

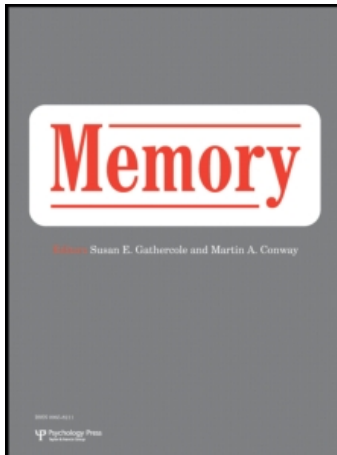
This article was downloaded by: [Macquarie University]

On: 1 September 2009

Access details: Access Details: [subscription number 907465007]

Publisher Psychology Press

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



## Memory

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title-content=t713683358>

### How did you feel when “The Crocodile Hunter” died? Voicing and silencing in conversation influences memory for an autobiographical event

Celia B. Harris <sup>a</sup>; Amanda J. Barnier <sup>a</sup>; John Sutton <sup>a</sup>; Paul G. Keil <sup>a</sup>

<sup>a</sup> Macquarie University, Sydney, Australia

First Published on: 27 August 2009

**To cite this Article** Harris, Celia B., Barnier, Amanda J., Sutton, John and Keil, Paul G. (2009) 'How did you feel when “The Crocodile Hunter” died? Voicing and silencing in conversation influences memory for an autobiographical event', *Memory*, 99999:1,

**To link to this Article:** DOI: 10.1080/09658210903153915

**URL:** <http://dx.doi.org/10.1080/09658210903153915>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

# How did you feel when “The Crocodile Hunter” died? Voicing and silencing in conversation influences memory for an autobiographical event

Celia B. Harris, Amanda J. Barnier, John Sutton, and Paul G. Keil

*Macquarie University, Sydney, Australia*

Conversations about the past can involve voicing and silencing; processes of validation and invalidation that shape recall. In this experiment we examined the products and processes of remembering a significant autobiographical event in conversation with others. Following the death of Australian celebrity Steve Irwin, in an adapted version of the collaborative recall paradigm, 69 participants described and rated their memories for hearing of his death. Participants then completed a free recall phase where they either discussed the event in groups of three or wrote about the event on their own. Finally, participants completed the original questionnaire again, both 1 week and 1 month after the free recall phase. Discussion influenced later memories for hearing of Irwin’s death, particularly memories for emotion and shock. Qualitative analysis of the free recall phase suggested that during conversation a shared understanding of the event developed, but that emotional reactions to the event were silenced in ways that minimised the event’s impact. These findings are discussed in terms of the processes and consequences of sharing public and personal memories in conversation.

**Keywords:** Silencing; Collaborative recall; Discussion and memory; Listeners; Social memory.

Remembering the past is an inherently social activity, something we do with and for other people. In our various social groups we talk about a range of events: everyday and significant, recent and distant, shared and unshared. Imagine, for instance, a family reminiscing about the last vacation they took together, or a couple discussing their separate days over dinner, or a group of old friends at a school reunion talking about what they have each been doing for the last 10 years. Remembering with others is as ubiquitous and mundane an activity as remembering alone (Barnier, Sutton, Harris, & Wilson, 2008). Hirst

and Echterhoff (2008) argued that these conversations are a “significant means of creating shared memories” (p. 190).

Recently theory and research has also focused on what is silenced during conversations, either explicitly through correction or dispute, or implicitly through avoidance or self-censorship. Fivush (2004) argued that during social interactions, certain memories are “validated or invalidated by the individual, by the conversational partner and by the larger community” (p. 3). Validated experiences—where the individual’s point of view is acknowledged as appropriate—are “voiced”,

---

Address correspondence to: Celia Harris, Macquarie Centre for Cognitive Science, Macquarie University, Sydney NSW 2109, Australia. E-mail: [charris@maccs.mq.edu.au](mailto:charris@maccs.mq.edu.au)

The preparation of this paper and the research we report is part of a larger long-term project on individual and group memory, and was supported by: (1) an Australian Research Council PhD scholarship to Celia Harris, (2) an Australian Research Fellowship to Amanda Barnier, (3) an Australian Research Council Discovery-Project Grant (DP0770271) to Amanda Barnier and John Sutton. We are grateful for that support. We are also most grateful to Zoe Hill, Amanda Sie, and Jasmina Petkoska for research assistance. We would like to thank Kate McLean and Monisha Pasupathi for their thoughtful editorial comments, and two anonymous reviewers for their insightful comments on an earlier draft.

while invalidated experiences—where an individual's point of view is regarded as inappropriate—are “silenced” (Fivush, 2004). Voiced memories are not just mentioned; they are supported and validated by the listeners. In the same way, silenced memories are not necessarily unmentioned; they are silenced by the invalidation of the group. Fivush (2004) suggested that these processes of voicing vs silencing, both at an individual and group level, can have ongoing influences on the way that events are later remembered and talked about.

In the current study we investigated the impact of conversation on memories for the death of “The Crocodile Hunter”, Steve Irwin. On the 4th of September 2006 news broke that Irwin had been killed by a stingray while filming a documentary. Both in Australia and worldwide, his death and its aftermath received a great deal of media attention. He was the subject of tributes and memorials, and criticism of Irwin was treated harshly (Coulton, Coorey, & Tadros, 2006; Wainwright & Baker, 2006; Williams & Hearn, 2006). We focused on this event because it was broadly shared by our participants and although each individual had their own personal autobiographical memory for hearing the news of Irwin's death, there was also a great deal of culturally shared information via the media. We focused on both the “products” of conversation—how conversation influenced subsequent individual memory—and the “processes” of conversation—how individuals interacted to validate and invalidate each others' memories (Fivush, 2004). We were particularly interested in how the processes of voicing and silencing might shape the product of subsequent individual recall.

