Assessing the accuracy of conflicting autobiographical memories

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We examined criteria that rememberers and neutral audiences use to validate conflicting memories. In Experiment 1, rememberers described an incident that they recalled differently from someone else from their own and the other person's perspective. Rememberers and audiences then evaluated the accuracy of statements in both accounts, explained their accuracy ratings, and appraised the qualities of the memories. In Experiment 2, dyads who possessed conflicting memories of a shared past episode evaluated each other's recollections. In both studies, rememberers rated their own recollections as more accurate than other people's and based their judgments primarily on the internal coherence of the memories. Rememberers used consensus more frequently and sensory detail less often to evaluate other people's memories than their own. Audiences (Experiment 1) reported examining the consistency between the accounts and their own experiences; they also used consensus and normative behavior to a greater extent than rememberers. In both studies, rememberers judged their own accounts to be more detailed and coherent. Their ratings of detail and coherence predicted their ratings of accuracy.

Bartlett is perhaps the most influential advocate of the constructivist approach to memory. In his book on remembering published in 1932, he commented that "the description of memories as 'fixed and lifeless' is merely an unpleasant fiction" (p. 311). In the first sentence of the preface of that book, Bartlett recalled that the Laboratory of Experimental Psychology at Cambridge was formally opened on "a brilliant afternoon in May 1913." Interestingly, another person present at the opening of the Laboratory, Sir Godfrey Thompson, subsequently remembered that it poured rain that day (Zangwill, 1972). As this anecdote illustrates, people sometimes report divergent recollections of events, and objective standards for establishing the validity of their accounts are neither sought nor readily available. In the present research, we investigated how rememberers and their audiences authenticate conflicting memories in the absence of objective criteria.

Although we are interested in situations in which rememberers do not knowingly lie, the extensive literature on lie detection is relevant to our concerns. People detect deception at only slightly better than chance levels and

often err by believing false accounts (DePaulo, Stone, & Lassiter, 1985; Fleming, Darley, Hilton, & Kojetin, 1990; Krauss, 1981). Bruner (1986) observed that humans are so readily duped that they should perhaps be described as *Homo credens*. When liars do give themselves away, it tends to be on the basis of nonverbal cues associated with anxiety, such as speech hesitations and voice pitch (DePaulo et al., 1985; Zuckerman, DeFrank, Hall, Larrance, & Rosenthal, 1979).

Audiences should have even more difficulty identifying inadvertent errors in recall than detecting lies. People's recollections may diverge from their earlier perceptions or accounts of the same episodes, but they may not intend any deceit. People's current knowledge and goals influence their long-term memories (Bahrick, Hall, & Berger, 1996; Bartlett, 1932; Fischhoff, 1975; Greenwald, 1980; Higgins & Lurie, 1983; Johnson & Sherman, 1990; Loftus, 1981; Loftus & Palmer, 1974; Mead, 1934, 1964; Neisser, 1967; Ross, 1989; Vincente & Brewer, 1993). When people's beliefs and goals change over time, their recollections often change as well (Ross, 1989; Ross & Buehler, 1994). Rememberers often seem not to recognize, however, that their recollections have varied over time (Ross, 1989). Also, rememberers might not regard their transformed accounts as false even when they notice alterations. Instead, they may view their amended versions as more accurate than their original accounts. Rememberers who are either unaware or accepting of their alterations will presumably fail to exhibit the anxiety-

This research was supported by a doctoral fellowship to J.W.K. and research grants to M.R. and R.B. from the Social Sciences and Humanities Research Council of Canada. We thank Celeste Alvaro, Stacy Ashton, Rebecca Filyer, Alisa Lennox, and Lindsay McLaren for their assistance in conducting the research. Correspondence should be addressed to M. Ross, Department of Psychology, University of Waterloo, Waterloo, ON N2L 3G1, Canada (e-mail: mross@watarts.uwaterloo.ca).

based, nonverbal signals that sometimes cue audiences to deceit.

Our theoretical analysis concerns situations in which rememberers do not knowingly lie and in which individuals assessing the accuracy of memories are primarily interested in determining truth (rather than defending a particular account). We suggest that in such cases, both rememberers and their audiences invoke two general classes of criteria to assess the truthfulness of recollections. Individuals evaluate the *consistency* of recollections with information available to them; in addition, they scrutinize the amount and type of *detail* in the memories.

Individuals can examine both the internal and the external consistency of a memory. Assessors evaluate the internal consistency or coherence of a recollection by considering whether the events in a memory are sequenced and connected in an intuitively convincing manner. Of the external consistency standards, consensus is perhaps the most familiar and compelling. When different people's recollections of an event agree, assessors tend to judge the memories as authentic (Ross, 1997; Undeutsch, 1988). Additional forms of external consistency are also potentially important. Assessors can evaluate whether a recollection corresponds with their other memories and knowledge (Johnson, Hashtroudi, & Lindsay, 1993; Johnson & Raye, 1981). Two forms of knowledge may be particularly relevant. First, assessors can refer to their general knowledge of human behavior: They can consider whether the actions of individuals in a memory are compatible with how people normally behave in such situations (normative behavior). Second, assessors who possess specific knowledge of the individuals depicted in a recollection can examine whether people's actions stem plausibly from their distinctive personalities, intentions, motives, and so forth (behavioral consistency). In general, memories that satisfy the internal and external consistency criteria should seem more credible than memories that fail to do so.

The other set of standards concerns the amount and type of detail in the memory (Johnson & Raye, 1981). Assessors can consider whether a recollection is sketchy or detailed and whether it contains sensory or contextual information. Vivid memories containing sensory and contextual details are likely to be believed (Bell & Loftus, 1989; Johnson, 1988; Johnson, Foley, Suengas, & Raye, 1988; Johnson et al., 1993; Johnson & Raye, 1981; Schooler, Gerhard, & Loftus, 1986; Undeutsch, 1988; Yuille, 1988). Furthermore, there is evidence that such memories should be believed. Accurate recollections include more sensory detail than inaccurate descriptions, although judges are not particularly sensitive to these differences (Mather, Henkel, & Johnson, 1997; Norman & Schacter, 1997; Schooler, Clark, & Loftus, 1988; Schooler et al., 1986).

