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Category-specific Enhancement of Retrieval Due to Field Perspective

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Abstract

Two memory perspectives have been distinguished: A field perspective where events are re-experienced in the first person, and an observer perspective where events are witnessed in the third person. Two experiments examined the influence of memory perspective on objective memory performance. In both experiments, participants were presented with a series of verbal passages, each of which contained several different categories of information. For four of these categories (pertaining to affective reactions, physical sensations, psychological states, and associated ideas), recall was significantly higher when a field perspective was adopted than when an observer perspective was adopted, but for the five other categories (pertaining to physical actions, personal appearance, fine details, spatial relations, and peripheral details) there was no significant effect of perspective upon recall. The results are discussed in the context of mental models and imagined episodic events..

Category-specific Enhancement of Retrieval Due to Field Perspective

Work in memory perspective has revealed that two perspectives predominate when individuals recall past events. The field perspective corresponds to recalling an event through one's own eyes again. The observer perspective corresponds to recalling the event as a spectator. Research has revealed a number of differences between the field and observer perspectives. Nigro and Neisser (1983) showed that situations with a high degree of self-awareness and high emotionality tended to be remembered in the observer perspective. In addition, when individuals were asked to focus on the objective circumstances of an event they were more likely to adopt a field perspective, whereas focusing on their feelings in the event rendered them more likely to remember from a field perspective. Research on social phobia has revealed that situations with high self awareness and anxiety tend to be remembered in the observer perspective (Wells, Clark, & Ahmad, 1998; Coles, Turk, Heimberg, & Fresco, 2001). Nigro and Neisser (1983) also revealed how recent memories were more likely to be remembered in the field perspective, and the influence of delay has been confirmed by Robinson and Swanson (1993).

Does the content of other psychological processes vary as a function of memory perspective? Robinson and Swanson (1993) revealed a change in affect with perspective during recall. Initially individuals were asked to remember an event from either the field or observer perspective. They were then asked to rate affect on dimensions such as pleasantness and intensity. When participants were re-tested after two weeks they were asked to remember the same event again but in the alternative perspective, again reporting affect when remembering. It was found that a shift in

perspective from field to observer resulted in a decrease in affect experienced, whereas a shift from observer to field perspective produced no change in affect.

The specific forms of knowledge associated with memory have been highlighted by Conway and Pleydell-Pearce (2000), who have shown how memories are constructions generated from several types of knowledge. A particular memory may be associated with cognitive, sensory, and emotional information. In terms of knowledge associated with memory perspective, our understanding has been advanced most notably by the work of McIsaac and Eich (2002). They instructed participants first to enact a series of movements, such as moulding a ball of clay into an object. Subsequently, participants recalled what they had done from either an observer or a field perspective. McIsaac and Eich (2002) found that different types of information--cognitive, sensory, perceptual, emotional--had their recall differentially favoured by the two perspectives. Previous research has tended to focus on the recollection of autobiographical events (Nigro and Neisser, 1983; Robinson & Swanson, 1993). McIsaac and Eich (2002) however revealed the influence of perspective on the content of memory for episodic events in the laboratory. Was the use of physical enactment crucial in their study? An alternative approach would be to construct narratives that represent verbally the different kinds of information that were manipulated within a physical environment by McIsaac and Eich (2002), including physical actions, personal appearance, spatial relations, and affective reactions.

Previous research on the comprehension and remembering of text provides some guidance for the present approach. Franklin and Tversky (Franklin & Tversky, 1990; Franklin, Tversky, & Coon, 1992) have shown how individuals reading a text