A number of lines of research indicate that remembering with others influences later individual recall (see Harris, Paterson, & Kemp, 2008). For example, the collaborative recall paradigm (Basden, Basden, & Henry, 2000; Weldon & Bellinger, 1997) has demonstrated that remembering with others inhibits the recall of new information on a later individual recall test; after collaboration people remember more mentioned items but remember fewer items that were not mentioned during discussion (Basden et al., 2000). Similarly, Cuc, Koppel, & Hirst, (2007) extended Anderson, Bjork, and Bjork's (1994) retrieval-induced forgetting paradigm to a social context, arguing that group conversations function as a form of retrieval practice. They found that participants remembered more mentioned

information, and forgot more unmentioned but related information (relative to unmentioned, unrelated information), following a conversation regardless of whether they were the speaker or the listener. That is, a speaker's conversational recall shapes both their own individual memory and the individual memory of their listener. Other relevant findings come from research on false memory. The social contagion paradigm (Roediger, Meade, & Bergman, 2001) uses confederates who mention incorrect items during collaboration with a genuine participant. The related memory conformity paradigm (Gabbert, Memon, & Allan, 2003) has participants view slightly different versions of stimuli before recalling together. Research in both these paradigms has demonstrated that, following exposure to misinformation via discussion, participants incorrectly recall information that they themselves never saw (Gabbert et al., 2003; Meade & Roediger, 2002; Roediger et al., 2001).

Research across these experimental paradigms converges on the view that social interaction shapes subsequent individual memory: following discussion, individuals are more likely to remember mentioned items (even when these items are incorrect), and are more likely to forget unmentioned items. However, research in these paradigms has focused mostly on neutral stimuli, like words, stories, or pictures. The influence of broader social processes of the kind invoked by Fivush (2004) is likely to be stronger when discussing autobiographical, emotional events, because people are likely to be motivated by a range of individual and social goals. In everyday conversations simply remembering as much as possible is not the primary goal of remembering (Alea & Bluck, 2003; Marsh, 2007). The goals that are most important depend on the particular group and particular remembering occasion, and might include being polite, agreeable, likeable, or entertaining, creating intimacy, or creating a shared understanding (Alea & Bluck, 2003; Barnier et al., 2008; Echterhoff, Higgins, & Groll, 2005). These conversational goals may be important determinants of how an event is recalled, both during conversation and subsequently (Tversky & Marsh, 2000).

One important goal when discussing emotional events is emotion management (Pasupathi, 2003). People are particularly likely to discuss unpleasant events to help deal with negative emotions (Luminet, Bouts, Delie, Manstead, & Rimé, 2000). Research from the clinical domain has suggested

that both writing and talking about negative events can reduce their emotional intensity (Mehl & Pennebaker, 2003; Pennebaker, 1997). Reduction in emotion following discussion—termed the “fading affect bias”—is particular to negative events, and does not occur for positive events (Skowronski, Gibbons, Vogl, & Walker, 2004). The more that negative memories are discussed, the more negative emotion decreases (Skowronski et al., 2004). But while conversation may influence people’s current emotional state, it is less clear how conversation might influence the way people remember feeling at the time of the event itself.

These conversational goals can influence memory in two ways. First, perceived audience biases can result in an individual “tuning” their recall to their audience, by deliberately mentioning certain details and not mentioning others (Higgins, 1992). Experimental research has demonstrated that recalling with a biased perspective has ongoing consequences for memory, known as the “saying-is-believing effect” (Higgins & Rholes, 1978) where people subsequently remember information consistent with this biased perspective (Echterhoff, et al., 2005; Echterhoff, Higgins, Kopietz, & Groll, 2008; Tversky & Marsh, 2000). Echterhoff and colleagues (2005, 2008) demonstrated that memory was most influenced when the goal of the speaker in the conversation was to create a shared reality; that is, to construct their knowledge and understanding of an event or information jointly with their audience, rather than simply being polite or entertaining (Echterhoff et al., 2005, 2008).

The saying-is-believing literature is consistent with Fivush’s (2004) concept of self-voicing and silencing. However, the experiments described did not examine genuinely social situations. Participants wrote a biased description that they believed would be read by another person (e.g., Tversky & Marsh, 2000), but they did not interact with anyone else. In social situations people are likely to jointly construct memories in a dynamic, interactive way (Bavelas, Coates, & Johnson, 2000). For instance, Pasupathi’s (2001) model of autobiographical memory suggests that conversational goals and listener behaviour interact to influence how a discussed event will be recalled in future. If an event is recalled in a way that elicits a desirable response from the listener, it is likely to be recalled in the same way in future. If the listener’s response is undesirable, the event is likely to be recalled differently (Pasupathi, 2001).

This model has been supported by evidence that the nature and response of an audience determine how an event is remembered. For instance, Pasupathi, Stallworth, and Murdoch (1998) found that participants recalled more when their listener was attentive than when they were inattentive. This interactive process captures Fivush’s (2004) concept of other-voicing and silencing. How an audience validates or invalidates recall will determine whether and how an event is remembered in future.

In the current study we examined how conversation influenced memory for hearing of Steve Irwin’s death: a salient, autobiographical event. We examined the influence of conversation on a number of measures, including clarity of recall, confidence in recall accuracy, memory for shock and emotion experienced when hearing the news, and beliefs about the significance of the event. In terms of memory for the autobiographical details of hearing the news, might conversation influence what and how well people remembered? In terms of memory for emotions and reactions to the event, might conversation influence how people remembered feeling and thinking about the event? Finally, in addition to these products of recall, we were interested in the processes of recall. Might we find evidence of voicing and silencing in conversations, and would these processes determine how participants’ memories were influenced?

## METHOD

### Participants

We tested 69 undergraduate psychology students at the University of New South Wales, Sydney, Australia (48 women, 21 men, *M* age = 19.17 years, *SD* = 1.78) in a 2 (free recall: individual vs group) × (3) (recall occasion: Recall 1 vs Recall 2 vs Recall 3) mixed-model design. They participated in return for course credit. Participants had lived in Australia for an average of 16.94 years (*SD* = 4.07), i.e., since age 2.23 years. All were fluent English speakers. Forty-seven participants spoke English at home, while 22 spoke a language other than English at home.<sup>1</sup> Years in Australia and home language did not influence the results

<sup>1</sup> A total of 19 participants spoke a Chinese language (Mandarin or Cantonese) at home, 1 spoke Vietnamese, 1 spoke Urdu, and 1 spoke Dari.

we report here. Of the 69 participants, we tested 39 in the individual condition and 30 in the group condition. Participants completed the laboratory component of the study between 17 and 53 days after Steve Irwin's death ( $M = 36.46$ ,  $SD = 12.79$ ).

## Materials

We used a memory questionnaire to index participants' memories for hearing about Steve Irwin's death. The first part of the questionnaire was a series of free response questions about participants' autobiographical memories: (1) Where were you? (2) Who were you with? (3) What were you doing? (4) How did you find out? (5) How did you feel and what were you thinking? (6) Did you change what you were doing when you found out? After each question participants rated the clarity of their memory for that detail and their confidence in the accuracy of that detail on a Likert scale (where 1 = not at all, 10 = very).