Selective Use of Truth Criteria

Individuals may emphasize the importance of some truth criteria and neglect others when judging the accu-

racy of memories. In the first experiment, we examined whether participants reported using similar or different standards to evaluate their own and other people's conflicting memories. We studied this question in two ways. First, we investigated how rememberers assessed their own recollections and other people's conflicting accounts of the same episodes. Second, we considered how rememberers' use of the truth criteria compared with that of neutral observers who evaluated the same memories.

How rememberers evaluate their own and conflicting memories. We expected rememberers generally to use the same criteria to evaluate their own and other people's conflicting recollections. We anticipated differences, however, on the dimensions of sensory detail, consensus, and normative behavior. Rememberers may base their evaluations of their own memories heavily on their subjective experience. While recalling an episode, rememberers may feel as if they are hearing or seeing the event unfold once again (indeed, there is evidence that the remembering activates perceptual areas of the brain, Schacter, 1996). In reconstructing a conversation, a man may "hear" his wife telling him that she closed the windows of their house. Her subsequent denial that she made the statement, and the obviously open windows, cannot eliminate the man's sensory experience. On the other hand, the husband lacks direct access to the vivid, sensory experience that his wife possibly derives from her own recall of the conversation. He can hear what she says, but not what she hears. As a result of the differential availability of sensory experience, rememberers may be more likely to emphasize sensory detail when evaluating their own rather than other people's memories.

In contrast, assessors should be less likely to use criteria external to the memory when evaluating their own recollections, especially the consistency criteria of consensus and normative behavior. Consider: A woman remembers dancing in the rain, whereas someone else recalls the sun shining on her. If the woman's recollection is detailed (including sensory information such as soggy clothes), internally coherent, and compatible with her general knowledge (it is possible to dance in the rain), she may well feel that her memory does not require corroboration or need to meet normative standards. She appreciates that her behavior was unusual—but she also "knows" that it happened.

We hypothesized, therefore, that rememberers would be more likely to use the consistency criteria of consensus and normative behavior when appraising someone else's recollections. This proposition is consistent with research on people's use of base rate information. Individuals are more influenced by base rates when evaluating other people's actions and judgments than when assessing their own (Ross & Fletcher, 1985).

Criteria used by neutral observers. By neutral observers, we refer to individuals, such as jurors, who possess neither personal memories of the target events nor personal knowledge of the individuals involved. Neutral observers should depend on the full gamut of truth cri-

teria to evaluate the accuracy of conflicting accounts. Like rememberers, observers should generally find detailed and coherent accounts to be compelling (Bell & Loftus, 1989; Reyes, Thompson, & Bower, 1980). Lacking the subjective sense of remembering, they should be more likely than rememberers to emphasize the importance of the consistency criteria of consensus and normative behavior.

Why One's Own Memories Seem Accurate

A second goal of the present experiments was to relate use of the truth criteria to rememberers' assessments of the accuracy of their own memories and of conflicting accounts. When a rememberer's recollections conflict with someone else's, the rememberer may scrutinize the alternative accounts, evaluating the degree to which each satisfies the various truth criteria. Whereas rememberers may suppose that they are impartial in their deliberations, there is reason to suspect that they will typically come to favor their own accounts. People's subjective experience may often be that their own memories contain more sensory information than does another person's recall of the same event. As a result, rememberers should judge their own accounts to be more accurate than competing versions when they base their validity assessments on the amount of sensory detail.

Rememberers may also believe that their own versions better fulfill other truth criteria. The act of constructing an account may spontaneously lead a rememberer to recall more memories of similar actions by the leading characters. As a consequence, rememberers may judge their additional memories to be more consistent with their own version than with an alternative rendering of the story. Rememberers are also likely to construct a story in which the protagonists' actions reflect the rememberers' attitudes and beliefs: They may portray "good guys" more favorably than "bad guys." Competing versions of the same episode may not seem as behaviorally consistent: One person's good guys may be another person's bad guys. Similarly, because people often have especially high opinions of themselves (Taylor & Brown, 1988), their recollections may be more flattering to themselves than competing versions would be. Finally, rememberers may judge their own accounts to be more coherent, partly because they created them and are more familiar with them. All of us who lecture or write have had the experience of generating puzzlement in others as we provide them with explanations that we consider to be perfectly lucid. In sum, we hypothesized that rememberers would judge their own recollections to be more plausible than conflicting descriptions because their own accounts seem to satisfy the various truth criteria.

Overview

We conducted two experiments to test the generalizability of the results across common, but different, types of remembering: individual recall (Experiment 1) and joint recall (Experiment 2). The procedure in Experiment 1

can be likened to a situation in which a man tells his wife how his own memory of an incident differs from his brother's recollection of the same episode. Experiment 2 reflects a situation in which a man reports his recollection to his brother, who then describes his own (conflicting) version of the episode.

In Experiment 1, participants described an episode for which their own memory differed from that of another person. They reported, in detail, their own account of the incident as well as the other individual's story. After estimating the accuracy of statements in both accounts, they provided open-ended explanations of their judgments and rated the accounts on a number of theoretically relevant dimensions, including detail and coherence. Experiment 2 was similar except that it focused on dyadic recall. Participants who possessed conflicting memories of a shared past episode reported only their own recollections and then evaluated the accuracy of each other's accounts.

Experiment 1 also included a group of neutral observers. These observers ("audiences") read the rememberers' stories and evaluated the recollections on the same dimensions as had the rememberers. We compared how rememberers and neutral observers evaluated the accuracy of the conflicting memories.

EXPERIMENT 1

Method

Participants

Forty-four undergraduates participated in the rememberer condition of the study. The data from 1 rememberer were discarded because the written versions of the incident were judged by raters to exhibit no conflict. An additional 3 rememberers refused to permit us to show their accounts to others; their recollections were not available for the audience portion of this study and have been discarded from all analyses. There remained 22 women and 18 men in the rememberer condition. The same number of men and women were assigned to the audience condition. All participants were recruited from an introductory psychology course and received course credit.