construct a spatial framework of the imagined scene, allowing objects to be located in relation to the three axes of the body.. Bryant, Tversky and Franklin (1992) showed that describing a scene from two different perspectives influences object identification. Participants were presented with a description of an observer surrounded by objects (internal perspective) or a description of an observer standing outside with objects in front (external perspective). Participants who adopted an internal framework represented objects in front and those who adopted an external framework represented objects in front and behind the actor, as indicated by patterns of response times when identifying objects. It is important, however, to note that it is not only spatial information which may be influenced by the mental models formed during the comprehension of text. Zwaan and Radvansky (1998) have reviewed evidence that temporal, spatial, causal, emotional, and motivational dimensions can all be incorporated within the situation models constructed within the context of a narrative. Thus it is investigated here whether the effects of adopting a particular memory perspective can be detected for a wider range of textual material than the specifically spatial. However, a possible reason why such effectsmay not be observed should also be noted. When comparing memory for enactment, as studied by McIsaac and Eich (2002), and memory for comparable texts, as in the present study, it is possible that the texts will give rise to relatively impoverished representations. Thus Johnson, Foley, Suengus, and Raye (1988) have shown that memories for imagined events contain less sensory and contextual information than perceived events, and therefore it is possible that the potential effects of memory perspective may be blunted for textual materials.

Finally, there are two issues with McIsaac and Eich's (2002) experiment that need to be considered further, since both may be seen as factors that could have influenced the outcome of the results. First, in McIsaac and Eich's (2002) experiment the veridicality of recall in a number of their categories (including affective reactions, physical sensations, psychological states, and associated ideas) could not be checked because there was no independent specification of them at the encoding stage (for those categories which could be checked against objective visual information, only two errors in the report of a single participant were observed). This problem of potentially nonveridical recall for the categories of information that were unobservable at encoding in the study of McIsaac and Eich (2002) is overcome in the experiments to be reported here by explicitly specifying all such information in the experimental materials to be studied by the participants. Second, in the study of McIsaac and Eich (2002) the overall level of recall for the field perspective was higher than that for the observer perspective, suggesting the possibility of a criterion difference in the level of detail voluntarily provided by participants in the two different conditions. Again, this problem was overcome in the experiments to be reported by assessing the accuracy of verbatim recall, for which the necessary level of detail in correct recall was identical in the field and observer conditions. That is, in the present experiments there was an objectively specified target state of complete recall which was uniform across conditions, whereas in the study of McIsaac and Eich (2002) it was not possible to specify externally a target state of complete recall, affording greater potential for varying subjective criteria to influence the extent of recall across conditions.

Experiment 1

Method

Participants. The participants were 28 undergraduate students who were paid for their participation.

Materials. There were six experimental passages, listed in the Appendix. Each describes undertaking a manual task. These passages were based on the six tasks which participants undertook in the study by McIsaac and Eich (2002). These were, moulding a ball of clay into an object, throwing a foam basketball into a hoop, touching a furry object, folding paper with gloved hands to match a model, lifting weights with both arms, and attempting to flutter a sheet of paper in front of a fan. The tasks in the passages had been designed to be activities that were engaging and evoked sensory and other experiential elements.

Each passage consisted of nine sentences, with each sentence contributing to a different response category. These nine response categories were adopted from the eleven response categories used by McIsaac and Eich (2002, p. 148), omitting only their categories of first-person referents and third-person referents (in the McIsaac & Eich study, participants had the option during recall of describing their activities in either the first or third person. But in the present study this distinction did not arise because the stimulus passages were written in the first person). The nine categories which were used were as follows: (1) affective reactions, whether emotional or motivational in nature; (2) physical sensations from any sensory modality; (3) psychological states; (4) associated ideas, including knowledge or experiences gained outside the current experimental context; (5) the participant's personal appearance; (6) physical actions made in the course of performing the tasks; (7) spatial relations

among objects used in the tasks, relative to other objects or to the participant; (8) fine details of the task objects including colour, shape, size, and numerical; and (9) peripheral details of the room that were not central to the task. In the Appendix, the same numbering system is used to identify the category to which each sentence contributed. Each passage consisted of 51-55 words in total.

For each sentence, a keyword related to the relevant response category was identified. These keywords are italicised in the Appendix, but were not italicised in the passages presented to the participants (nor were the passages numbered). The subsequent analysis of the results focused in particular on these keywords. Finally, each passage was also allocated a cue word relating to its content. These cues (also listed in the Appendix) were absent during presentation, and provided for participants only at retrieval.

Design and Procedure. Participants were presented with the six passages in succession, for 2 min each. They were instructed that, for each passage, "The passages contain an imaginary task that you are carrying out in a room. It contains details of the task and the activities of the task. You will be asked to read the passages carefully and concentrate about it as much as you can. Try to visualise the details and the activities that are being carried out in the room. You will be asked to recall the details of the passages later." Each participant received the passages in an individually randomised order.