The second part of the questionnaire was a series of ratings indexing participants' reactions to and beliefs about the event: (7) How important was Steve Irwin's death to you personally? (8) ... to Australia? (9) How much do you think Steve Irwin's death will have consequences for you personally? (10) ... for Australia? (11) When you heard that Steve Irwin died, how emotional were you? (12) ... how upset were you? (13) ... how sad were you? (14) ... how shocked were you? (15) ... how surprised were you? (16) How much have you talked about Steve Irwin's death with other people? (17) ... thought on your own? (18) ... heard in the media? Participants rated each item on a Likert scale (where 1 = not at all, 10 = a great deal).

## Procedure

The study had five phases: (1) Introduction and Recall 1; (2) Distraction; (3) Free Recall Phase (individual or group); (4) Recall 2; (5) Recall 3. The first three phases were conducted in the laboratory in a single session. Recall 2 and Recall 3 were conducted by email 1 week and 1 month after the laboratory session.

*Recall 1.* Three participants attended each experimental session, and sat at individual desks as they arrived. The experimenter told participants to spend a few minutes thinking back to

when they heard the news that Steve Irwin had died, and allowed 2 minutes for participants to recall the event in silence. Then participants had 10 minutes to complete the memory questionnaire (Recall 1). If they finished early, they spent time adding more details to their responses until 10 minutes had passed.

*Distraction: Individual condition.* Participants in the individual condition remained at their desks. The experimenter explained they were to complete a Sudoku puzzle, explained the rules, and told participants they had 10 minutes. After 10 minutes the experimenter told participants that time was up and collected the puzzles back.

*Distraction: Group condition.* Participants in the group condition moved from their desks to a central round table in the same room. They sat together in a group of three around the table and the experimenter introduced them to each other by name. She explained that they were to complete a Sudoku puzzle as a group, explained the rules, and told participants they had 10 minutes. She sat in a chair in the corner of the room while participants worked together. After 10 minutes the experimenter told participants that time was up and collected the puzzle back.

*Free recall phase: Individual condition.* The experimenter gave participants in the individual condition a sheet of paper and told them to spend some time thinking about their memories for hearing that Steve Irwin had died. The specific instructions were:

Now I want you to think about Steve Irwin's death some more, your reactions to it, and elaborate on why you gave the ratings you did and what you feel about the ratings that you gave. Try to just think freely about the event, your experience of it and what has happened since. Write down whatever comes to mind. I'm going to give you about ten minutes to think about the event, your memory of it, and your reaction to it.

The experimenter allowed participants 10 minutes to write about their memories.

*Free recall phase: Group condition.* The experimenter told participants in the group condition that they were to spend some time discussing their memories for hearing that Steve Irwin had died. The specific instructions were:

Now I want you to talk together about Steve Irwin's death, your reactions to it, and elaborate on why you gave the ratings you did and what you feel about the ratings that you gave. Try to talk freely about the event, your experience of it and what has happened since. Say whatever comes to mind. I'm going to give you about ten minutes to talk about the event, your memories of it, and your reactions to it.

The experimenter turned on a tape recorder, went and sat on a chair in the corner of the room, and allowed participants 10 minutes to freely discuss their memories.

After the free recall phase the experimenter told participants they would be contacted on two further occasions, and participants supplied their contact details to receive the follow-up emails.

*Recall 2.* Exactly 1 week after the laboratory session the experimenter emailed participants a blank copy of the memory questionnaire and asked them to complete and return it as soon as possible (Recall 2). If participants did not respond within 2 days the experimenter sent them a reminder email. Of the original participants, 64 (92.75%; 90.00% in the group condition, and 94.87% in the individual condition) completed and returned the second memory questionnaire by email.<sup>2</sup>

*Recall 3.* The procedure for Recall 3 was identical to that for Recall 2, except that it was conducted 1 month after the laboratory session. Of the original participants, 48 (69.57%; 70.00% in the group condition, and 66.67% in the individual condition) completed and returned the third memory questionnaire by email.<sup>3</sup> After completion of the study, participants received

debriefing by email and were invited to contact the experimenter with any questions.

*Coding of free recall.* Two raters (CBH and PGK) coded the themes that were present in participants' free recall; in participants' written thoughts in the individual condition and in participants' conversations in the group condition. PGK was blind to the quantitative results while the coding system was being developed. We used a subset (20%) of the transcripts to develop the coding system in collaboration. We did not have a priori hypotheses about what the themes might be; rather we went through an open coding process to develop a coding system that accounted for the majority of statements made by our participants. After the coding system was developed, we individually coded all the transcripts. We had good inter-rater reliability ( $\kappa = 0.79$ ) and we resolved disagreements by discussion.

## RESULTS

There are two sets of data for this study: (1) participants' memories for hearing of Steve Irwin's death, indexed by quantitative data derived from the memory questionnaire across three recall occasions; (2) the themes that emerged during the free recall phase, indexed by qualitative data derived from the transcripts. Qualitative data come from either written thoughts of participants (in the individual condition) or from transcribed conversations between participants (in the group condition). We used the quantitative data to examine the products (or consequences) of group remembering, and the qualitative data to examine the processes of group remembering.

### Questionnaire data: The products of voicing and silencing

*Scale reduction.* We conducted factor analysis on the individual questionnaire items to collapse across them and create a smaller set of dependent variables for analysis. We conducted a principal components analysis with varimax rotation, and the solution yielded four factors with Eigen values greater than 1. The first factor included most of the reaction ratings, including being upset, sad, or emotional on hearing the news, ratings of the significance of the event, and ratings of exposure to information about the

<sup>2</sup> We conducted a series of one-way ANOVAs comparing participants who returned the questionnaire at Recall 2 to those who did not, both in terms of demographic variables and their initial questionnaire responses. This analysis indicated only one difference between those who returned the questionnaire and those who did not. Participants who returned the questionnaire tended to rate themselves as more emotional on Recall 1 ( $M = 5.98$ ,  $SD = 1.62$ ) than participants who did not ( $M = 4.45$ ,  $SD = 1.92$ ),  $F(1, 67) = 4.01$ ,  $p = .049$ . No other effects were significant, all  $F_s < 3.23$ , all  $p_s > .07$ .

