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Phenomenal Characteristics of Autobiographical Memories for Positive, Negative, and Neutral Events

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SUMMARY

We investigated memory qualities for positive, negative, and neutral autobiographical events. Participants recalled two personal experiences of each type and then rated their memories on several characteristics (e.g. sensorial and contextual details). They also reported whether they 'see' the events in their memories from their own perspective ('field' memories) or whether they 'see' the self engaged in the event as an observer would ('observer' memories). Positive memories contained more sensorial (visual, smell, taste) and contextual (location, time) details than both negative and neutral events, whereas negative and neutral memories did not differ on most dimensions. Positive and negative events were more often recollected with a field perspective than neutral events. Finally, participants were classified in four groups according to the repressive coping style framework. Emotional memories of repressors were not less detailed than those of the other groups. Copyright © 2002 John Wiley & Sons, Ltd.

Certain types of event are remembered with great clarity whereas our memories of other events seem vague. The emotional meaning of the event could play an important role in determining these differences in memory. Indeed, it has been argued that recreating emotional experiences is crucial for defining the self, for planning current actions, and for predicting the future (Ochsner and Schacter, 2000). Research on the impact of emotion on memory has a long history and has produced rather complex, and sometimes inconsistent, results (see Christianson, 1992; Schooler and Eich, 2000 for reviews). The influence of emotion on memory has been investigated with various approaches including eyewitness studies (e.g. Burke *et al.*, 1992; Christianson and Loftus, 1987), flashbulb memories studies (e.g. Brown and Kulik, 1977; Conway *et al.*, 1994; Finkenauer *et al.*, 1998), and autobiographical memory studies (e.g. Conway and Bekerian, 1988; Reisberg *et al.*, 1988; Thompson *et al.*, 1996). The vast majority of these studies were mainly concerned with the objective accuracy of recall for emotional events and were only secondarily interested in determining the qualitative characteristics of emotional memories. And yet recent developments in memory research have emphasized the importance of subjective

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experiences that accompany recollection (Brewer, 1996; Gardiner, 2000; Wheeler *et al.*, 1997). It is indeed the subjective experience during recall that gives us the sense that a particular memory belongs to our personal past (Wheeler *et al.*, 1997) and that enables us to distinguish a personal memory from an event we only imagined or from other kinds of representations such as beliefs (Johnson *et al.*, 1993).

In most empirical studies that have investigated qualitative characteristics of memory for emotional events, participants were asked to rate the overall vividness of their memories. Such studies have found a relationship between retrospective evaluation of emotion during encoding and vividness of the memories (Conway and Bekerian, 1988; Reisberg *et al.*, 1988; Rubin and Kozin, 1984). However, as argued by Ochsner and Schacter (2000), this relationship is ambiguous because it is not clear how participants made their ratings. Memories could have been rated as vivid because the subjects were confident in their accuracy, because they felt they re-experienced the events, or because they thought the memories were detailed.

A more elaborate way to investigate qualitative characteristics of memories comes from the literature on source monitoring (see Johnson *et al.*, 1993 for a review). From this perspective, specific memories are constructions generated from several types of knowledge such as sensorial, cognitive, and emotional information that were present during the episode as well as contextual (spatio-temporal) information (Johnson and Chalfonte, 1994; see also Conway and Pleydell-Pearce, 2000). Johnson *et al.* (1988) investigated qualitative (phenomenal) characteristics of autobiographical memories such as sensorial and contextual details by using a Memory Characteristics Questionnaire (MCQ) and showed that autobiographical memories for real events contained more of these details than memories for imagined events. Recently, Destun and Kuiper (1999) used MCQ items to compare autobiographical memories for pleasant and stressful events. Participants had to retrieve one pleasant and one stressful event and were also asked to imagine one event of each type. They then rated their memories on several 7-point scales which assessed the amount of sensory details (visual, smell, taste), clarity of contextual information (location, time), familiarity of setting, complexity of storyline, and intensity of feelings (positive, negative). Destun and Kuiper observed that positive memories were more detailed than negative memories regarding sensorial and contextual information. Similarly, Larsen (1998) showed that the visual, auditory, olfacto-gustatory, tactile and somato-kinaesthetic details were more vivid for positive than for negative memories. Finally, Raspotnig (1997) found that the imagery associated with positive memories was reported as being more colorful, sharper in focus, and more vivid than the imagery associated with negative memories. Unfortunately, none of these studies have compared memories for emotional events with memories for neutral events. Yet, this comparison is important because it is currently not known whether emotional events (positive as well as negative) are more richly recollected than neutral events.