Procedure

Rememberer condition. Rememberers were telephoned approximately 1 week prior to their experimental session. They were told that the study concerned people's memories for past events and were asked to think of a "personal incident where your memory conflicts with somebody else's; in other words, you know of somebody who remembers the incident differently than you do." The caller noted that participants would need to have an incident in mind when they arrived for the experiment since they would write about their own memory of the episode and that of the other person. The caller also stressed that some people would be unable to recall such an incident and that they would in no way be penalized if this were the case. We attempted to minimize the possibility that participants would feel a need to fabricate memories by providing them with ample time to recall an incident, as well as the opportunity to opt out of the study.

Participants were telephoned the night before the scheduled session; the caller reminded them of their appointment and asked if they had been able to recollect a conflicting memory. Eleven individuals reported being unable to recall a conflicting memory and did not participate in the experiment. The number of rememberers

per experimental session varied between 1 and 11. Rememberers first provided written descriptions of their own and the other person's memory of the incident. The order in which they wrote the two accounts was counterbalanced across participants. Rememberers wrote each account on a separate page containing 20 numbered lines. They recorded one major point or aspect of the incident on a line. Rememberers were encouraged to provide as much detail as possible and to be equally detailed in both accounts.

When they had finished writing, rememberers evaluated the accuracy of every statement in both accounts in the same order that they wrote the two stories. They were instructed to rate a statement as accurate to the extent that it described an event as it actually occurred. Rememberers rated each line in both accounts on a 7-point Likert scale ranging from *not at all accurate* (1) to *completely accurate* (7). After each rating, rememberers were asked to provide written explanations for their assessment of accuracy: "How did you evaluate the accuracy of this statement? Describe your thoughts as you made this accuracy judgment."

A subsequent set of closed-ended questions was designed to assess participants' evaluations of how detailed, coherent, behaviorally consistent, and self-serving the accounts were. The detail and coherence items were derived from Johnson's work on reality monitoring (e.g., Johnson et al., 1988; Johnson & Raye, 1981). Contextual detail was assessed by means of three questions: Participants indicated the degree to which each person's memory was sketchy or detailed, vague or distinct, dim or sharp. As a measure of coherence, we asked participants to evaluate the extent to which each person's memory for the order in which the events occurred was mixed up or well defined. The behavioral consistency question assessed the degree to which the individuals depicted in each account acted in a manner consistent with their personality or attitudes. We also assessed whether the accounts were self-serving. Participants indicated the extent to which each version of an episode flattered either the rememberer or the other person. Participants recorded their answers to all closed-ended questions on a 7-point Likert scale.

Finally, rememberers were asked to describe their relationship to the person who had generated the conflicting account, to date the incident to the nearest quarter month, and to indicate their liking and respect for the person who had generated the conflicting account. At the conclusion of the experiment, we asked rememberers' permission to use their accounts of both persons' memories in subsequent research.

Audience condition. Audience participants were telephoned 1 or 2 days prior to their experimental session. They were told that the study concerned people's memories for past events; they would read two different accounts of the same incident and answer questions.

The number of audience participants per experimental session ranged from 1 to 6. Participants were first told how we had collected descriptions of conflicting memories. They then read two accounts that had been written by a previous same-sex participant to whom they were randomly assigned. We identified the accounts as belonging to either the rememberer or the other person to provide audience participants with information that was available to rememberers. After they had read both accounts, they answered the same questions asked of the rememberers, except for items that only rememberers could be expected to answer.

Coding of open-ended data. Each accuracy explanation provided by rememberers and audiences was classified into one of 10 categories, described in Table 1. Categories 9 and 10 were created after we examined the responses that could not be coded in the original classification scheme; the remaining categories were derived a priori from the truth criteria discussed earlier. Categories 1–6 refer to various consistency criteria. Categories 7 and 8 concern type of detail in the memories.

All of the justifications provided by rememberers and audiences were coded into at least one of these categories. More than one code

could be applied to a response since some responses consisted of two or more sentences that addressed different issues concerning the accuracy of the statement. Note that Categories 1 and 2 could be used only for rememberers and Category 3 only for audience participants. Two raters coded all of the participants' responses. The interrater agreement for this procedure was 87.6% for rememberers' and 83.0% for audiences' justifications. Prior to data analysis, the raters discussed their disagreements and reached consensus on their classifications.

Finally, every statement in the two accounts of the incident provided by each rememberer was coded by two raters for whether it corroborated information in the other account, contradicted information in the other account, or was extraneous (i.e., unrelated) to information in the other account. The interrater agreement for this coding was 84.9%. The raters discussed and resolved their initial disagreements prior to data analysis.

Results

On the average, rememberers reported that 55.58 months ($SD = 69.61$ months) had elapsed since the incident on which they based their accounts had transpired. Most rememberers (92.5%) stated that the episode had occurred with a friend, significant other, or a member of their family. Rememberers indicated considerable liking ($M = 6.60$, $SD = .91$) and respect ($M = 6.13$, $SD = 1.14$) for the other person on a 7-point scale, with larger numbers indicating a more favorable rating. An example of the conflicting memories reported by the rememberers is presented in Table 2. In this case, the rememberer reported her own version of events and the account of her older sister. An alpha level of .05 was used for all statistical tests.

Agreement Coding

The number of statements coded as corroborating, contradicting, or extraneous to statements in the alternative account were totaled for each participant, yielding six scores per participant (three for each account). These totals were subjected to an analysis of variance (ANOVA), with account order (rememberer's account written first vs. other's account written first) as a between-subjects factor and account (rememberer vs. other's account) and statement agreement (content of statement similar, dissimilar, or extraneous to statements in the alternative account) as repeated measures. Accounts contained more corroborated ($M = 4.78$, $SD = 2.78$) than contradicted ($M = 3.49$, $SD = 2.32$) or extraneous ($M = 0.83$, $SD = 1.20$) statements [$F(2,37) = 45.06$, $MS_e = 9.06$]. Importantly, there were no significant effects involving account; rememberers had complied with the instructions to write descriptions of equivalent length for themselves and the other person.