<sup>3</sup> We conducted a series of one-way ANOVAs comparing participants who returned the questionnaire at Recall 3 to those who did not, both in terms of demographic variables and their initial questionnaire responses. This analysis indicated no differences between those who returned the questionnaire and those who did not, all  $F_s < 1.19$ , all  $p_s > .28$ .

event (items 7–13, and 16–18). The second factor included clarity and confidence ratings of most of the autobiographical details (items 1–4). The third factor included clarity and confidence ratings for whether participants changed what they were doing once they heard the news (item 6). The fourth factor included shock and surprise ratings (items number 14 and 15). This four-factor solution accounted for 68% of the variance. Since items 5 and 6 did not load with the other autobiographical memory questions we excluded items 5 and 6 from future analyses.

Based on this analysis, as well as conceptual distinctions between variables, we constructed the following three subscales: (A) autobiographical details, which loaded on factor 2 (items 1–4;  $\alpha = .89$ ); (B) shock ratings, which loaded on factor 4 (items 14 and 15;  $\alpha = .88$ ); (C) reaction ratings, which loaded on factor 1. We distinguished between reaction items relating to feelings, significance and exposure to event information: (C-1) reaction–feelings (items 11 to 13;  $\alpha = .92$ ); (C-2) reaction–significance (items 7 to 10;  $\alpha = .85$ ); and (C-3) reaction–exposure (items 16 to 18;  $\alpha = .73$ ). Overall, this process resulted in five dependent variables (see Table 1).

*Initial recall.* All participants completed the memory questionnaire at the beginning of the laboratory session (Recall 1). Participants readily reported the autobiographical details (where they were, how they heard the news etc.), and they rated their memories as clear and confidently held (autobiographical subscale:  $M = 8.86$ ,  $SD = 1.15$ ). Participants reported that they experienced a high level of shock or surprise (shock subscale:  $M = 7.91$ ,  $SD = 2.21$ ), and a moderate amount of emotion on hearing the news (feelings subscale:  $M = 5.64$ ,  $SD = 2.29$ ). Participants reported moderate belief that the event was important and would have ongoing consequences (significance subscale:  $M = 5.87$ ,  $SD = 1.68$ ), and reported that they had had a moderate amount of exposure to information about the event (exposure subscale:  $M = 6.73$ ,  $SD = 1.72$ ). Separate two-level (free recall condition) one-way ANOVAs on each of these ratings indicated that there were no pre-existing differences between participants in the individual condition and participants in the group condition, all  $F_s < 2.58$ , all  $p_s > .11$  (see Table 1).

*One week later.* We indexed the impact of discussion by comparing participants' question-

naire responses one week after the free recall phase (Recall 2).<sup>4</sup> To determine how participants' memories had changed over time, we conducted separate 2 (free recall condition)  $\times$  (2) (recall occasion: 1 vs 2) mixed model ANOVAs on each of the five subscales.

All participants reported the same autobiographical details for hearing of Irwin's death as they did at Recall 1. For the autobiographical details subscale the ANOVA yielded no main or interaction effects, all  $F_s < 1.04$ , all  $p_s > .31$ . That is, in the week following the free recall phase participants in both conditions maintained unchanged, clear, and confident memories of how they heard about Irwin's death (see Table 1).

For the shock and feelings subscales we also conducted separate 2 (condition)  $\times$  (2) (occasion) repeated measures ANOVAs on participants' scores, but because Recall 1 ratings of shock and feelings were highly correlated ( $r = .61$ ,  $p < .01$ ), we used participants' Recall 1 feelings scores as a covariate in the analysis of shock, and we used participants' Recall 1 shock scores as a covariate in the analysis of feelings.<sup>5</sup> For the shock subscale the ANOVA yielded only a significant interaction between recall occasion and condition,  $F(1, 61) = 5.11$ ,  $p = .03$ ,  $\eta^2 = .08$ ; the main effects of recall occasion and condition were not significant, all  $F_s < 1.09$ , all  $p_s > .30$ . Follow-up tests suggested that participants in the group condition reduced their ratings of shock,  $t(26) = 1.89$ ,  $p = .07$ , although this effect was not strong. Participants in the individual condition did not change their ratings,  $t(36) = 1.28$ ,  $p = .21$ . Interestingly, there was a main effect of initial feelings score (the covariate),  $F(1, 60) = 48.50$ ,  $p < .01$ ,  $\eta^2 = .45$ , but no interaction with occasion,  $F(1, 60) = 2.32$ ,  $p = .14$ . Taken together, these results suggest that Recall 1 feelings scores predicted shock scores on both Recall 1 and Recall 2, but even taking this variance into account, participants who discussed the event subsequently remembered being less shocked

<sup>4</sup> An alternative analytic approach would have been to analyse changes across Recall 1, Recall 2, and Recall 3 as a three-level within-participants factor in the ANOVA. This analysis would decrease the  $n$  to 45 (26 in the individual condition, 19 in the group condition), since it would only include participants who responded on all three occasions. We also conducted the analysis in this way and the effects were essentially the same, although the loss of power weakened some of the effects.

<sup>5</sup> We are grateful to an anonymous reviewer for suggesting this analysis strategy to clarify and strengthen the results.

**TABLE 1**  
Mean score on each subscale for participants in the individual and group conditions at Recalls 1, 2, and 3

		<i>Individual free recall condition</i>	<i>Group free recall condition</i>
Recall 1 (before Free recall)	Subscale A (autobiographical)	8.98 (1.16)	8.70 (1.14)
	Subscale B (shock)	7.92 (2.24)	7.90 (2.20)
	Subscale C1 (feelings)	5.74 (2.11)	5.51 (2.54)
	Subscale C2 (significance)	6.01 (1.51)	5.68 (1.89)
	Subscale C3 (exposure)	7.03 (1.47)	6.41 (1.75)
Recall 2 (1 week delay)	Subscale A (autobiographical)	8.85 (1.54)	8.56 (1.12)
	Subscale B (shock)	8.32 (1.71)	7.42 (1.97)
	Subscale C1 (feelings)	5.51 (2.18)	4.53 (2.35)
	Subscale C2 (significance)	5.68 (1.81)	5.47 (1.70)
	Subscale C3 (exposure)	6.15 (1.55)	5.67 (1.87)
Recall 3 (1 month delay)	Subscale A (autobiographical)	8.57 (1.47)	8.35 (1.20)
	Subscale B (shock)	8.06 (2.14)	7.35 (2.30)
	Subscale C1 (feelings)	4.97 (2.45)	4.45 (2.50)
	Subscale C2 (significance)	5.55 (1.75)	5.08 (1.92)
	Subscale C3 (exposure)	5.85 (1.77)	5.05 (2.03)

Values are means, with standard deviations in parentheses.

