

Emotion and the self: The context of remembering

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In an incidental learning task, the effectiveness of self-reference as a learning strategy is equalled by that of reference to a friend in terms of amount of material remembered, and both are more effective than reference to imagery or the commonness of material. The results of the present study, however, show that reference to the self enhances memory for emotional material compared with reference to a friend; but emotionally neutral material is remembered better by reference to a friend. Whether the emotional material is positive or negative also influences memory levels. It is suggested that the self-concept is not a uniform schema for remembering: it is differentiated according to type of material (emotional vs. neutral) and whether material represents items or actions; but the primary form in which the self-concept appears to be represented is emotional.

Referring new information to the self as a strategy for remembering is demonstrably superior to other strategies that direct attention to semantic or phonemic features of material. But is the self unique as a context for remembering? An influential study by Rogers *et al.* (1977) placed the self at the deepest level in a depth of processing model derived from Craik & Lockhart (1972) and Craik & Tulving (1975). Instructing subjects to relate material to their self-concept enhanced both recall and recognition memory. A study by Bower & Gilligan (1979), however, while replicating this finding, found that instructing the subject to refer material to his mother produced a recall and recognition performance which equalled that of self-reference. It was concluded that the self is not a unique context for remembering: any well-differentiated information structure may be equivalent to the self. Lord (1980), on the other hand, found that recall varied according to whether the material being related to the self was an image or a schema: images were more effective memory aids when encoding information about others. Despite the questions these later studies raise over the status of the self as a context for remembering, work has continued to take place on the assumption that asking subjects to relate information to the self leads to the most efficient learning (Schmeck & Meier, 1984).

The concept of self drawn upon in these studies is that of a well-developed but relatively homogeneous structure, which may be more closely implicated in normal information processing than other major concepts such as one's mother, but is otherwise not distinguishable from them. The role of emotion as a differentiating feature has not been examined directly. It seems plausible, however, that one major difference between the self-concept and concepts of other people will be this: that the emotions of the self are directly known to the self, whereas the emotions of others are an inference from perceptions of behaviour, facial expression, or utterance. The obverse of this proposition also seems plausible: that perceptual or behavioural aspects of others are directly available to inspection, whereas one's own image as a perceptible and behaving being is largely an inference compounded from motor sensations and inferences from perceiving the behaviour of others. It follows, therefore, that according to whether new material addresses emotional or perceptual aspects of the self, the self is likely to prove more or less effective as a context for remembering: more effective as the material refers to immediate experience rather than inference.

This argument relates to wider issues concerning the nature of the self-concept. In what form is information about the self encoded? It is proposed in this paper that the emotions represent the primary form in which knowledge about the self is represented. This

is contrasted with the position of those who see the self as a social construct (Turner, 1982) or who consider that self-concept knowledge operates as a prototype or schema (Greenwald & Pratakis, 1984). Several previous studies that have shown the distinctive role of emotion in memory may point to this alternative construal of the self-concept. Ferguson *et al.* (1983) asked subjects to rate personality trait words for desirability or as desirable for the self: recall levels were the same following both instructions, and superior to tasks requiring ratings for familiarity, imageability, or meaningfulness. Emotion, in the form of what was judged desirable or as referring to the self, thus enhanced recall. Packman & Battig (1978) found a similar effect for emotion: words rated for pleasantness were recalled significantly better than words rated in six other non-emotional categories. Strongman (1982), in a cued recall task, also showed that the presence of emotion in single words or sentences enhanced recall. The self may be implicated in each of these studies, including those where self-reference was not an explicit part of the instructions given to subjects: emotion enhanced recall because it signalled issues related to the self.

The present study was designed to test the role of emotion in relation to the self. The effects of both emotional and non-emotional verbal material on remembering were examined, together with the differing effects of referring material either to the subject's self-concept or to the concept of some other person important to the subject. In order to place the study within the depth of processing model (despite theoretical problems that have been associated with it: Baddeley, 1978), and to allow comparison with the previous studies cited above, two other conditions which assume shallower processing were also included: these required subjects to make judgements about the imageability or commonness of the material.

In considering the role of emotion in memory a further variable was also seen to be significant. It seemed likely that the self-reference condition would enhance recall of material showing negative emotion, whereas the other-reference condition would enhance material showing positive emotion. There are several reasons for proposing this. To the degree that a subject becomes aware of him- or herself, according to the study of Csikszentmihalyi & Figurski (1982), so the affective state of the subject shifts towards the negative. Becoming aware of the self is likely to disrupt voluntary activity, and deplete the intensity of attention to the activity. More generally, self-awareness may also tend to be an aversive experience if it leads to self-evaluation with a resulting sense of failure to attain one's ideals. One role of negative emotion, however, may be to motivate shifts and readjustments within the schema of the self. Transformations of the self are more likely to be initiated by negative than positive emotions.