Accuracy Ratings

Rememberers and audiences rated the accuracy of every statement in both accounts on a 7-point scale. For each participant, we calculated separate mean accuracy ratings for the corroborated and contradicted statements in each account (Table 3). The accuracy ratings for the

Table 1
Categories of Explanations for Accuracy Ratings

Category	Criterion	Example
1. Consistency with the rememberer's own usual behavior	Rememberers referred to their own idiosyncratic traits or behaviors to support or refute a statement in one of the accounts.	"I always walked with these two people to school."
2. Consistency with the other person's usual behavior	Rememberers referred to the other person's traits or behaviors.	"My father usually answers by saying 'Hello.' "
3. Consistency with the audience's memories or experiences	By calling upon their own experiences, audience participants evaluated the likelihood of a rememberer's statement.	"I've never heard of John Eric Hexum, therefore in my opinion this is not very accurate."
4. Normative behavior	Participants referred to the usual or probable behavior of most people, of a certain category of people, or of people in this type of situation.	"It was approximately the length of time it takes for someone to identify themselves on the phone."
5. Consensus	Participants pointed to agreement (or disagreement) between the two accounts.	"We both agree." "They say the same thing."
6. Internal coherence of the memory	Participants supported their accuracy judgments by referring to other portions of the written description as evidence.	"The statement is completely accurate due to the fact it is a prerequisite for the rest of the description of the event."
7. Sensory detail	Participants referred to the recall of specific sensory detail (colors, tastes, sounds, etc.) as evidence for the truth of a statement.	"I can visualize the tree and yard." "I can hear my Mom's voice."
8. Contextual detail	Participants noted the amount of detail reported.	"They're being very specific about a number of years, therefore showing some confidence and knowledge of when the event occurred."
9. Motivated remembering	Participants stated that there could be a hidden motive for remembering some aspect of the incident in a certain way.	"He doesn't want to admit saying that."
10. Theory of the nature of memory	Participants stated explicitly that a certain aspect of the incident would be particularly memorable (or easily forgotten).	"You will always remember a death, [sic] it's not something you make up." "It would be hard to remember the exact time."

extraneous statements were omitted from the analysis because only 12 rememberers had provided extraneous statements in both their own version and the conflicting version of the episode. Additionally, we found no significant sex differences in these or subsequent analyses; the results reported have been collapsed across sex. Unless noted otherwise, subsequent ANOVAs included condition (rememberer vs. audience), account (rememberer's vs. other's account), and agreement (content of statement either corroborated or contradicted statements in the alternative account) as repeated measures.

Rememberers and audiences judged statements that were corroborated across accounts to be more accurate than statements that were contradicted across accounts [$F(1,39) = 142.53$]. The analysis of accuracy judgments also revealed a significant three-way interaction [$F(1,39) = 9.36$]. Rememberers exhibited a significant bias in favor of self; moreover, the bias was stronger for dissimilar than for similar statements. Rememberers judged statements in their own accounts that conflicted with

statements in the other people's accounts to be more accurate than statements in the others' accounts that contradicted statements in the rememberers' own accounts [$t(39) = 5.14$]. Although the same comparison was also significant for corroborated statements, the effect was not as large [$t(39) = 2.27$]. In contrast to rememberers, audiences showed no systematic favoritism: They considered statements in the accounts of the rememberers and the other people to be equally valid [$t(39) = 1.27$ for corroborated statements, and $t(39) < 1$ for contradicted statements].

A direct comparison of rememberers' and audiences' ratings is revealing. Both rememberers and audiences evaluated statements that were corroborated across accounts as highly accurate; average ratings exceeded 6 on a scale on which 7 represented *completely accurate*. On the other hand, rememberers and audiences deviated in their ratings of contradicted statements. Rememberers rated their own contradicted statements as more accurate [$t(39) = 3.31$], and other people's contradicted statements

Table 2
Example of a Memory Conflict

Own Account	Other's Account (Older Sister)
I was 7 years old.	I was 10 years old.
I woke up at 7:30 a.m. in preparation for school.	I woke up at 4:30 a.m. for school.
I put my winter outerwear on, i.e., hat, scarf, snowpants.	She saw me put my winter clothes on.
I walked with two of my friends.	I walked alone.
No one was at school because it was a P.D. day.*	No one was at school because I was 3 hours early.
I returned home happily when I realized that school had been canceled.	I returned home upset that she set the alarm 3 hours ahead of time.

*Professional Development Day—schools are closed.

as less accurate [$t(39) = 2.22$] than did audiences. Whereas audiences used the consensus rule evenly, rememberers judged a lack of corroboration to be more damning to the validity of others' recollections than to their own.

Explaining Accuracy Ratings

Open-ended explanations. The coding of participants' open-ended explanations for their accuracy judgments is shown in Table 4. Rememberers used the same criteria to judge their own and the other person's accounts, with two exceptions. As predicted, rememberers were more likely to refer to sensory details ($\chi^2 = 5.00$) and less likely to mention consensus ($\chi^2 = 4.00$) when explaining their judgments of the accuracy of their own memories than when explaining their assessments of the other person's memories. We had anticipated that rememberers would make more use of normative behavior when judging the other person's memory; however, they made little reference to this standard with regard to either account.

The data also revealed systematic differences between the explanations provided by rememberers and those offered by audiences. Over 80% of rememberers reported basing their judgments of the accuracy of a particular incident primarily on its internal coherence; no other category code was assigned to even 50% of rememberers. In contrast, audiences provided a more diverse set of explanations. They most frequently considered the consistency of the circumstance with their own remembered experiences; audiences also reported fairly extensive use of consensus, theories of the nature of memory, and the normativeness of the behavior. As predicted, comparisons between rememberers and audiences revealed that audiences made significantly more use of normative behavior ($\chi^2 = 16.16$). Audiences also made significantly more use of consensus than rememberers, but only when judging the rememberers' own accounts ($\chi^2 = 10.76$). As expected, rememberers made more use of sensory detail than did audiences, and the difference was significant only for their own accounts ($\chi^2 = 11.10$).

There were some additional, unanticipated, findings. Rememberers relied more on the internal coherence of the memory ($\chi^2 = 15.24$) and less on the amount of contextual detail ($\chi^2 = 18.46$) than did audiences. Finally, audiences were more likely than rememberers to invoke theories of the nature of memory ($\chi^2 = 7.27$) to explain their assessments of accuracy.