Ratings were made on a scale of 1 to 10, where 1 = not at all, and 10 = a great deal.

while participants who thought about the event alone did not (see Table 1).

For the feelings subscale the ANOVA yielded a main effect of recall occasion,  $F(1, 60) = 4.24, p = .04, \eta^2 = .07$ , which was moderated by a significant interaction between recall occasion and condition,  $F(1, 60) = 9.19, p < .01, \eta^2 = .13$ ; the main effect of condition was not significant,  $F(1, 60) = 1.39, p = .24$ . Follow-up tests confirmed that participants in the group condition significantly reduced their ratings of feelings,  $t(25) = 3.90, p < .01$ , while participants in the individual condition did not,  $t(36) = 1.51, p > .14$ . Interestingly, the interaction between recall occasion and Recall 1 shock scores (the covariate) was also significant,  $F(1, 60) = 11.76, p < .01, \eta^2 = .16$ . Taken together these results suggest that emotion ratings reduced over time, and that initial levels of shock predicted this change. However, regardless of initial shock scores, participants who discussed the event subsequently remembered being less emotional while participants who thought about the event alone did not (see Table 1).

For the significance and exposure subscales the separate ANOVAs yielded only main effects of recall occasion,  $F(1, 61) = 8.80, p < .01, \eta^2 = .13$  and  $F(1, 61) = 31.92, p < .01, \eta^2 = .34$  respectively. There were no main effects of condition, and no interactions between occasion and condition, all  $F_s < 2.29$ , all  $p_s > .13$ . Regardless of condition, participants reduced their ratings of significance and exposure to information over time (see Table 1).

*One month later.* On Recall 3 all participants reported the same autobiographical details for hearing of Irwin's death as they did at Recall 1. We conducted a 2 (condition)  $\times$  (2) (occasion: Recall 2 vs Recall 3) repeated measures ANOVA on the autobiographical details subscale, which yielded no significant main or interaction effects. That is, regardless of condition, participants' autobiographical clarity and confidence ratings did not change between Recall 2 and Recall 3, all  $F_s < 2.84$ , all  $p_s > .09$  (see Table 1).

Next we examined whether participants in the group condition continued to reduce their shock subscale and feelings subscale scores, relative to participants in the individual condition using separate 2 (condition)  $\times$  (2) (occasion) repeated measures ANOVAs. For shock, the ANOVA yielded a significant main effect of occasion,  $F(1, 43) = 8.61, p < .01, \eta^2 = .17$ , and a significant main effect of condition,  $F(1, 43) = 4.42, p < .05, \eta^2 = .09$ ; the interaction was not significant,  $F(1, 43) = 2.21, p = .15$ . For feelings, the ANOVA yielded a significant main effect of occasion,  $F(1, 43) = 6.61, p = .01, \eta^2 = .13$ , but no main or interaction effects of condition, all  $F_s < 2.00$ , all  $p_s > .16$ . Regardless of condition, participants reduced their ratings of emotion and shock between the two recall occasions, although participants in the group condition continued to give lower ratings (particularly for shock) than participants in the individual condition (see Table 1).



## Free recall phase: The process of voicing and silencing

The second set of data for this study was the qualitative data provided by the transcripts from the free recall phase shortly after Recall 1. We instructed participants to think about their memory for this event and either write down (in the individual condition) or discuss among themselves (in the group condition) whatever came to mind. Participants in both conditions spent 10 minutes on this task, but because the modality differed between conditions there were differences in output. Participants in the individual condition wrote an average of 196.64 words ( $SD = 49.21$ ). Participants in the group condition spoke an average of 412.60 words ( $SD = 204.63$ ) with an average of 1276.50 words ( $SD = 232.18$ ) per group conversation.

For each participant we scored the number of times a statement relating to a coded theme appeared in their free recall transcript. Because our quantitative results demonstrated effects for shock and feelings, we focus our analysis particularly on themes relating to emotion and shock, and to beliefs about Irwin's significance and impact, rather than statements about autobiographical details. We calculated the number of group transcripts (out of 10) and individual transcripts (out of 39) in which each theme occurred at least once. We conducted chi-square analyses to examine whether there were differences in theme frequencies between conditions. Our  $n$  is low for groups (since they contained three participants), so some cells had a count of less than 5. This requires a conservative, continuity corrected statistic (Yates, 1934), so significance estimates are indicative only.

*Frequency of themes.* Focusing first on references to emotion, groups and individuals were equally likely to make at least one reference to experiencing negative emotion, such as being sad or upset, when hearing the news of Irwin's death,  $\chi^2 = 1.29$ ,  $p = .26$ . However, groups were marginally more likely to make at least one reference to not experiencing emotion,  $\chi^2 = 3.40$ ,  $p = .07$ . Additionally, groups were more likely to make at least one depersonalised reference to emotion, such as "it was tragic" or "people were really upset",  $\chi^2 = 5.98$ ,  $p = .01$ . Focusing next on references to shock, groups and individuals were equally likely to make at least one reference to experiencing shock when hearing the news of

Irwin's death,  $\chi^2 = 0.75$ ,  $p = .39$ . However, groups were more likely to make at least one reference to a reduction in shock over time,  $\chi^2 = 9.23$ ,  $p < .01$ . For example, one participant said, "Well, initially I was surprised ... but then the more I thought about it, and the probability of the situations he put himself in, I was like, chances are ...".

There were also differences in the frequencies of broader evaluative comments. Groups and individuals were equally likely to make at least one reference to Irwin's good work and positive impact,  $\chi^2 = 2.01$ ,  $p = .16$ , but groups were more likely to make a least one reference to Irwin's having a negative impact,  $\chi^2 = 13.07$ ,  $p < .01$ . Groups and individuals were equally likely to make at least one reference to the public significance of Irwin's death,  $\chi^2 = 2.58$ ,  $p = .11$ . For example, one participant wrote, "It is unbelievable how much he affected everybody's lives." However, groups were also more likely to make at least one reference to the Irwin not having a great deal of public significance,  $\chi^2 = 13.07$ ,  $p < .01$ . For example one participant stated, "If you're not a devoted fan you're not going to [be upset]."