Works of literature (poems, novels) tend to address what is individual in the reader. Studies by the author on affective responses to works of literature (Miall, 1985) have shown that more negative than positive variance is associated with individual response, and that literary material is typically rated more negatively than other domains, as judged by the Golden Section hypothesis (Rigdon & Epting, 1982). In another study a set of constructs was used to rate both normal daily experience and a literary work, which again resulted in a marked negative skew in the second domain (Miall, 1984). For the self, therefore, negative emotions are likely to be more salient, since they signal the necessity of adjustments within the self that have survival value. In viewing others, however, it is the positive emotions in others which (in our culture) are likely to be more salient, both because negative emotions tend to be suppressed in company with others, and because the occasion of being with others will tend to be some activity during which self-awareness, and hence negative emotion, is minimized.

It is thus possible to make predictions about the effects on incidental learning of both (a) different orienting instructions, and (b) varying the material for emotional content. In line

with previous findings, it can be predicted that a general 'depth of processing' effect will be obtained, in which reference to the self or a significant other will result in the same level of remembering, and that this level will be higher than that resulting from reference to either the imageability of the material or its commonness. Of the latter two conditions, commonness is the more superficial and should result in the poorest remembering. For the purpose of this study subjects in the second condition were asked to refer material to a close friend, since this would offer the closest parallel to the self-reference condition in terms of the type of experience being envisaged by subjects.

A second prediction is that subjects instructed to refer material to themselves would remember more emotional material than subjects referring it to a friend; the self-reference subjects would also remember more emotional than neutral material, whereas the friend-reference subjects would on the contrary remember more neutral material than emotional. There should, in other words, be an interaction effect between instruction and type of material.

The third prediction that can be made concerns the differing effects of positive versus negative emotions. The self-reference subjects should remember more negative than positive material, whereas the friend-reference subjects should remember more positive than negative material. Again, an interaction effect should be obtained.

In order to vary the content of the experimental material emotionally, verb-noun phrases were used in which the verb signified either an emotional or non-emotional state. The emotion was either negative or positive; the neutral phrases presented verbs of either behaviour or perception. Examples of the four types of phrase respectively are: *pleased with the money*, *nervous of the doctor*, *catching a train*, and *gazing at the moon*. Thirteen phrases of each type were used (52 in all). In order to control for imageability across the four types of phrase, the nouns were chosen by reference to the image potential according to the ratings of Paivio *et al.* (1968); where a noun chosen did not appear in the list of Paivio *et al.* the rating of a synonym was used as a guide. Nouns ranging from high to low imageability were used for all four phrase types, with a mean imagery rating that was the same for all four. It was expected that phrases high in imageability would be remembered better, regardless of phrase type, although the presence of the verb might alter imageability in unpredictable ways.

Method

Subjects

Fifty-four students of the College of St Paul and St Mary, Cheltenham, participated in the study as part of an educational psychology course.

Design

There were four between-subjects conditions, in which subjects were given different orienting instructions: self-reference, friend-reference, imagery, and commonness. There were four within-subject conditions, in which subjects were exposed to four types of phrase: phrases of positive emotion, negative emotion, behaviour, and perception.

Materials

Fifty-eight verb-noun phrases were read aloud to subjects at 10 s intervals. The first three and last three phrases served as buffers for primacy and recency effects and were not analysed. The order of phrases was randomized, but was the same for all subjects. In a subsequent recognition task, 104 phrases were read aloud, of which 52 were new. The order of these phrases was also randomized.

Procedure

Subjects were run in four groups of from 12 to 17 subjects, one for each between-subjects condition. Subjects had previously been assigned to one of four seminar groups on an alphabetical basis. Since there were unequal numbers in the groups, material from six subjects was randomly discarded from two groups in order to produce 12 subjects in each condition for the analysis of results.

Subjects were told that they were to be given four short tasks that were typical of experiments on verbal material. For the first task phrases were read aloud to the subjects at 10 s intervals, each phrase being preceded by its number. Each subject judged each phrase by entering a rating on a seven-point scale in a booklet. Subjects in the self-reference and friend-reference groups were instructed to bring to mind an actual or imagined experience (of one's self, or of one's friend) described by the phrase, and then to enter a rating of how strong they judged their impression of the experience to be. Subjects in the imagery condition were instructed to rate the strength of the imagery aroused by each phrase. Subjects in the commonness condition entered a rating showing how commonly each phrase might be used in ordinary conversation by students like themselves.