Closed-ended assessments. The three questionnaire items that asked participants about the amount of detail in each account were combined into one measure. The mean reliability of this measure, estimated by Cronbach's alpha, was .87. Rememberers also judged the behavioral consistency of each account, an assessment omitted from audiences' questionnaires because they could not make an informed evaluation. The means of the detail, coherence, and behavioral consistency measures are presented in Table 5.

Both detail and coherence ratings differed by account, but not by experimental condition. Rememberers and audiences rated the rememberers' accounts as more detailed [$F(1,39) = 8.16$, $MS_e = 1.84$] and coherent [$F(1,39) = 7.04$, $MS_e = 2.31$] than the other people's accounts. Additionally, rememberers judged their own accounts to be more behaviorally consistent [$t(39) = 2.37$] than other people's accounts.

Next, we examined the relations between respondents' mean accuracy ratings for each account and their evaluations of the qualities of the account. As predicted, when rememberers provided higher detail and coherence ratings for their own accounts, they also reported higher accuracy judgments [$r(39) = .66$ and $r(39) = .53$, respectively]. Their assessments of the behavioral consistency of their own accounts were not, however, significantly related to accuracy ratings. In addition, rememberers' ratings of the qualities of the other people's accounts were not significantly correlated with their assessments of the accuracy of those accounts. The relation between audiences' assessments of detail and coherence and their judgments of accuracy was relatively weak, but attained significance for their ratings of the other people's accounts [$r(39) = .38$ and $r(39) = .35$, respectively]. In sum, the correlations suggest that detail and coherence were most strongly related to rememberers' evaluations of the accuracy of their own accounts, and less relevant to the judgments of audiences.

Table 3
Mean Accuracy of Statements by Condition, Account, and Agreement (Experiment 1)

Condition/Agreement	Account			
	Rememberer		Other	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Rememberer				
Corroborated	6.67	.45	6.34	.93
Contradicted	5.67	1.25	3.87	1.82
Audience				
Corroborated	6.40	.61	6.27	.79
Contradicted	4.88	1.31	4.67	1.46

Table 4
Proportion of Participants in Each Condition Using
Explanations at Least Once (Experiment 1)

Criterion	Rememberer		Audience	
	Own	Other	Rememberer	Other
1. Consistency with rememberer's usual behavior	.18	.23	—	—
2. Consistency with other's usual behavior	.20	.25	—	—
3. Consistency with audience's memories or experiences	—	—	.75	.58
4. Normative behavior	.08	.08	.40	.38
5. Consensus	.18	.38	.53	.60
6. Internal coherence of memory	.85	.80	.35	.40
7. Sensory detail	.30	.10	.03	.03
8. Contextual detail	.00	.00	.25	.23
9. Motivated remembering	.03	.10	.15	.18
10. Theory about nature of memory	.23	.15	.50	.55

Note—Dashes indicate a category that could not be assessed by participants in that experimental condition.

Is Recall Self-Serving?

Participants indicated how flattering each version was to the rememberer and the other person on a 7-point scale. Both rememberers ($M = 5.82$, $SD = 1.30$ for rememberers' accounts; $M = 2.30$, $SD = 1.44$ for other people's accounts) and audiences ($M = 5.62$, $SD = 1.82$ vs. $M = 2.80$, $SD = 1.83$) judged accounts to be more flattering to their narrators [$t(39) = 9.47$ and $t(39) = 6.00$, respectively].

Recency of Discussing Memory Conflict

Participants were asked when they had last discussed the incident with the person with whom they had a memory conflict. Because their answers were sometimes rather vague (e.g., "a few months ago"), we placed their responses into one of five categories (1 = within last week, 2 = within last month, 3 = within last 6 months, 4 = within last year, 5 = more than 1 year ago). Only 11 (28%) of the rememberers reported discussing the incident in the past week—that is, in the interval between being contacted for the experiment and their participation. The remaining (cumulative) percentages were 45% within last month, 68% within last 6 months, and 78% within last year. The majority of participants had not recently discussed their memories with the other person. Reanalyses of the data, including recency of discussion as a factor, indicated that none of the effects involving recency approached significance.

Discussion

Our major concern was *how* people evaluate the accuracy of conflicting memories. Participants' open-ended explanations of their accuracy ratings provide a perspective on their thinking about accuracy. Rememberers reported using the same criteria to evaluate their own and the other people's accounts, with two exceptions. As expected, rememberers reported using consensus more frequently to evaluate other people's memories and sensory detail more frequently to evaluate their own recollections. Rememberers' differential use of consensus was reflected

in their accuracy ratings. A lack of corroboration had more impact on rememberers' ratings of other people's accounts than on their ratings of their own accounts. Unexpectedly, rememberers did not report much use of normative behavior as a standard for judging either account.

Over 80% of rememberers reported that they assessed accuracy by considering the degree to which a memory was internally coherent. Indeed, this consistency standard was the only criterion that was reported by more than half of the rememberers. Although we emphasized the importance of sensory detail to rememberers, fewer than 40% of rememberers referred to this category even when judging their own accounts.

Audience participants reported rather heavy use of all of the consistency criteria. Comparisons between the explanations provided by audience participants and rememberers provided further evidence for a self-other difference in use of consensus and sensory detail. Audience participants reported using consensus to a considerable degree, and sensory detail hardly at all. Audience participants did not ignore detail altogether, however. They reported making more use of contextual detail than did rememberers. Audience participants also reported making substantial use of normative behavior and theories of the nature of memory, relative to rememberers. People seem to use general norms and theories as standards pri-

Table 5
Closed-Ended Ratings of Memory Qualities
by Condition and Account (Experiment 1)

Condition/Dimension	Account			
	Rememberer		Other	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Rememberer				
Detail	5.63	1.02	4.88	1.37
Coherence	6.05	1.04	5.25	1.72
Behavioral consistency	5.78	1.42	5.18	1.65
Audience				
Detail	5.17	1.21	4.69	1.21
Coherence	5.73	1.32	5.25	1.53
Behavioral consistency				

marily when they have no personal memory of the episode or direct knowledge of the individuals involved.