After reading the six passages, the participants undertook a distractor task (the naming of familiar faces) for 3 min. Participants were then assigned randomly, in equal numbers, to take either a field or an observer perspective on the information in the passages, and instructed to recall as much as they could of each passage in turn,

writing their responses on six separate pages. Participants were given one page for each passage and instructed to write their responses for each passage on the sheet of paper with the appropriate cue word for that passage (the cue words are listed in the Appendix). The instructions for the field perspective condition were as follows: "You will now be asked to mentally reinstate or visualise the remembered scene as if you were seeing it through your own eyes. Imagine you are carrying out the task and visualise the task through your own eyes. Put yourself in this perspective and try to think of the passage from this perspective. Please, write down as much of the exact passage as you can on this paper. If you cannot remember the exact words of any sentence, but you do remember the meaning, write down a sentence or part of a sentence as close to the original as possible. It is extremely important that you write down every bit of the passage which you can remember." The instructions for the observer perspective condition were the same, except the first three sentences were replaced by the following: "You will be asked to mentally reinstate the original room as if you were viewing it from the perspective of a spectator or detached observer, watching yourself in the remembered scene. Put yourself in this observer perspective and try to think of the passage from this perspective."

Following recall, the participants completed a six item questionnaire (in either a field or observer form), based on that used by McIsaac and Eich (2002, p. 147). The items were as follows (for Items 2 to 6, the participants responded on 7-point scales, with 7 and 1 labelled as indicated). (1) For what percentage of the total recall time were you able to maintain the field / observer vantage point? (2) How strongly did you maintain the field / observer vantage point? (*strongly maintained - not strongly maintained*). (3) How easy was it for you to maintain the field / observer vantage

point? (*easy to maintain - difficult to maintain*). (4) To what degree did the field /

observer vantage point influence your recollections? (*large influence - small

influence*). (5) How rich in detail were your recollections? (*much detail - little detail*).

(6) How rich in emotions were your recollections? (*much emotion - little emotion*).

The participants were tested individually, each in a single session lasting about 45

min.

Results

Questionnaire. There were no significant differences between field and

observer participants with regard to the items in the final questionnaire. Mean results

were as follows, in each case listing the value for field first and observer second.

Percentage of time that perspective maintained was 71% vs 66%, $t(26) = 0.63$.

Strength of maintaining perspective was 5.1 vs 4.9, $t(26) = 0.33$. Ease of maintaining

perspective was 4.8 vs 4.4, $t(26) = 0.76$. Influence of perspective on recollections was

5.4 vs 4.3, $t(26) = 1.87$. Richness in detail was 5.3 vs 4.9, $t(26) = 0.79$. Richness in

emotions was 4.2 vs 3.3, $t(26) = 1.42$.

Recall. For each of the nine response categories, the participant's recall of one

keyword in each of six passages was assessed. Three different criteria were used.

These were, first, verbatim criterion, comprising exact stimulus words; second,

morphemic criterion, comprising verbatim plus morphemically related words (e.g.,

enjoyed instead of *enjoyable*); and third, semantic criterion, comprising morphemic

plus semantically related words (e.g., *fun* instead of *enjoyable*).

Table 1 shows the mean levels of recall of each type of response category, for

the verbatim criterion. It can be seen that the level of recall was significantly higher

for field than for observer participants in four response categories, those of physical

sensations, associated ideas, affective reactions, and psychological states. In contrast, although levels of recall were numerically higher for observer participants in some of the other response categories, such as peripheral details, in no case did this tendency reach significance. Further analyses using the morphemic and semantic criteria, instead of the verbatim criterion, showed exactly the same pattern of significance, and thus are not reported in detail here.

Discussion

The results of this experiment provided evidence that manipulation of the participant's perspective at the time of retrieval can significantly influence the completeness of their recall of certain types of information. How flexible is memory perspective in this respect? In the present experiment, each participant was allocated to only a single perspective condition. An alternative procedure is for each participant to adopt the two types of perspective in succession, and this was adopted in a second experiment.

Experiment 2.