This frequency analysis did not capture the full complexity of the themes that emerged, particularly in the conversations, since it did not take into account the relative amount that each theme was mentioned. For example, if one participant mentioned being upset but then gradually changed what they said over the conversation, this would be coded the same as all three participants agreeing that they were sad when they heard the news. So we conducted follow-up analyses to examine the relative amount that each theme was mentioned, particularly the themes relating to being upset and shocked.

To compare individual and group transcripts quantitatively, we first analysed all transcripts with the LIWC (Pennebaker, Chung, Ireland, Gonzales, & Booth, 2007), which uses a dictionary to calculate the percentage of words consistent with various themes that are mentioned in a piece of text. An independent samples  $t$ -test on these data confirmed that there were differences between individual and groups in mentioning words relating to negative emotions ( $p < .05$ ). However, the LIWC does not indicate the context in which these words were uttered. For example, stating "I was sad" would be scored the same as "I was not sad". For this reason, the follow-up  $t$ -tests that we report next provide a better test of our specific hypotheses, but this consistent

evidence from the LIWC supports the validity of our coding system.

Because the modality and output differed between individuals and groups, it is difficult to precisely compare the amount that themes were mentioned between conditions. However, we can compare within each condition which themes were mentioned more than others. In each (group or individual) transcript we scored the percentage of statements that were consistent with being personally upset and the percentage consistent with not being personally upset, and compared these scores separately for individuals and for groups. On average, individuals' transcripts contained 6.93% ( $SD = 10.21$ ) statements consistent with being personally upset, and 5.27% ( $SD = 7.85$ ) statements consistent with not being personally upset. There was no statistical difference between these means,  $t(38) = .75$ ,  $p = .46$ . Alternatively, on average groups' conversations contained 1.44% ( $SD = 1.12$ ) of statements consistent with being personally upset, and 4.36% ( $SD = 3.31$ ) statements consistent with not being upset. These means were significantly different,  $t(9) = 3.08$ ,  $p < .02$ . That is, in groups, participants made about three times as many references to not being upset as they did to being upset, and this pattern was not present for individuals.

In summary, our qualitative analysis provided converging evidence from frequency counts, the LIWC, and follow-up within-condition comparisons that during conversation certain ideas were not mentioned—particularly those relating to being upset. Additionally, groups were more likely than individuals to mention realising that the event was not surprising, to mention negative evaluations of Irwin's character and work, and to mention that the event was not publicly significant.

*Voicing and silencing.* To examine the process by which ideas were voiced and silenced during conversation, we coded evidence for negotiation about the meaning of the event. All 10 group transcripts contained multiple examples of negotiation. Some of these negotiations were identified as evidence of voicing—where participants expressed views that were validated by the group. For example, one participant said, “Were you kind of surprised? I found that I was surprised,” to which another replied, “Yeah, I was surprised how he could die so young.” In a different conversation one participant stated, “I'm really put off by the media hype, when there's so much

happening in the world,” to which another replied, “Yeah, he's just one guy!”

However, we also identified instances of silencing in all the conversations. This included self-silencing, such as expressing uncertainty, ambiguity, or revising a previous statement or opinion, which was present for an average of 4.92% ( $SD = 3.29$ ) of statements. For example, in response to one participant asking if they cared about the event, another participant stated, “Yes, I feel a bit . . . I mean, not personally . . . I mean I think about the impact on the rest of the world, how they've viewed Australia through him, has been a good thing.” This participant is self-silencing by expressing an ambiguous view about whether they were affected by Irwin's death or not.

We also identified other-silencing, such as direct or implied contradiction or correction of one group member by another, which was present for an average of 9.26% ( $SD = 4.64$ ) of statements. Thus both kinds of silencing were common but other-silencing was significantly more common,  $t(9) = 3.65$ ,  $p < .01$ . For example, one participant stated, “I was really surprised how no one really cares that much, you know,” to which another replied, “Well a lot of people cared, it was in the media a lot.” The first participant responded, “No I think the media put it up a lot more than it was. Well, obviously for us, we're uni students . . .” This example demonstrates negotiation about the meaning of the event, and the introduction of norms about how it was appropriate for “uni students” to react to the event. Similarly, consider the following excerpt from a conversation:

- K: I know people that cried when they were watching the memorial service when Bindi was doing her speech.  
 M: Yeah, that was really sad! I don't know anybody who actually cried . . .  
 E: Did you cry?  
 K: Can't say that I did.  
 E: Do you know anybody that cares at all?  
 M: I don't think a lot of people . . .  
 K. I think people feel bad for him. A lot of people.  
 E. People die every day.

Here, K introduces the idea that people were emotional about the event. However, she is challenged by E to state whether or not she was personally upset, and responds by saying she wasn't. E and M continue by stating that people

don't really care, and that Irwin's death is not a significant event, "People die every day."

## DISCUSSION

We focused on the products and processes of remembering a culturally shared, autobiographical event in conversation. In terms of the products of group remembering, we found that participants readily reported the autobiographical details of how they heard the news, and they all recalled these details unchanged over three recall occasions. This is not surprising given that Irwin's death was a salient event that received a great deal of media coverage, and our study focused on a relatively short period of time (compared with, for example, flashbulb memory studies; Conway, 1995). But discussion did influence memory: participants who discussed the event remembered themselves as being less shocked and less emotional. Participants who did not discuss the event also reduced their emotion and shock ratings but it took longer, and there were still group main effects 1 month later. Our findings are consistent with prior research suggesting that social interactions influence individual memory (e.g., Cuc et al., 2007; Gabbert et al., 2003; Roediger et al., 2001; Weldon & Bellinger, 1997). Our study extends prior research by demonstrating that conversation had selective effects, isolated to memory for shock and emotion. What was it about the process of discussion that resulted in these changes in memory?

We analysed the process of conversational remembering by comparing the transcripts of the group discussions to the transcripts of the individual free recall. Compared to thinking about the event alone, conversations seemed to be processes of negotiation about the significance of the event and the way to respond to it. Group norms were endorsed during the discussion, suggesting that it was inappropriate for our participant group to react to this event in an emotional way. For example, when one participant said she knew people who had cried when they heard the news, another replied, "The people who cried, were they our age?" This process of negotiation and the endorsement of norms seemed to be aimed at the development of a shared understanding about the event during conversation. In support of this, in our post-experimental interview, 80% of people said they agreed with everything or almost everything said

by other group members. However, in pursuing this shared understanding, there was clear evidence of both self- and other-silencing during conversations (see Fivush, 2004).

