter & Scardamalia, 1980; Flower, 1979). Writers have difficulty shifting from "a concern with information retrieval and organization to a concern with purpose, audience

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hello.</td>
<td>Hey Dad,</td>
<td>Guess what?</td>
<td>(Laughing) you got a little, a granddaughter.</td>
<td>Yup.</td>
<td>Oh yeah, everything is fantastic.</td>
<td>(Laughing) you have!</td>
<td>Everybody's cheering. Her name's T—</td>
<td>Her name is T—</td>
<td>Yup.</td>
<td>Oh that's good.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yeah.</td>
<td>Tell me.</td>
<td>Wonderful.</td>
<td></td>
<td>Great, (inaudible) been going nuts all day (laughing).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Well that's great.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(cheering heard in background)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>What?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>T—?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>So...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>That's very pretty.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yeah, so...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>How's H—?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12. H Oh she’s fine, everything’s...
   HF Oh, what a day she must have had.
13. H Yeah, we had kind of a wild one.
   HF Hm.
14. H Yeah, everything went fine and she didn’t need any extra work at all. And you
   know, really, she feels real weak right now but she’s feeling real good.
   HF I was so worried about you all day long when I didn’t hear anything. I was
   going out of my mind.
15. H (Laughing)
   HF I didn’t want to chase you around.
16. H I was, yeah, I was telling H. the same thing happened when M—went into
   labor.
17. H I remember hearing that she went to the hospital and then I heard nothing all
   day, so I said I know what everyone else is thinking at the same time.
   HF Sure.
18. H We had her around 5:30, but we just got into the room. Just now.
   HF Oh, well that’s wonderful news. Now you give H. a great big hug for us.
   HF I’m going to put Mom on here.
20. H OK.
   HM Congratulations.
21. H Hey Mom, we finally did it.
   HM Listen, you what?
22. H I said we finally did it.
   HM Oh God, your father was absolutely, he was like he was in a state of depression
   this afternoon (laughing). He just was simply up-tight.
23. H (Laughing).
   HM Well tell us about it. Was it exciting?
24. H Oh yeah, it was good, it was great.
   HM I’m dying to hear.
25. H We, well we, yeah, I think I told you that we probably got up this morning
   around three and we left, well I called you.
   HM No, you didn’t tell me that. I didn’t know that.
26. H Oh, well that was around three o’clock this morning. We were up from three to
   six-thirty, and then when we left is when I called you.
   HM Yeah.
27. H And we got to the hospital and they said oh it would probably be about 20
   hours because things weren’t...
   HM Oh.
28. H Things were definitely progressed, but not at any super fast rate.
   HM Oh, I see.
29. H And H— kept saying, “Gee’s, things are getting a little tough, you know, and
   it’s tougher to breathe and everything,” and they said, “Oh, you know, save
   your breath, don’t do any of the special breathing yet, because, you know, the
   worst Is yet to come.”
   HM Oh no (laughing).
30. H Yeah and finally around five o’clock she said, at this point around five I was
   thinking, “Gee, maybe this baby will be borne on the eleventh.”
   HM Yeah.
31. H You know, because they were talking about another, you know, six, eight
   hours.
   HM Uh huh. (continued)
32. H — said, "I've got this real pain, you know, right in my bottom really." And the
girl said, "Where is it?" And she told her exactly where it was and she said,
"You'd better be checked out." And when she checked it out she found out that
the baby was within about fifteen minutes of being born.
HM Oh my God.
33. H So, everybody flew. And yeah we, immediately the girl said, "Start pushing,"
and then we took off for the delivery room, and Bingo, right there.
HM No kidding.
34. H The baby is terrific. She's got a little bit of hair already.
HM Uh huh.
35. H And she rated a ten on the scale of 1-10, so . . .
HM Great.
36. H So...
HM Is H— with you there?
37. H Yup, H— says she has a chin.
HM Oh good, I'm glad to hear she has a chin.
38. H Let me put H— on, hold on.
(Conversations is interrupted while wife speaks)
39. H Hey are you having that party right now?
HM Yeah, it's just M— and B— Yeah, we're having a party (laughing), right now. It's
going to start in a bit.
40. H No, I mean, isn't J— coming? Aren't you with them or something like that?
HM Pardon?
41. H Aren't you with J— and K— or is that later?
HM Not yet. No at 8:30, down at the boat club. What are you going to do tonight?
42. H Well, I'll probably leave around 10:30, but I've got some super pictures of a
beautiful girl.
HM If you don't, huh?
43. H I got some great pictures.
HM Oh you, well why don't you come here and spend the night?
(Discussion of plans continues to line 67)