In contrast to Experiment 1, this experiment used a within-participants rather than a between-participants design. Although this procedure has the potential disadvantage of introducing possible carryover effects between conditions, it has the advantage of an enhanced power of detecting differences between conditions, for a fixed number of participants. More generally, the experiment allows the robustness of the findings of the first experiment to be assessed.

Method

Participants. The participants were 39 new undergraduate students who were paid for their participation.

Materials. These were the same as in Experiment 1.

Design and Procedure. The design and procedure were the same in general as those of Experiment 1. As before, participants were presented with six passages, followed by a 3 minute delay. However during the recall stage the six passages were divided into two sets of three passages each. Participants were presented first with one of these sets, and subsequently recalled the passages from either a field or an observer perspective. They were then presented with the other set of passages, and subsequently recalled those from the alternative perspective. After the recall stage the participants were given two questionnaires to answer, which were based on the field and observer perspective. The orders of the sets and of the perspectives were counterbalanced over participants. The participants were tested individually in a single session lasting about 45 mins.

Results

Questionnaire. In this experiment, the mean response levels for all except one item were significantly higher for the field than for the observer condition. Mean results were as follows, in each case listing the value for field first and observer second. Percentage of time that perspective maintained was 68% vs 58%, $t(38) = 2.50$, $p < .05$. Strength of maintaining perspective was 5.1 vs 4.5, $t(38) = 2.56$, $p < .05$. Ease of maintaining perspective was 4.8 vs 3.9, $t(38) = 2.96$, $p < 0.01$. Influence of perspective on recollections was 4.7 vs 4.4, $t(38) = 0.89$, $p = 0.38$. Richness in detail was 4.7 vs 4.0, $t(38) = 2.39$, $p < .05$. Richness in emotions was 3.9 vs 2.9, $t(38) = 2.91$, $p < .01$.

Recall. Table 2 shows the mean levels of recall of the keywords for each type of response category, for the verbatim criterion. It can be seen that the level of recall was significantly higher in the field than in the observer condition in the same four response categories as in Experiment 1, those of physical sensations, associated ideas, affective reactions, and psychological states. Recall was numerically, but not significantly, higher for observer perspective only in the case of peripheral details. As in Experiment 1, further analyses using the morphemic and semantic criteria, instead of the verbatim criterion, showed exactly the same pattern of significance and thus are not reported in detail here.

<div align="center">General Discussion.</div>

The results of Experiment 1 and Experiment 2 were highly consistent in revealing that the levels of recall of certain types of information differ systematically as a function of whether a participant adopts a field or an observer perspective at the time of recall. Nine different categories of information which had been distinguished by McIsaac and Eich (2002) were studied. The recall of five of these (physical actions, personal appearance, fine details, spatial relations, and peripheral details) did not differ significantly as a function of perspective. Recall of the remaining four (physical sensations, associated ideas, affective reactions, and psychological states), however, was found to depend significantly upon perspective, with in each case the adoption of the field perspective leading to enhanced recall.

The present results thus demonstrate that the nature of the detail recovered during recall is influenced by the perspective adopted during recall. They powerfully confirm a major component of the results of McIsaac and Eich (2002), in that McIsaac and Eich found that precisely the same four categories of recall as here (i.e.,

physical sensations, associated ideas, affective reactions, and psychological states) displayed an advantage for the field perspective. However, for three categories (namely, personal appearance, physical actions and spatial relations) McIsaac and Eich (2002) reported that recall was significantly higher with an observer than a field perspective. In the present experiments, with strong control over the checking of recall veridicality and the maintenance of a common, objective specification of complete recall for the two perspectives, no significant differences were observed for these categories. Therefore, it is now clear that for certain types of information the adoption of a field perspective at retrieval reliably leads to improved recall. However, it cannot yet be concluded that any comparable advantages for other types of information have been demonstrated to accrue from the adoption of an observer perspective. On the other hand, a further study by McIsaac and Eich (2004) in which individuals with PTSD attempted to recall the traumatic event that led to their condition from either a field or an observer perspective also displayed on advantage for the observer perspective in the cases of. participants' physical appearance and actions, and the spatial layout of the traumatic scene, as well as an advantage for the field perspective in the cases of affective reactions, somatic sensations, and psychological states.