At the end of this task the rating booklets were collected, and the subjects were each given a list of anagrams on a sheet of paper, with the instruction to solve as many as they could in 10 minutes. This served as an interpolated distractor task.

The subjects were then given two unexpected memory tasks. First, subjects were each given a blank sheet of paper and asked to recall as many of the phrases as they could in 10 min; if a phrase was not remembered exactly, subjects were asked to write down a phrase as close to it as possible. At the end of 10 min the sheets were collected, and booklets for a recognition task distributed. Subjects listened to 104 verb-noun phrases read aloud at 7 s intervals, of which half had been presented before (Trues), and half were new (Lures). The new material consisted of 52 further phrases, 13 of each type, balanced as before for imageability and ranging from high to low in imagery. Subjects were asked to rate the phrases on a seven-point scale, in which 1 indicated certainty that the phrase had been heard before, and 7 indicated certainty that the phrase was new.

The free recall scoring included half credit where half of a phrase was correctly recalled, and full credit where a close synonym had been substituted. This follows the scoring procedure of Bower & Gilligan (1979).

Results

The mean number of phrases of each type correctly recalled by subjects is shown in Table 1. From this it can be seen that the self-reference and friend-reference groups both recalled more phrases than the imagery and commonness groups. The general effect of the orienting instructions reached significance ($F = 2.8$, d.f. = 3, 44, $P = 0.05$) in accord with the depth of processing model. Pre-planned t tests showed that the self and friend mean scores did not differ from each other ($t < 1$, d.f. = 44) but that together they were significantly different from the imagery and commonness scores ($t = 3.907$, d.f. = 44, $P < 0.01$). Relating material to the self or a friend are thus both equally effective in enhancing recall memory compared with tasks requiring more superficial processing of material.

The effect of different types of phrase on recall can also be seen from the scores in Table 1. The self-reference group, as expected, recalled a higher number of emotion phrases than the friend-reference group, but fewer neutral phrases. In this respect there was a strong interaction effect of phrase type and orienting instruction ($F = 4.56$, d.f. = 9, 132, $P < 0.001$). A small part of this effect is also due to variance between the imagery and commonness conditions, where the imagery subjects recalled more neutral phrases than the commonness group, but fewer emotion phrases. Scheffé tests of the mean scores show a significant difference between the emotion and neutral scores of the self-reference group ($P < 0.01$), and between the emotion scores of the self-reference and friend-reference groups ($P < 0.05$).

An examination of the effect of positive and negative types of phrase also shows significant variation between self-reference and friend-reference conditions. While there is only a slight advantage for negative phrases in the self-reference group, among the friend-

Table 1. Mean number of phrases recalled in each condition classified by type of phrase

	Emotion			Neutral			Total
	Pos.	Neg.	Total	Behav.	Perc.	Total	
No. phrases heard	13	13	26	13	13	26	52
Self-reference	4.79	4.96	9.75	3.13	3.25	6.38	16.13
Friend-reference	4.13	3.04	7.17	5.21	3.08	8.29	15.46
Imagery	2.42	3.0	5.42	3.2	3.67	6.87	12.29
Commonness	2.75	3.29	6.04	2.58	2.46	5.07	11.08
Total	14.09	14.29	28.38	14.12	12.46	26.58	

reference group there is by contrast a strong advantage for positive phrases. The difference between the negative scores for these groups is significant (Scheffé: $P < 0.01$), as is the difference between negative and positive within the friend-reference group ($P < 0.1$).

The marked effect of the behaviour phrases for the friend-reference group compared with the other groups was significant ($P < 0.01$), suggesting that behaviour was the most salient feature of the experience addressed by subjects in this group. Other effects of phrase type did not reach significance, but some trends of interest appeared: the imagery group, as might be expected, recalled more perception phrases than other types. For the commonness group, on the other hand, there was a tendency for the emotion phrases to be better remembered.

The imagery of phrases, established *a priori*, was found to have affected the probability of recall significantly. In all four groups of subjects, mean recall scores for phrases correlated highly ($r = 0.51$ or above, d.f. = 50, $P < 0.001$) with the rated imagery of the nouns derived from Paivio *et al.* The stronger the imagery for a phrase the more subjects recalled it. The group judging imagery at time of input rated the phrases on a seven-point scale. Their mean scores for each phrase also confirmed the ratings derived from Paivio *et al.* ($r = 0.51$, d.f. = 50, $P < 0.001$). The verbs in the phrases for this study thus appear to have disrupted the image potential of the nouns less than the adjectives used in the first experiment of Bower & Gilligan (1979). This effect held constant across orienting instructions. The commonness of the phrases, on the other hand, as rated by the commonness group, bore no relation to the recall scores in any of the four groups of subjects, including the commonness group itself. It can be concluded, therefore, that imagery has a general effect in determining recall probability, while phrase type and orienting instruction interact to produce a more complex effect on recall.