We also examined the participants' judgments of the accuracy of the accounts. As predicted, rememberers rated their own recollections of events to be more accurate than other people's contradictory versions. This favoritism toward the self does not appear to be simply a response bias since rememberers' accuracy assessments were influenced by the presence or absence of corroboration. Although rememberers assigned quite high accuracy ratings even to disputed elements of their accounts, they judged their statements that were substantiated by others to be more accurate than their statements that were challenged.

On the closed-ended measures of the memories, rememberers indicated that the individuals acted more consistently with their personalities or attitudes in their own accounts than in the others' accounts. Both audiences and rememberers judged the rememberers' own accounts to be more detailed and coherent than the other people's accounts. The relations between these closed-ended judgments of the memories and respondents' mean accuracy ratings for each account were inconsistent. Detail and coherence ratings predicted rememberers' judgments of their own accounts and audience participants' judgments of the other people's accounts. The significant correlations replicate the findings of earlier research (e.g., Bell & Loftus, 1989), but it is unclear why similar relationships were not obtained for rememberers' ratings of the other people's accounts or audience participants' ratings of the rememberers' accounts.

EXPERIMENT 2

In the first experiment, rememberers generated and evaluated both versions of the conflicting memories. Perhaps their portrayal of the contrasting recollections did not fairly represent the other people's views. Rememberers may have recalled and reported information selectively, representing their own recollections more effectively. The generalizability of the findings, then, may be limited by the fact that 1 rememberer described both points of view. In Experiment 2, pairs of participants who possessed conflicting memories of a shared past episode evaluated the accuracy of each other's recollections. The participants took turns telling their recollections. One individual from each pair provided a narrative description of the event, which the second individual considered before reporting his/her own description. Both individuals then rated the two conflicting stories on several dimensions. We sought to determine whether the findings obtained in Experiment 1 would generalize to situations in which both parties were given the opportunity to report their own accounts of the incident.

Method

Participants

Fifty pairs of participants were recruited through the Department of Psychology participant pool and postings around the campus.

Each individual received either course credit or \$10 for participating. Pairs of individuals were eligible for the experiment if they had been friends for longer than a year or were members of the same family. These criteria were designed to ensure that participants would have a history of shared experiences, and thus potentially conflicting recollections of some past events. The data from 3 dyads were discarded because the questionnaire responses were incomplete and the data from an additional dyad were discarded because a participant reported falsifying part of her story to "test" her boyfriend's memory. The final sample included 55 women and 37 men in the following pairings: 37 male-female dyads, 9 female-female dyads, and no male-male dyads. Twenty-seven pairs had been in a romantic relationship for more than 1 year, 12 were siblings, 4 were in a parent-child relationship, and 3 had been friends for more than 1 year.

Procedure

Participants were contacted approximately 1 week before the experimental session. They were told that the study concerned people's conflicting memories for the same event. The caller explained to potential participants that they and a partner who had shared an experience that they remembered differently would describe their own versions of the event. The caller provided examples of events that might be remembered differently (e.g., a first encounter, childhood events, practical jokes) and a specific example of a conflicting memory from Experiment 1 to ensure that participants understood the concept of conflicting memories and the types of remembered events being studied. Additionally, participants were told that misunderstandings at the time of the event did not constitute conflicting memories. Participants were asked if they could think of an incident that would qualify for the experiment. Participants unable to think of a conflicting memory at the time of the initial phone call were asked to discuss past events with their partners to see if they could remember one. All participants were called the night before their appointment to confirm that they and their partners had been able to agree on the episode they wanted to report.

Two versions of the study were available to participants. Where possible, the pairs reported to the laboratory to complete the questionnaires. Twenty-one of the 46 dyads answered the questionnaires in the laboratory. The remaining 25 dyads completed the questionnaires in their own homes.

Questionnaires administered in the laboratory. Members of each pair were randomly assigned to either the role of Rememberer 1 or Rememberer 2. Rememberer 1 wrote his/her version of the chosen incident first, with a carbon copy attached. Rememberer 2 subsequently received the copy, read it, and responded by writing out his/her own version of the incident, also with a carbon copy. Both rememberers were encouraged to provide as much detail as possible, although Rememberer 2 was also asked to try to keep his/her version at about the same level of detail as that of Rememberer 1.¹

Next, rememberers were given their own account and their partner's version (carbon copies) and asked to begin the second part of the questionnaire. They independently evaluated the accuracy of each story; participants in half of the dyads rated their own story first and those in the remaining dyads rated their partners' first. As in Experiment 1, rememberers rated the accuracy of each line in both accounts on a 7-point Likert scale and provided written justifications for the accuracy rating that they assigned to each statement.

Participants were then asked the same closed-ended questions as in Experiment 1. In Experiment 2, however, in addition to assessing the accuracy of each statement in each account, participants evaluated the *overall* accuracy of each account on a single 7-point scale.

Take-home questionnaire. In the take-home version of the experiment, the participant contacted on the telephone attended a 15-min information session on how to complete the questionnaires. Participants were again randomly assigned to the role of Rememberer 1 and Rememberer 2. The experimenter stressed that participants

should complete the questionnaires at the same time, but separately and independently, in different rooms if possible, with contact between the rememberers limited to exchanging the carbon copies of the event descriptions. The questionnaires used for the take-home version of the experiment were identical to those used in the laboratory version. At the conclusion of the information session, a time within the next week was established for the participants to return the questionnaires.

Coding of data. Initially, every statement in the two accounts of the incident provided by each dyad was coded by two raters for whether it corroborated information in the other account, contradicted information in the other account, or was extraneous (i.e., unrelated) to information in the other account (interrater agreement = 91.7%). In addition, the open-ended explanations of the accuracy ratings were coded using the same categories as in Experiment 1 (interrater agreement = 95.4%).

Results

On average, participants reported that the episode occurred 46.27 months earlier ($SD = 49.69$). Participants indicated that they liked and respected the other person ($M_s = 6.71$ and 6.48 , respectively, on a 7-point scale in which higher numbers reflected more favorable ratings).