The main objective of the present study was to compare phenomenal characteristics associated with memories for positive, negative, and non-emotional autobiographical events. There are several ways of sampling autobiographical memories for emotional events. Several studies used positive, negative, and neutral words (e.g. birthday, funeral) as cues for recall or asked participants to recall specific situations which are supposed to involve emotions (e.g. 'remember a time when you passed an important exam'). However, such procedures do not guarantee that all participants will always recall events in which they actually felt the emotions they are supposed to feel (e.g. a birthday is not necessarily a positive event for everyone). In the present experiment, we wanted to be sure that the

events recalled were actually positive, negative, or neutral for the participants, so we explicitly asked them to recall events in which they had felt positive emotions, negative emotions, or no particular emotion. Participants were asked to recall two events of each type and then to rate the sensorial (visual, smell, taste) and contextual (location, time) components of their memories. The memory characteristics items were drawn up from the MCQ (Johnson *et al.*, 1988) and were the same as those used by Destun and Kuiper (1999). Like Destun and Kuiper, we predicted that positive memories would receive higher ratings than negative ones. Indeed, people may have a tendency to elaborate selectively positive emotional information about themselves and then to recall positive information better than negative information (Denny and Hunt, 1992; Taylor and Brown, 1988). Greater elaboration and rehearsal should result in more detailed memories (Suengas and Johnson, 1988). When considering neutral memories, we predicted that they would receive lower ratings than both positive and negative memories. Firstly, emotional material tends to be more richly encoded than neutral one: on the one hand, it attracts and maintains attention to a greater extent (Williams *et al.*, 1996); on the other hand, people tend to devote deliberately more attention and to elaborate more deeply emotional information because emotional experiences are relevant to significant changes of important personal goals (Bower, 1992; Stein *et al.*, 1997). Second, emotional events tend to be more often thought about and recounted to others than are non-emotional events (Schacter, 1996) and may benefit from special neuronal consolidation processes (Cahill and McGaugh, 1998). More attention devoted to and greater rehearsal of emotional experiences should result in memories that contain more sensorial and contextual details. Overall, we thus predicted that positive memories would receive the highest MCQ ratings, that negative memories would receive lower ratings than positive ones but higher ratings than neutral ones.

We were also interested in another characteristic of autobiographical memories. Nigro and Neisser (1983) showed that personal events could be remembered in two ways: the rememberer may 'see' the event from his or her point of view (field memories, F), or 'see' the self engaged in the event as an observer would (observer memories, O). Emotion may be an important factor in determining the point of view in memories. Indeed, situations which involved high emotional self-awareness seem to be more often recollected with an O perspective (Nigro and Neisser, 1983, Experiment 3). Moreover, subjects who were trying to remember emotional components of memories reported more F and less O memories than subjects who were trying to remember the objective circumstances surrounding the events (Experiment 4). Robinson and Swanson (1993) found no differences in emotional intensity during encoding of F and O memories. These authors proposed that encoding conditions are not crucial in determining the perspective of memories, instead each perspective would be an active construction made during recall that provides different types of knowledge: in the F perspective, cognitive (goals, beliefs) as well as affective components of memories would be accessible, whereas in the O perspective only cognitive information would be accessible. Consistent with this, Robinson and Swanson found that shifting from F to O perspectives decreased affect intensity while remembering.

Our second goal was to explore the point of view in memories associated with positive, negative, and neutral events. We asked participants to classify each memory they recalled according to the F/O distinction. We thought that emotional memories would be more often associated with the F perspective than neutral memories because subjects should focus more on their emotional responses when remembering emotional memories. When considering positive versus negative memories, we predicted that negative events would be

less likely remembered with the F point of view because it has been argued (Conway and Pleydell-Pearce, 2000) that access to negative affect might be inhibited during the construction of memories in order to prevent disruptions of current tasks. This inhibition of affective components of memories should result, according to Robinson and Swanson, in fewer F memories.