TABLE 6
Data for Sample Subject

<table>
<thead>
<tr>
<th>Topics Mentioned</th>
<th>Line Number of First Mention</th>
<th>Topic Category</th>
<th>Topic Initiator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (Brief)</td>
<td>3</td>
<td>Announcement</td>
<td>Reporter</td>
</tr>
<tr>
<td>Health of Baby (Brief)</td>
<td>5</td>
<td>Announcement</td>
<td>Recipient</td>
</tr>
<tr>
<td>Name (Brief)</td>
<td>8</td>
<td>Announcement</td>
<td>Reporter</td>
</tr>
<tr>
<td>Health of Mother (Brief)</td>
<td>12</td>
<td>Announcement</td>
<td>Recipient</td>
</tr>
<tr>
<td>Health of Mother</td>
<td>14</td>
<td>Narrative-Early</td>
<td>Reporter</td>
</tr>
<tr>
<td>Time of Birth</td>
<td>18</td>
<td>Announcement</td>
<td>Reporter</td>
</tr>
<tr>
<td>Painfulness of Labor</td>
<td>29</td>
<td>Narrative-Early</td>
<td>Reporter</td>
</tr>
<tr>
<td>Natural Childbirth</td>
<td>29</td>
<td>Narrative-Early</td>
<td>Reporter</td>
</tr>
<tr>
<td>Birth Attendants</td>
<td>32</td>
<td>Narrative-Early</td>
<td>Reporter</td>
</tr>
<tr>
<td>Birthing Room</td>
<td>33</td>
<td>Narrative-Early</td>
<td>Reporter</td>
</tr>
<tr>
<td>Physical Features</td>
<td>34</td>
<td>Narrative-Late</td>
<td>Reporter</td>
</tr>
<tr>
<td>Health of Baby (Brief)</td>
<td>35</td>
<td>Narrative-Late</td>
<td>Reporter</td>
</tr>
<tr>
<td>Photographing</td>
<td>42</td>
<td>Narrative-Late</td>
<td>Reporter</td>
</tr>
</tbody>
</table>
needs, and conventional genre characteristics" (Bracewell et al., 1982). The conversational reporters in the present study, on the other hand, had no difficulty carrying out the cognitive processing that was needed to make their reports not only comprehensible, but entertaining as well.

There are several reasons why the task of reporting on a personal event in a phone call, such as the birth of a baby, might be easier than the task of writing down information that was gathered as part of a school or work project. First, as we have seen in the case of childbirth conversations, there are conventional ways of announcing ritual events, such as the birth of a baby, that help the reporter to communicate the main point of the call. Second, the recipients of a conversational report ask questions that ensure that the main points (e.g., the prototypical information about baby and mother) will be reported first. Fewer such aids are available when writing an essay or journal article. As a result, college writers typically fail to mention the "bottom line" of a report at the beginning, where it would be most helpful (Flower, 1979). Finally, the conversational reporter is more familiar with the material, since it is based on first-hand experience. These factors conspire to ensure that communication and not memory concerns dictate the selection and ordering of topics in conversational reports.

How then should the relationship between memory search and conversational reporting be characterized? The present results suggest that salient events are not simply retrieved as they occur to the reporter, but rather are selected with respect to criteria that foster social interaction. These criteria fall into several categories. First, there are genre constraints. The pro forma topics that ritually began the childbirth conversations in this study not only satisfied the recipient's curiosity, but also fulfilled the requirements for a conversational opening (Schegloff, 1968). Second, there are recipient constraints. The reporters in the present study appeared to be constrained by the particular recipient they were addressing, particularly where unpleasant information was involved. Thus, one reporter went out of her way to spare her mother the details of her difficult labor, although she did not hesitate to describe her ordeal to a friend. Another reporter refrained from mentioning any problems to his grandmother until she began to reminisce about her own difficulties in labor. Third, there is the constraint of having to fit topics into the flow of the conversation by making reasonable (i.e., relevant and informative) conversational responses (Grice, 1975; Schank, 1977; Schank et al., 1982; Sidner, 1983). In addition, reporters have knowledge of domain-specific conventions, such as the pro forma topics that typically begin childbirth conversations. An awareness of convention was particularly evident in one reporter's reply to the question, "How was the labor?" "Real hard and long. She broke her water, I don't want to tell you labor stories (laughter), but, briefly, broke her water yesterday morning at 10 a.m...."

A final set of constraints concerns the goals that the phone calls were intended to serve. In the present study, the goal of presenting the self in a
favorable light led to the suppression of potentially embarrassing information. Thus, one reporter failed to mention the fact that she had inadvertently "pee-ed" on the nurse during labor in most of her conversations, although this information was surely salient in her memory! The goal of entertaining the listener, on the other hand, led reporters to elaborate on the information in a variety of ways. They told stories with culturally relevant themes, such as the possibility of defying the odds and surprising the experts (Polanyi, 1985) (see Table 5, lines 25–33). They explored topics in depth:


They engaged in spoof. For example, the baby's weight was treated with whimsey ("Just wanted to confirm that the package has arrived, yeah, the little 7 pound, or 6 pound, 15 ounce package"), the baby's sex was introduced with suspense ("It's... a baby!"), and the baby's name was treated with humor ("Well, it was either 'Robin' or 'Blackbird'"). Clearly, the art of conversation requires more than a good memory. It is this creative aspect of conversational reporting that poses the biggest challenge to our understanding.

In summary, the notion that topic selection must satisfy a variety of constraints is a common theme in the literature on discourse production (e.g., Grice, 1975; Kintsch, 1980; Polanyi, 1975; Schank, 1977). The results of the present study support this theme by suggesting that conversational reporting is more akin to "knowledge processing" than it is to "knowledge telling" (Bereiter & Scardamalia, 1980). Further research should be directed at understanding the interplay between memory and production processes in other domains. It would be interesting to know, for example, how information in long-term memory is transformed into conversational reports of weddings, trips, accidents, job offers, major purchases, and winning the lottery.

Original Submission Date: June 16, 1988.

REFERENCES