Preliminary analyses revealed no significant effects for the gender makeup of the dyads (male–female vs. female–female), the order in which participants rated the accounts (own account first vs. other account first), or whether participants completed the study in the laboratory or at home. An a priori power analysis revealed that the power to detect a moderate effect (Cohen, 1977) of gender, order, and location was relatively low (power = .25, .39, and .39, respectively). Thus, we cannot draw confident conclusions about the meaning of these null effects. Nevertheless, because no significant effects emerged and we had no specific a priori hypotheses, the data are reported collapsed across these variables. We averaged the responses of the 2 participants in a dyad, obtaining a mean score for own account and a mean for other's account for each pair.²

Accuracy Ratings

As in Experiment 1, the accounts contained more corroborated ($M = 5.91$, $SD = 2.86$) than contradicted ($M = 3.97$, $SD = 1.73$) or extraneous ($M = 1.35$, $SD = 1.49$) statements [$F(2,90) = 44.95$, $MS_e = 10.74$]. Because only 20 participants were coded as having extraneous statements, we excluded these statements from subsequent analyses. Participants rated the accuracy of every statement in both accounts on a 7-point scale. The mean accuracy judgments for statements that were corroborated or contradicted in the two accounts are shown in Table 6.

Table 6
Mean Accuracy of Statements by
Account and Agreement (Experiment 2)

Agreement	Account			
	Own		Other	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Corroborated	6.61	.37	6.34	.47
Contradicted	6.10	.65	3.03	1.21

A 2 (agreement: corroborated statements vs. contradicted statements) $\times$ 2 (account: own vs. other) repeated measures ANOVA of the accuracy judgments replicated the findings from Experiment 1. Participants judged corroborated statements to be more accurate than contradicted statements [$F(1,45) = 292.29$, $MS_e = .57$] and judged the statements in their own accounts to be more accurate than the statements in their partners' accounts [$F(1,45) = 224.0$, $MS_e = .57$]. The ANOVA also revealed a significant interaction [$F(1,45) = 161.46$, $MS_e = .56$]. Participants rated the statements in their own accounts that were contradicted in their partners' accounts as much more accurate than the statements in their partners' accounts that were contradicted in their own accounts [$t(45) = 14.60$]. In contrast, participants assessed the statements in their own accounts that were corroborated in their partners' versions to be only slightly, albeit significantly, more accurate than the statements in their partners' accounts that were corroborated in their own [$t(45) = 3.73$]. As in the first experiment, lack of corroboration appears to have been more harmful to judgments of the accuracy of other people's accounts than to judgments of one's own recollections. In Experiment 2, we also obtained a rating on a 7-point scale of the overall accuracy of each account. Participants judged their own accounts to be more accurate ($M = 5.90$, $SD = .56$) than their partners' [$M = 4.28$, $SD = 1.05$, $t(45) = 9.16$].

Explaining Accuracy Ratings

Participants' open-ended explanations for their accuracy ratings were coded into the same categories as those used in Experiment 1 (Table 7). The pattern of results is consistent with that obtained in Experiment 1. Almost 90% of rememberers reported basing their judgments of accuracy on the internal coherence criterion; most of the other category codes were assigned to fewer than 50% of the participants (the exception was the consensus code). In general, participants reported using the same explanation categories for their own and the others' accounts, with a few notable exceptions. As in Experiment 1, participants were more likely to report using consensus for assessing other people's memories ($\chi^2 = 24.51$) and sensory detail for assessing their own ($\chi^2 = 4.69$). They also reported a greater tendency to use consistency with their own behavior ($\chi^2 = 5.62$) as a basis for determining the accuracy of their own memories.

Closed-Ended Measures

Rememberers' ratings of the degree of detail, coherence, and behavioral consistency in the accounts are shown in Table 8. Participants rated their own accounts as more detailed [$t(45) = 6.53$], coherent [$t(45) = 5.08$], and behaviorally consistent [$t(45) = 2.98$] than the other people's accounts. These findings replicate those obtained in Experiment 1.

Next we examined the relation between these measures and participants' assessments of the overall accuracy of each account. The correlation coefficients are

Table 7
Proportion of Participants Using Explanations
at Least Once for Ratings of Own Account
and Other's Account (Experiment 2)

Criterion	Account	
	Own	Other
1. Consistency with rememberer's usual behavior	.40	.24
2. Consistency with other's usual behavior	.20	.20
3. Normative behavior	.11	.13
4. Consensus	.23	.59
5. Internal coherence of memory	.88	.88
6. Sensory detail	.23	.11
7. Contextual detail	.03	.02
8. Motivated remembering	.03	.05
9. Theory about nature of memory	.08	.05

displayed in Table 9. As in Experiment 1, individuals' ratings of the degree of detail and coherence in their accounts were significantly correlated with their judgments of accuracy, whereas behavioral consistency did not predict accuracy. In contrast to the findings from Experiment 1, participants' ratings of the degree of detail and coherence in the other person's account also predicted their judgments of the accuracy of that person's account. When the three measures were entered simultaneously into a regression equation to predict the overall accuracy ratings, the detail measure accounted for most of the variance in the accuracy ratings (for participants' own accounts, standardized $\beta = .72$; for others' accounts, standardized $\beta = .53$). The correlations are very similar, though slightly weaker, if participants' mean ratings of the accuracy of each statement are substituted for the overall accuracy measure in these analyses.

Was Recall Self-Serving?

As in Experiment 1, participants rated how flattering each version of the incident was to each person. Once again, they judged the accounts to be more flattering to their narrators ($M = 4.14$, $SD = 1.45$) than to the other person involved [$M = 3.43$, $SD = 1.31$; $t(45) = 4.24$].

GENERAL DISCUSSION

Consensus is generally viewed as the "gold standard" for evaluating the authenticity of recollections in the absence of objective evidence. In the courts and in everyday life, corroboration is taken as compelling evidence for the validity of memories, and a lack of consensus is viewed as problematic. The present findings suggest, however, that whether or not people focus on consensus information depends on whose memory they are evaluating. In both studies, rememberers reported using consensus more often to judge other people's memories than to judge their own. In Experiment 1, audiences reported greater use of consensus when judging the accuracy of rememberers' accounts than did the rememberers themselves. The differential use of consensus was also reflected in rememberers' accuracy ratings: In both studies, a lack

of consensus was more detrimental to rememberers' judgments of the validity of other people's accounts than to their evaluations of their own recollections.