It may be possible that phenomenal characteristics associated with emotional memories are affected by individual differences factors. From this perspective, the repressive coping style framework seems interesting. Weinberger *et al.* (1979) made use of measures of trait anxiety and social desirability to identify four groups of individuals. Those low in trait anxiety and in social desirability were referred to as low-anxious, those low in trait anxiety and high in social desirability as repressors, those high in trait anxiety and low in social desirability as high-anxious, and those high in both trait anxiety and social desirability as defensive high-anxious. Using Weinberger *et al.*'s classification, numerous studies have shown that repressors have more limited recall of negative events than the other groups (e.g. Davis and Schwartz, 1987; Newman and Hedberg, 1999). Moreover, repressors took more time to access negative memories (Myers *et al.,* 1992). Myers and Brewin (1994) have also found that repressors were substantially older at the time of their earliest negative memory recalled although they reported to have experienced more aversive events during childhood. The difficulty that repressors have when recalling negative personal experiences has been interpreted as a consequence of a reduced accessibility (Davis, 1990) or availability (Schimmack and Hartmann, 1997) for these experiences.

Turning from memory performance to qualitative characteristics of memories, one may wonder whether repressors, once they have accessed negative experiences, tend to have less detailed representations for these experiences. This is an important question because, as we have already argued, it is the subjective experience during remembering that gives us the sense that we are remembering an event that belonged to our personal past. The construction of impoverished negative memories may be another way by which repressors tend to protect their self-esteem. The phenomenal characteristics of memories in repressors have not yet been studied and it was the third objective of the present experiment to do so. We predicted that negative memories would be less detailed for repressors than for the other groups. Indeed, as we have seen, repressors tend to have more difficulty in recalling negative events; fewer reactivations of memories is associated with a decrease of their phenomenal characteristics (Suengas and Johnson, 1988). Finally, we examined the effect of the repressive coping style on the perspective within memories. Terry and Barwick (1995) found that repressors had fewer O memories than the low-anxious. We wanted to replicate these findings.

METHOD

Participants and composition of the repressive coping style groups

One hundred and one University of Liège undergraduates participated in the study (25 males and 76 females). The average age of participants was 21.47 (ranging from 18 to 32). The repressive coping style was assessed by using scores on the French versions of the Trait scale of the Spielberger State-Trait Anxiety Inventory (STAI; Spielberger *et al.*, 1970) and of the Marlowe–Crowne Social Desirability Scale (MC-SDS; Crowne and Marlowe, 1964). The Trait scale of the STAI is a 20-item self-report measure that assesses

Table 1. Mean STAI and MC-SDS scores for the total sample and for each group

	Total sample ($n = 101$)	LA ($n = 23$)	HA ($n = 29$)	R ($n = 32$)	DHA ($n = 17$)
STAI	46.3	39.9	55.6	37.7	55.5
MC-SDS	15.2	11.9	11.1	19.8	18.5

the cognitive and affective components of anxiety. Although the majority of previous repressor studies used the Taylor Manifest Anxiety Scale (Taylor, 1953), we preferred the STAI because of its more widespread use in contemporary studies of trait anxiety. Moreover, several recent studies used the STAI as a measure of trait anxiety for the classification of their subjects according to the repressive coping style (Derakshan and Eysenck, 1998; Tomarken and Davidson, 1994). The MC-SDS is a 33-item self-report scale which measures defensiveness (see Weinberger, 1990).

Median splits were used to classify the participants into low-anxious (LA), repressor (R), high-anxious (HA), and defensive high-anxious groups (DHA). Participants in the R group ($n = 32$) scored above the sample median on social desirability ($Mdn = 14$) and below the sample median on trait anxiety ($Mdn = 46$). HA participants ($n = 29$) scored below the median on social desirability but above the median on trait anxiety. LA participants ($n = 23$) scored below the median on both social desirability and trait anxiety scales. Participants in the DHA group ($n = 17$) scored above the median on both scales. The mean STAI and MC-SDS scores for the total sample and for each group are presented in Table 1.