Following the recall task, subjects were tested on recognition memory. Each phrase was rated on a seven-point scale according to how certain the subject was that the phrase had been heard before (rating of 1 for certainty) or had not been heard before (rating of 7). The mean rating for each type of phrase, both Trues and Lures, is shown in Table 2. In the case of the True phrases, the rating scores follow a pattern that is similar to the recall scores. Analysis of the ratings showed as before a significant main effect for orienting instruction ($F = 4.75$, d.f. = 3, 44, $P < 0.01$) and a significant interaction effect between instruction and phrase type ($F = 2.56$, d.f. = 9, 132, $P = 0.01$). The variation across positive and negative emotion scores between self-reference and friend-reference groups at recall was also reproduced in the recognition scores.

Analysis of the ratings for Lures showed a strong effect for phrase type ($F = 18.62$, d.f. = 3, 132, $P = 0.001$) but no other significant difference. Subjects in all conditions were less certain that the emotion Lures had not been heard before, with the negative emotion

Table 2. Mean ratings for recognition in each condition classified by type of phrase

	Emotion		Neutral		Mean
	Pos.	Neg.	Beh.	Perc.	
Trues					
Self-reference	1.42	1.15	1.33	1.35	1.32
Friend-reference	1.21	1.42	1.11	1.41	1.29
Imagery	1.97	1.38	1.65	1.45	1.61
Commonness	1.56	1.52	1.79	1.71	1.64
Mean	1.54	1.37	1.47	1.48	1.47
Lures					
Self-reference	6.31	6.17	6.58	6.57	6.41
Friend-reference	6.3	5.99	6.7	6.44	6.36
Imagery	6.42	5.97	6.59	6.4	6.34
Commonness	6.44	6.08	6.4	6.49	6.35
Mean	6.37	6.05	6.57	6.47	6.37

Lures in each case producing the least certainty. This suggests a slight spreading of the effect of emotion in memory from old to new phrases, which was a little more marked in the case of negative emotion.

Discussion

The present study replicates the findings of previous investigators that the self-concept is a more effective context for remembering than tasks that require shallower processing. The effect has now been obtained with a range of different types of verbal material, including trait adjectives, adjective-noun descriptions, and (in the present study) verb-noun phrases. The effect has also been obtained whether a subject is tested singly or in a large group. Thus the finding is robust to both changes in experimental conditions and type of material. As a context for learning the self contrasts favourably with such tasks as judging orthographic, phonemic, or semantic aspects, or judgements of the imagery or commonness of material. This study also replicates the finding, on the other hand, that as an overall context for remembering the self is not unique: reference to a friend will result in an equivalent performance in terms of the amount of material remembered.

The manipulation of remembering by phrase type, however, reveals that self-reference is distinct from friend-reference by virtue of certain specific features. If the material is emotionally weighted then relating it to the self will significantly improve its chances of recall, compared with relating it to the friend. If the material is emotionally neutral, being concerned with behaviour or perception, then the friend provides a better context for remembering. Moreover, considering the two types of emotional material studied, emotion that was negative was remembered the least well in relation to the friend, whereas in relation to the self negative material had a slight advantage. The presence or absence of emotion in the test material thus serves to distinguish the self from the friend in incidental learning.

Several implications of these findings require further study. In one important respect the data on self-related emotions are ambiguous. If negative emotions initiate transformations in the self, then it might be argued that the transformation process will modify the original emotion and that negative phrases will thus be less well remembered. Since, even so, negative phrases were slightly better recalled than positive this might indicate that the

negative were markedly more salient at time of input. A more probable explanation, however, is that the short time span allowed in the study (10 minutes from the end of input to the time of recall) was insufficient for the hypothesized transformation process to take place. Evidence for such transformations will only come from studying recall rates for negative material over a longer period. As all clinical psychologists know, emotions modify only slowly in comparison with more purely cognitive material.

Another implication of this finding is that the self is not the 'uniform, well-structured concept' that was proposed by Rogers *et al.* (1977). There may be two separate routes of access to material that has been associated to the self, an emotional and a cognitive route; of these the cognitive seems to be less efficient. The self-concept appears to be represented primarily in emotional terms, since the best conditions for both recall and recognition are obtained when material referred to the self is emotional.