Similarly, Bernstein, Willert and Rubin (2003) have shown how PTSD individuals avoid re-experiencing traumatic events and thus dissociate themselves from the trauma by adopting an observer perspective which is congruent with the current goals of the working self. McIsaac and Eich (2004) showed that field memories evoked higher levels of anxiety in the individuals compared to observer

memories. Thus if the goal of an individual with PTSD is to avoid re-experiencing painful memories the adopting of an observer perspective would be of advantage.

An issue potentially relevant to the present results is that of the compatability between the participant's perspective at encoding and at retrieval. The verbal materials were presented in text which adopted a first-person format, and it would be possible to argue that this factor may have encouraged the adoption of a field perspective at encoding, although the accompanying instructions to visualize the details and activities were neutral as to field and observer perspectives. The influence of perspective at the encoding stage has been explored by Abelson (1975). Participants were presented with a story about a person walking down a street that contained a range of details (e.g., of near and far visual elements, and of bodily sensations), and instructed at the outset to adopt either a *self* perspective, where they imagined being the character, or a *balcony* perspective, where they imagined watching the character from above as they heard the story. Abelson (1975) found that the self-perspective group remembered more body-sensation details and the balcony-perspective group remembered more far-visual details. When originally listening to the passage, the participant was presumably more likely to have encoded those details that were more salient within their allocated perspective. If at recall individuals tended to adopt the same perspective, then encoding-retrieval compatability may have further increased divergence between the two perspective groups. Libby (2003) has shown directly that a match between perspectives at encoding and retrieval is important for memory recall, implicating source monitoring judgements. When the perspective adopted to imagine an event was the same as the perspective adopted testing, overall memory accuracy was improved. The general importance of a match between encoding and

retrieval has been highlighted by the encoding specificity principle, which affirms that cues present at the encoding stage with the to-be-remembered material will aid the retrieval of material when those same cues are present again at the recall stage (Tulving and Osler, 1968; Tulving and Thompson, 1973). However, the work of Anderson and Pichert (1978) suggests limits to the operation of this principle. They found that,at recall, shifting perspective allowed participants to access and recall additional information from a schema different from that which was originally activated. Accordingly, a possible tendency in the present experiments towards the adoption of a field perspective at encoding is likely at most to have only partially modulated the observed systematic effects of memory perspective at retrieval.

Why were physical sensations, associated ideas, affective reactions, and psychological states all found to benefit reliably in recall from the adoption of a field perspective, whereas physical actions, personal appearance, fine details, spatial relations, and peripheral details were not found to benefit? A possible answer focuses on the dichotomy between subjective and objective report. When the listed features relate to direct experiences, as in the study of MsIsaac and Eich (2002), those in the first group are primarily accessible only to introspection, whereas those in the latter group are open equally to external report. Indeed, in the study of McIsaac and Eich (2002) the availability of the first group of features only to introspection posed a methodological problem, because it was not possible to verify independently participants' recall of them. In the present experiments, on the other hand, none of the features were derived from direct experiences, because all information was presented symbolically in text. It is therefore at first sight paradoxical that the effects of memory perspective can be partitioned between features that are capable of subjective and of

objective report, when in practice all features here were instantiated objectively. In resolution of the paradox, it appears that the adoption of a field perspective at the time of recall preferentially facilitates the retrieval of information which in some circumstances is accessible only to introspection, irrespective of its actual source. The reason for this is as yet unclear, but may relate to the privileged position that appears to be occupied by self-related information, as demonstrated by the self-reference effect in memory (e.g., Conway & Dewhurst, 1995; Symons & Johnson, 1997). It may be that the field perspective facilitates access to information that has been encoded in relation to the self. Although the evidence is not yet decisive, it is certainly consistent with this account that the effect of affective valence has been shown to interact both with the effect of memory perspective (D'Argembeau, Comblain, & Van Der Linden, 2003) and with the self-reference effect (D'Argembeau, Comblain, & Van Der Linden, 2005).