Materials

Instructions

Participants filled in a questionnaire which asked them to recall six personal experiences that had occurred within the last 12 months: two that were positive or pleasant, two that were negative or unpleasant, and two that were neutral regarding their emotional content. The recalled events had to be specific, that is, they must have occurred in a specific place at a specific time and they had to have lasted several minutes or hours but not several days or weeks (Conway, 1996). To illustrate what could be a positive, a negative, or a neutral event, the instructions provided some examples. Pleasant events could have been such things as a party with friends, a wedding, or going to a concert. Unpleasant events could have been such things as having an argument with a friend, being involved in a car accident, or the death of a close relative. Neutral events could have been such things as buying a book, or baby-sitting. However, the instructions clearly indicated that participants were not limited to using only these examples and it was emphasized that the important thing was that they themselves actually felt positive emotions, negative emotions, or no particular emotions in the events. For positive and negative events, participants had to choose the most intense if several events came to their mind. This was done in order to sample events which are highly contrasted with regard to their emotional meaning. For each event, participants were asked to think about that event for two or three minutes and to try remembering it as clearly as possible before going on to the next part of the questionnaire.

Ratings of memories

Participants were first asked to describe in a few words the content of the event. They were nonetheless free to skip this question. This was done in order to prevent a change of memory if participants judged it would have been embarrassing to report it. Participants then rated their memory on nine dimensions. The items were drawn from the MCQ created by Johnson *et al.* (1988) and were the same as those used by Destun and Kuiper (1999). For the nine questions, the participants used 7-point scales. They rated the memories on visual details (1 = none, 7 = a lot), odours (1 = none, 7 = a lot), taste (1 = none, 7 = a lot), clarity of location memory (1 = not at all clear, 7 = very clear), clarity of time memory (1 = not at all clear, 7 = very clear), familiarity of general setting (1 = not at all familiar, 7 = very familiar), complexity of storyline (1 = simple, 7 = complex), positive emotion (1 = none, 7 = very intense), negative emotion (1 = none, 7 = very intense). They were also asked to report the point of view in their memory by assigning the memory in one of three categories depending on whether they 'saw' themselves in the memory (O), they saw the original field of view (F), or they felt that neither point of view fitted (N). A detailed paragraph instructed them on the distinction between observer and field memories (see Nigro and Neisser, 1983).

Procedure

Questionnaire construction

The first page of the questionnaire informed participants that the experiment concerned the recall of personal events, that it was anonymous and that they were free to withdraw from the experiment at any time. The instructions for each event recall were given on one page. The two pages following the instructions for an event contained the nine memory characteristics ratings and the item concerning the point of view in the memory. Participants recalled one event of each type (positive, negative, neutral) first and then another event of each type. Thirty-six versions of the questionnaire were constructed by systematically varying the order of recall of positive, negative, and neutral memories (six possibilities for the first three memories × six possibilities for the second memories). Participants completed the STAI and the MC-SDS at the end of the questionnaire.

Testing sessions

The questionnaires were administered in small groups of two to six individuals. Participants were sufficiently apart to ensure that they would be at ease when responding. They were encouraged to ask questions if something in the questionnaire was not clear. Most participants completed the questionnaire in 30 to 40 minutes. They were debriefed concerning the purpose of the experiment at the end of the session.

RESULTS

Content of the memories

To give an idea of the content of the events recalled in the present study, we classified descriptions of the events in broad categories. Positive events were such things as parties (33%), successes at school (18%), leisure activities (18%), or romantic episodes (17%); 8% of the events reported could not be classified in these categories and 6% of the events

were not described. Negative events were such things as arguments with relatives or close friends (27%), the end of a romantic relationship (22%), accidents, severe illnesses, or deaths of relatives (17%), failures at school (14%), or accidents involving the participants themselves (7%); 4% of the events reported could not be classified in theses categories and 9% of the events were not described. Neutral events were such things as attending a course or other episodes at school (28%), doing some shopping (20%), leisure activities (19%), going to the doctor, the hairdresser, etc. (17%), a car/bus/train journey (13%); 3% of the events were not described. Overall, the events recalled were varied and quite representative of what one generally means by positive, negative, and neutral events.

Memory characteristics ratings

The main goal of the present study was to compare memory characteristics for positive, negative, and neutral events. The mean ratings and standard deviations for the nine memory characteristics investigated are presented in Table 2 as a function of event type (positive, negative, neutral). As can be seen, positive memories received higher ratings than both negative and neutral memories with regard to sensorial and contextual details, whereas negative and neutral memories received equivalent ratings on most dimensions.

A $3 \times 2 \times 2 \times 2$ multivariate analysis of variance (MANOVA) was calculated to assess the effects of event type (positive, negative, neutral), order of recall (first memories, second memories), anxiety (high, low), and defensiveness (high, low) on the memory characteristics ratings. Event type and order of recall were within-subject factors; anxiety and defensiveness were between-subjects factors. An alpha level of 0.05 was used for all statistical tests.