The present findings thus suggest that accounts of the self-concept that describe it in exclusively cognitive terms or as a social construct should be reconsidered. Two other recent studies point to a similar conclusion. Andersen & Williams (1985) observe that research on self-esteem has emphasized the overt, behavioural aspects of the self in self-evaluation; but the subjects in their study were only likely to attend to public aspects of the self in a context where the perception of outside observers was a salient feature. In a private context, covert thoughts and feelings were a more significant influence on self-esteem. Figurski (in press), in an experience-sampling study involving 31 adults, found that the most frequent form of person awareness was egocentric, consisting of awareness of the experience of the self (emotions, attitudes, bodily sensations and thoughts). Significantly less frequent were images of the self or images of others, those aspects objectively available to perception. Awareness of the emotions of others was the least common. Awareness of the experience of the self was also found to be more intense than other forms of person awareness. As Figurski points out, these findings call into question research on the self-concept which places emphasis on the adoption of an external perspective in attending to the self.

This issue clearly requires further research, taking account of individual differences in private self-awareness that have been found (Fenigstein *et al.*, 1975), as well as differences in awareness of others (Snyder, 1974). While awareness of emotion in the self or others may vary, however, the findings of the present study argue that the representation of the self-concept as a structure of emotions is prior to such differences.

The implications for learning are also more complex than the study of Schmeck & Meier (1984) suggested. In their study self-reference was compared only to phonetic and semantic judgements. Scores for recall for each subject were compared with scores on the Elaborative Processing Scale of the Inventory of Learning Processes, which measures the extent to which an individual makes new information personal by translating it into his or her own 'terminology, examples, and mental images'. It was shown that subjects scoring low on the scale nevertheless produced superior recall performance when instructed to use self-reference as a strategy. This indication that self-reference taps the same type of process as Elaborative Processing is, however, not supported by the present study. If it is assumed that phrases describing behaviour or perception, when judged in the self- and friend-reference conditions, are processed by translation into examples from experience and into mental images, then the friend-reference instruction has a clear advantage for behaviour phrases, while an instruction to judge imagery is marginally more effective than either in the case of perception phrases. Thus the learning process measured by the Elaborative Processing Scale, which deals mainly with examples and imagery, does not tap the differences between self, friend, and imagery conditions, nor does it address the main advantage of self-reference, which is for emotional material. The implications for

instructional strategy are therefore less straightforward than the general advocacy of self-reference by Schmeck & Meier: type of material is a significant variable.

While the present study partly replicates that of Bower & Gilligan (1979), one important difference beside type of material requires examination. Their first experiment included pleasant and unpleasant phrases. It was found that in both the self-reference and semantic conditions significantly more pleasant phrases were recalled. In the present study, on the other hand, marginally more negative than positive phrases were recalled in all conditions except the friend-reference condition. What might account for this difference? The principal cause may lie in the type of phrase. The adjective-noun phrases of the Bower & Gilligan study, such as 'a boring lecture', or 'a faithful pet', may have addressed the subject's memory for moments or objects in experience, whereas the verb-noun phrases used in the present study may have invoked sequences of action in experience. The distinction between adjective and verb may thus have addressed the difference between schemata for items and schemata for actions. As a description of an experience that requires, or once required, action, the negative phrases seem to be marginally more salient. Memory that raises no implications for action, by contrast, may tend to be confirming for the individual, tending to select positive material. This account is consistent with Csikszentmihalyi & Figurski's (1982) emphasis on negative emotion and self-awareness in the context of behaviour. This suggestion, if correct, has important implications for the role of the self-concept in learning and memory which require further investigation. It also shows once again that the self is not a uniform schema, but one that will give rise to different effects according to the type of material to which it is related.

In conclusion, it has been shown that the self-concept as a context for remembering is differentiated according to whether material is emotional or neutral. These and other findings reported in recent studies lead to the proposal that the self-concept is primarily represented in the emotions. It is also suggested that memory for actions may differ from memory for moments or objects: in the case of self-reference, negative experiences which imply action may prove to be more salient than positive experiences. Instructional strategies which require reference to the self will be most effective when the material to be remembered is of an emotional nature. If the material is emotionally neutral other referral strategies may be more effective.

Acknowledgements

I am grateful to Sylvia Hucklesby and an anonymous reviewer for comments on a draft of this article.

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Received 10 September 1985; revised version received 4 January 1986

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