Self-voicing and silencing occurs where people censor their own output during conversational recall (Fivush, 2004). Self-silencing is similar to the saying-is-believing effect (Echterhoff et al., 2005, 2008), where people's biased recall in response to social demands shapes their subsequent individual recall. In the current study we identified many instances of self-silencing, where participants expressed themselves ambiguously and revised previous statements to make them consistent with the viewpoints of others.

Other-voicing and silencing occur where conversational partners shape memory by validating and invalidating each others' recall (Fivush, 2004). Other-silencing is more consistent with approaches to social remembering that conceptualise speakers and listeners as active and dynamic co-constructors of memory (Bavelas et al., 2000; Pasupathi, 2001). In the current study we identified many instances of other-silencing, challenge, or correction of one participant's point of view by another. Additionally, the existence of other-silencing was supported by our separate analyses of emotion in the conversations. Our frequency analysis indicated that emotion was just as likely to be mentioned at least once in the conversations as in the individual transcripts. But there were differences in the relative amount that emotion was discussed. Groups talked three times as much about not being upset as they did about being upset, but this difference did not occur for individuals. Taken together, this suggests that remembering being upset on hearing the news was silenced through the course of the conversation.

The effects we have described are somewhat surprising. Our discussion groups consisted of three strangers, and a brief (10-minute) interaction. Yet even this minor interaction was sufficient to produce differences in individual recall. Our findings reinforce the power of quite trivial conversations in shaping and constructing memory. In follow-up work it would be interesting to examine the effects of discussion among groups of intimates (such as families) rather than strangers (see Barnier et al., 2008; Tollefsen, 2006), where we might predict more or less silencing. Additionally, in future research we could focus on the dynamics of the interaction, and examine the effects of individual differences such as gender, or the

presence of a dominant narrator (Hirst, Manier & Apetroaia, 1997).

It is interesting that it was particularly participants' memories for their emotion and shock that were influenced by discussion. There are a range of possible explanations for this. This event was culturally shared, but the experience itself was unshared. Thus, participants had no authority over each other's autobiographical memories of how they found out that Irwin died. It may be that only memories for reactions were open to negotiation. In our own research (Barnier, Khan, Harris & Sutton, 2007) we have found evidence that discussion can shape even memory for autobiographical details, in a situation where group members did have authority over each other's autobiographical recall. Perhaps if we examined conversational recall of an event that participants had experienced together, then autobiographical details would have been influenced as well (see also Skagerberg & Wright, 2007, for the role of authority in modulating memory conformity).

It is also possible that more ambiguous aspects of an event are open to negotiation. While this event was significant, it was not an extremely emotional event for our participants. There may have been conflicting norms about how it was appropriate to react to this event, particularly for our Australian participants. While this was an important event that received a great deal of media coverage in Australia, Australian cultural norms proscribe "taking oneself too seriously" (Goddard, 2009), and encourage the criticism of high achievers ("tall poppy syndrome"; Feather, 1989). Perhaps participants' memories for emotion were particularly influenced because they were unsure of how it was appropriate to react to this event. Memories for autobiographical details do not have this ambiguity. One way of following up the role of ambiguity in determining social influence on memory would be to study conversations about a more extreme, less ambiguous event (such as 9/11 for example) where less negotiation might be required in the pursuit of shared views, especially regarding emotional reaction.

An alternative explanation for the minimisation of emotion in particular is that the process of talking with others reduced participants' actual current emotional state. Extensive research has demonstrated that both talking with others and writing about emotional events assists in the management of negative emotions (e.g., Pennebaker, 1997; Pennebaker & Harber, 1993; Skowronski et al., 2004). It is possible that these

conversations reduced participants' current emotional state more than writing about the event alone. By this interpretation, people remembered themselves as less emotional following conversation because they based their memory for their reaction on their current emotional state (as in the "consistency bias"; e.g., Pieters, Baumgartner, & Bagozzi, 2006). While this interpretation seems unlikely, given that writing about the event should also have resulted in such a change (e.g., Pennebaker, 1997) and because shock was influenced as well, we cannot discount it completely. In order to eliminate this explanation we would need to examine the process and product of recalling other events in other kinds of groups, where the norms may be reversed. For example, if we had used a different participant demographic (with different norms), or a different event, perhaps the process of negotiation in conversation would have had a different outcome, serving to increase (rather than minimise) remembered emotional reaction. This would argue against a general "emotion management" explanation.

Overall, our findings demonstrate that conversation influences memory. These influences can occur even for significant autobiographical events that we remember well, and even after a brief interaction in a group of strangers. However, these influences may be subtle, and may not be evidenced by gross changes in memory for facts. Our qualitative analysis suggested that conversations about shared national events can be dynamic processes of negotiation about the appropriate way to respond, and that this negotiation can silence particular aspects of memory in a motivated, targeted way. Particularly, it may be those aspects of memory that are ambiguous or those aspects that are shared, that can be negotiated in conversation. This process of silencing has ongoing consequences for individual memory. Our findings provide evidence for the way in which our social groups shape our individual memories.

## REFERENCES

- Alea, N., & Bluck, S. (2003). Why are you telling me that? A conceptual model of the social function of autobiographical memory. *Memory, 11*, 165-178.
- Anderson, M. C., Bjork, R. A., & Bjork, E. L. (1994). Remembering can cause forgetting: Retrieval dynamics in long-term memory. *Journal of Experi-*