We hypothesized that people would rely on their subjective experience of sensory detail, rather than consensus, when assessing the accuracy of their own memories. The data offer only partial support for this claim. Although rememberers did report greater use of sensory detail in both studies when judging their own accounts, their use of this standard was relatively infrequent. Instead, both rememberers and audience participants most commonly reported basing their accuracy judgments on the internal coherence of each memory.

The high degree to which participants reported using an internal coherence criterion is intriguing. Perhaps individuals suppose that this standard provides a stronger and more defensible justification for their accuracy ratings than criteria such as amount of detail, normative behavior, or consensus. Alternatively, our procedure of asking individuals to judge and explain the accuracy of each statement may have contributed to this finding. If we had asked them to focus on the entire account rather than sections of it, they might have dwelled less on the relations among the parts of the memory.

From this perspective, the closed-ended assessments of detail, coherence, and behavioral consistency provide valuable additional information. Participants made these assessments on the entire account. We proposed that because of the differing cognitive perspectives that rememberers have on their own experiences versus those of other individuals, they would judge their own accounts to be more detailed, coherent, and consistent with the usual behaviors of the protagonists. These effects were obtained in both studies.

As expected, people judged their own accounts to be more accurate than the conflicting versions. We hypothesized that people's evaluations of detail and coherence would predict their judgments of accuracy. In Experiment 1, rememberers' assessments of detail and coherence predicted their judgments of the accuracy of only their own accounts. In the second experiment, rememberers' assessments of detail and coherence were positively correlated with their judgments of the accuracy of both accounts. The discrepant findings may well reflect the shift in procedures. In Experiment 1, participants assessed their own reports of the other person's memory. In Experiment 2, they directly evaluated the other person's mem-

Table 8
Closed-Ended Ratings of Memory Qualities
by Account (Experiment 2)

Dimension	Account			
	Own		Other	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Detail	5.78	.62	4.73	.93
Coherence	6.02	.67	5.19	1.21
Behavioral consistency	5.57	1.13	5.13	1.18

Table 9
Correlation of Memory Qualities With
Overall Accuracy Ratings (Experiment 2)

Dimension	Accuracy Rating	
	Own	Other
Detail	.64	.62
Coherence	.40	.46
Behavioral consistency	.08	.26

Note—Table entries are Pearson correlation coefficients indicating the relation between participants' overall accuracy rating for an account and their ratings of the qualities of that same account.

ory. Conceivably, participants are more sensitive to the detail and coherence of the other's account when they are directly confronted with that person's report of the episode.

People's accounts were more complimentary to themselves than to the other person. This finding is consistent with the idea that people construct stories of the past that reflect their attitudes toward the individuals in the memory. People tend to have uniquely high opinions of themselves (Taylor & Brown, 1988); as a consequence, they should tend to portray their actions more favorably than other people would.

In the present research, we examined memory conflicts among people who generally liked and respected each other. Our participants seemed more amused than troubled by the divergent recollections. We did not study the types of sensational memory conflicts reported in the media, in which disputants' competing claims can have serious implications for each person's reputation and well-being. In such circumstances, individuals may be more interested in defending their own versions of history than in establishing truth. Does our analysis of how people assess the accuracy of memories apply to conflicts in which people are highly motivated to obtain public acceptance of their own depiction of reality?

We suggest that people rely on the same *potential* list of truth criteria whether they are motivated to assess truth or to defend their own accounts. The set of truth criteria that we studied captures our data well, but is not exhaustive (for additional criteria, see Ross, 1997, Undeutsch, 1988, and Yuille, 1988). For instance, people can use the circumstances in which a memory is expressed as a basis for evaluating its validity (e.g., whether it was elicited under hypnosis or during therapy, Loftus, 1993).

When people are motivated to verify a particular version of an episode, they may use the truth criteria selectively to justify their preferred conclusions, especially in public debate. The truth criteria are sufficiently varied to allow people to select standards that provide the strongest support for an account that they favor. If their memory lacks corroboration, they may point to the amount of sensory detail it contains, or to its internal coherence. In contrast, if the memory seems incoherent but is corroborated, rememberers may emphasize the latter.

The present results do not appear to indicate that people were *idiosyncratically* choosing criteria that favor their

own accounts. For the most part, individuals described using the same standards to evaluate both accounts. The discrepancies that did occur can be interpreted as reflecting systematic differences in the cognitive perspectives that people bring to bear on their own and other people's memories. In our research, people's judgments of the accuracy of memories did not have significant personal and social implications. Further research is required to study the impact of different motivations (e.g., to establish fact vs. defending a particular account) on people's use of the truth criteria.

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NOTES

1. We adopted this procedure to ensure that the members of each dyad produced accounts that were structurally similar and thus amenable to our open-ended coding. As reported in note 2, the major findings are not qualified by order of remembering. Thus the account provided by the first person was not qualitatively different from the account provided by the second person, who saw the first story prior to writing his/her own version.

2. In addition to these dyad-level analyses, we performed ANOVAs that included the order of remembering (Rememberer 1 vs. Rememberer 2) as a within-subjects factor. The analysis for ratings of statement accuracy revealed a significant interaction between account (own vs. other), statement agreement (corroborated vs. contradicted), and order of remembering [$F(1,45) = 5.21$, $MS_e = 1.03$]. This three-way interaction effect indicated that the account $\times$ agreement interaction that we have described was more pronounced for the 2nd rememberer than for the 1st rememberer. However, it did not qualify the basic pattern of effects that we have described: The account $\times$ agreement interaction was highly significant for both Rememberer 1 [$F(1,45) = 41.67$, $MS_e = 1.50$] and Rememberer 2 [$F(1,45) = 189.90$, $MS_e = .66$]. Similarly, for all other measures, the results that we report were not qualified by the order of remembering. Because we had no a priori hypotheses concerning the effects of being the 1st or 2nd rememberer, we collapsed across this methodological factor.

(Manuscript received April 29, 1997;
revision accepted for publication January 27, 1998.)