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Table 1

Mean Recall in Experiment 1 as a Function of Response Category and Memory

Perspective Condition

| | Memory Perspective Condition | | | | | |
| | Field | | Observer | | | |
Response category	*M*	*SD*	*M*	*SD*	*t*(26)	*p*
Physical sensations	4.86	1.09	1.50	1.45	6.89	< .001
Physical actions	3.36	1.74	3.36	1.69	0.00	n.s.
Associated ideas	4.79	1.05	0.50	1.09	10.58	< .001
Personal appearance	3.14	1.79	2.57	1.34	0.96	n.s.
Affective reactions	2.14	0.95	0.21	0.43	6.94	< .001
Fine details	4.64	1.55	5.14	1.02	1.01	n.s.
Spatial relations	3.93	1.94	4.00	1.57	0.11	n.s.
Peripheral details	2.64	2.34	3.71	1.86	1.34	n.s.
Psychological states	1.79	0.80	0.29	0.61	5.57	< .001

Table 2

Mean Recall in Experiment 2 as a Function of Response Category and Memory

Perspective Condition

| | Memory Perspective Condition | | | | | |
| | Field | | Observer | | | |
Response category	*M*	*SD*	*M*	*SD*	*t*(38)	*p*
Physical sensations	2.54	0.64	1.13	0.89	8.43	< .001
Physical actions	1.67	0.93	1.49	0.94	1.10	n.s.
Associated ideas	2.49	0.72	0.59	0.88	9.80	< .001
Personal appearance	1.61	1.04	1.28	0.86	1.97	n.s.
Affective reactions	1.46	1.05	0.49	0.72	4.28	< .001
Fine details	2.56	0.55	2.49	0.76	0.55	n.s.
Spatial relations	2.13	0.92	2.05	0.83	0.49	n.s.
Peripheral details	1.62	0.99	1.64	1.01	0.15	n.s.
Psychological states	0.90	0.94	0.21	0.41	4.55	< .001

Appendix

The six passages which were used as stimuli are listed, with keywords italicised. Numbers refer to the following response categories. 1: affective reactions, 2: physical sensations, 3: psychological states, 4: associated ideas, 5: personal appearance, 6: physical actions, 7: spatial relations, 8: fine details, and 9: peripheral details. The cue word for each passage is capitalised at the start of the passage, but was presented to participants only at retrieval.

CLAY: The clay felt *soft* (2). I *pressed* out a cup (6). Cups were always *useful* (4). It was *fun* playing with the clay (1). The clay was *blue* (8). The clay was to the *left* of a model aeroplane (7). I was in a new *sweater* (5). There were some *cans* sitting on a bookshelf (9). I *contemplated* the finished cup throughout (3).

BASKETBALL: The basketball felt *squashy* (2). I *threw* the basketball (6). This was easier than *tennis* (4). I was *determined* to make my basketball shots (1). The basketball was *yellow* (8). The basketball hoop was *above* the table (7). My *hair* was getting long (5). There was a *chair* against the wall (9). I was *rehearsing* the throw in my mind (3).

RABBIT: The rabbit felt *fluffy* (2). I *sat* down on the chair with it (6). I had seen a rabbit on a *farm* (4). Stroking the rabbit was *enjoyable* (1). The rabbit was *large* (8). It was *next* to the vase (7). I was wearing a *tee-shirt* (5). There was a *basket* on the floor (9). I was *deciding* to keep the rabbit (3).

PAPER: The gloves felt *warm* (2). I *folded* the paper (6). There were experts on this in *Japan* (4). It was *irritating* to fold the paper with gloves on (1). The paper was shaped like a *triangle* (8). The booklet was in *front* of me (7). I was looking *untidy* (5). The *window* was open (9). I *wondered* how much time was left (3).

WEIGHTS: The weights felt *hard* (2). I *lifted* the weights (6). It was like being in the *gym* (4). I was *happy* doing the exercises (1). The weights were *small* (8). Their case was *on* top of the cupboard (7). I was in my *shorts* (5). There was a *cardboard* box near the door (9). I *thought* about my fitness (3).

FAN: The fan made it feel *cold* (2). I *dropped* the leaf (6). The fan reminded me of the *summer* (4). I was *disappointed* the leaf missed the bin (1). The leaf was *red* (8). The fan was *behind* the bin (7). I was wearing my old *jeans* (5). There was a *poster* on the wall (9). I was *confused* about what to do (3).