- mental Psychology: Learning, Memory & Cognition*, 20, 1063–1087.
- Barnier, A. J., Sutton, J., Harris, C. B., & Wilson, R. A. (2008). A conceptual and empirical framework for the social distribution of cognition: The case of memory. *Cognitive Systems Research*, 9, 33–51.
- Barnier, A. J., Khan, T., Harris, C. B., & Sutton, J. (2007, November). Social contagion of autobiographical memories. In A. J. Barnier (Chair), *Toward a cognitive psychology of collective memory*. Paper presented at the 48th Annual Meeting of the Psychonomics Society, Long Beach, USA.
- Basden, B. H., Basden, D. R., & Henry, S. (2000). Costs and benefits of collaborative remembering. *Applied Cognitive Psychology*, 14, 497–507.
- Bavelas, J. B., Coates, L., & Johnson, T. (2000). Listeners as co-narrators. *Journal of Personality and Social Psychology*, 79, 941–952.
- Conway, M. A. (1995). *Flashbulb memories*. Hillsdale, NJ: Lawrence Erlbaum Associates Inc.
- Coultan, M., Coorey, P., & Tadros, E. (2006, September 5). Worldwide praise for a bloody good bloke. *The Sydney Morning Herald*, <http://www.smh.com.au/news/national/worldwide-praise-for-a-bloody-good-bloke/2006/09/04/1157222072720.html>
- Cuc, A., Koppel, J., & Hirst, W. (2007). Silence is not golden: A case for socially-shared retrieval-induced forgetting. *Psychological Science*, 18, 727–733.
- Echterhoff, G., Higgins, E. T., & Groll, S. (2005). Audience-tuning effects on memory: The role of shared reality. *Journal of Personality and Social Psychology*, 89, 257–276.
- Echterhoff, G., Higgins, E. T., Kopietz, R., & Groll, S. (2008). How communication goals determine when audience tuning biases memory. *Journal of Experimental Psychology: General*, 137, 3–21.
- Feather, N. T. (1989). Attitudes towards the high achiever: The fall of the tall poppy. *Australian Journal of Psychology*, 41, 239–267.
- Fivush, R. (2004). Voice and silence: A feminist model of autobiographical memory. In J. Lucariello, J. A. Hudson, R. Fivush, & P. J. Bauer (Eds.), *The development of the mediated mind: Sociocultural context and cognitive development* (pp. 79–100). Mahwah, NJ: Lawrence Erlbaum Associates Inc.
- Gabbert, F., Memon, A., & Allan, K. (2003). Memory conformity: Can eyewitnesses influence each other's memories for an event? *Applied Cognitive Psychology*, 17, 533–543.
- Goddard, C. (2009). Not taking yourself too seriously in Australian English: Semantic explications, cultural scripts, corpus evidence. *Intercultural Pragmatics*, 6, 29–53.
- Harris, C. B., Paterson, H. M., & Kemp, R. I. (2008). Collaborative recall and collective memory: What happens when we remember together? *Memory*, 16, 213–230.
- Higgins, E. T. (1992). Achieving “shared reality” in the communication game: A social action that creates meaning. *Journal of Language and Social Psychology*, 11, 107–131.
- Higgins, E. T., & Rholes, W. S. (1978). “Saying is believing”: Effects of message modification on memory, and liking for the person described. *Journal of Experimental Social Psychology*, 14, 363–378.
- Hirst, W., & Echterhoff, G. (2008). Creating shared memories in conversation: Toward a psychology of collective memory. *Social Research*, 75, 183–216.
- Hirst, W., Manier, D., & Apetroaia, I. (1997). The social construction of the remembered self: Family recounting. In J. G. Snodgrass & R. L. Thompson (Eds.), *The self across psychology: Self-recognition, self-awareness, and the self concept* (pp. 163–188). New York: New York Academy of Sciences.
- Luminet, O., Bouts, P., Delie, F., Manstead, A. S. R., & Rimé, B. (2000). Social sharing of emotion following exposure to a negatively valenced situation. *Cognition and Emotion*, 14, 661–688.
- Marsh, E. J. (2007). Retelling is not the same as recalling: Implications for memory. *Current Directions in Psychological Science*, 16, 16–20.
- Meade, M. L., & Roediger, H. L. III. (2002). Explorations in the social contagion of memory. *Memory and Cognition*, 30, 995–1009.
- Mehl, M. R., & Pennebaker, J. W. (2003). The social dynamics of a cultural upheaval: Social interactions surrounding September 11, 2001. *Psychological Science*, 14, 579–585.
- Pasupathi, M. (2001). The social construction of the personal past and its implications for adult development. *Psychological Bulletin*, 127(5), 651–672.
- Pasupathi, M. (2003). Social remembering for emotion regulation: Differences between emotions elicited during an event and emotions elicited when talking about it. *Memory*, 11, 151–163.
- Pasupathi, M., Stallworth, L. M., & Murdoch, K. (1998). How what we tell becomes what we know: Listener effects on speakers' long-term memory for events. *Discourse Processes*, 26, 1–25.
- Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science*, 8, 162–166.
- Pennebaker, J. W., & Harber, K. D. (1993). A social stage model of collective coping: The Loma Prieta earthquake and the Persian Gulf War. *Journal of Social Issues*, 49, 125–145.
- Pennebaker, J. W., Chung, C. K., Ireland, M., Gonzales, A., & Booth, R. J. (2007). *The development and psychometric properties of LIWC2007*. Austin, TX: LIWC.net.
- Pieters, R., Baumgartner, H., & Bagozzi, R. (2006). Biased memory for prior decision making: Evidence from a longitudinal field study. *Organizational Behavior and Human Decision Processes*, 99, 34–48.
- Roediger, H. L. III, Meade, M., & Bergman, E. T. (2001). Social contagion of memory. *Psychonomic Bulletin & Review*, 8, 365–371.
- Skagerberg, E. M., & Wright, D. B. (2007). Manipulating power can affect memory conformity. *Applied Cognitive Psychology*, 22, 207–216.
- Skowronski, J. J., Gibbons, J. A., Vogl, R. J., & Walker, W. R. (2004). The effect of social disclosure on the intensity of affect provoked by autobiographical memories. *Self and Identity*, 3, 285–309.
- Tollefsen, D. P. (2006). From extended mind to collective mind. *Cognitive Systems Research*, 7, 140–150.

- Tversky, B., & Marsh, E. J. (2000). Biased retellings of events yield biased memories. *Cognitive Psychology*, *40*, 1–38.
- Wainwright, R., & Baker, J. (2006, September 5). Farewell to a larrikin adventurer. *The Sydney Morning Herald*, <http://www.smh.com.au/news/national/farewell-to-a-larrikin-adventurer-killed-in-his-prime/2006/09/04/1157222072696.html>
- Weldon, M. S., & Bellinger, K. D. (1997). Collective memory: Collaborative and individual processes in remembering. *Journal of Experimental Psychology: Learning, Memory and Cognition*, *23*, 1160–1175.
- Williams, D., & Hearn, L. (2006, September 4). Steve Irwin killed by a stingray. *The Sydney Morning Herald*, <http://www.smh.com.au/news/national/steve-irwin-killed-by-stingray/2006/09/04/1157222051512.html>
- Yates, F. (1934). Contingency table involving small numbers and the  $\chi^2$  test. *Journal of the Royal Statistical Society*, *1*, 217–235.