The main effect of event type was significant at the multivariate level, $\Lambda(18, 80) = 0.025$, $p < 0.001$, and was significant for the nine characteristics at the univariate level (see Table 2 for F, p and η^2 values). To find differences among the three types of events, a series of planned comparisons was computed. Significant differences ($p < 0.05$) are shown in Table 2. Positive memories were rated as more detailed than both negative and neutral memories with regard to sensorial and contextual components of the memories (visual details, odours, taste, location memory, and time memory). In contrast, negative and

Table 2. Means (and standard deviations) for the nine memory characteristics ratings as a function of event type (positive, negative, neutral), and F values for the main effect of event type on each item

	Event type			Univariate F's		
Memory characteristics	Positive	Negative	Neutral	$F(2, 194)$	$p<$	η^2
Visual details	6.14 (1.00)[a]	5.52 (1.28)[b]	5.34 (1.31)[b]	19.32	0.001	0.17
Odours	3.04 (1.68)[a]	1.88 (1.16)[b]	2.28 (1.19)[c]	21.54	0.001	0.18
Taste	3.08 (1.74)[a]	1.57 (0.95)[b]	1.60 (1.06)[b]	40.81	0.001	0.30
Location	6.65 (0.72)[a]	6.42 (0.92)[b]	6.38 (0.87)[b]	5.05	0.01	0.05
Time	5.98 (1.10)[a]	5.61 (1.21)[b]	5.03 (1.55)[c]	17.37	0.001	0.15
Setting	4.74 (1.64)[a]	5.60 (1.38)[b]	5.25 (1.38)[c]	9.93	0.001	0.09
Storyline	2.64 (1.47)[a]	4.02 (1.59)[b]	1.54 (0.85)[c]	96.67	0.001	0.50
Positive emotions	6.31 (0.67)[a]	1.56 (0.79)[b]	3.03 (1.26)[c]	745.25	0.001	0.88
Negative emotions	1.54 (0.56)[a]	6.24 (0.75)[b]	2.29 (1.08)[c]	997.39	0.001	0.91

Note: Superscript letters indicate significant differences: if means within a row are labelled with different superscripts, they were significantly different ($p < 0.05$); and if they share superscripts, they did not differ.

neutral memories differed on only two dimensions with negative memories obtaining superior ratings for time memory while neutral memories received superior ratings for odours. Also, the setting of negative events was rated as more familiar than the setting of neutral events, whereas the setting of positive events was rated as less familiar. Negative events were rated as more complex than positive events which were themselves rated as more complex than neutral ones. Finally, positive emotions were rated as more intense for positive than neutral events, and more intense for neutral than negative events. Negative emotions were rated as more intense for negative than neutral events, and more intense for neutral than for positive events.

The MANOVA also indicated a significant multivariate main effect of order of recall (first versus second memories), $\Lambda(9, 89) = 0.698$, $p < 0.001$. At the univariate level, this effect was significant for three of the nine characteristics. For clarity of location memory, the first memories recalled ($M = 6.58$) received higher ratings than the second memories ($M = 6.38$), $F(1, 97) = 9.11$, $p < 0.01$, $\eta^2 = 0.08$. For clarity of time memory, the first memories recalled ($M = 5.81$) received higher ratings than the second memories ($M = 5.28$), $F(1, 97) = 17.71$, $p < 0.001$, $\eta^2 = 0.15$. Finally, storyline was rated as more complex for the first memories ($M = 2.89$) than for the second memories ($M = 2.57$), $F(1, 97) = 7.43$, $p < 0.01$, $\eta^2 = 0.07$.

The MANOVA did not reveal any other significant effects. Of particular interest for the present study was the anxiety × defensiveness × event type interaction. This interaction failed to reach statistical significance, $\Lambda(18, 80) = 0.822$, $p = 0.51$. Thus, contrary to our assumptions, ratings of memory characteristics for negative events were not different among the repressive coping style groups.[1]

Point of view in memories

Of the total 606 memories in this study, 58% were classified as field (F) memories, 39% as observer (O) memories, and only 3% as not clearly either (N). These proportions are similar to those reported in other studies (see Nigro and Neisser, 1983, Experiment 1; Terry and Barwick, 1995). Table 3 shows the frequencies and proportions of F, O, and N

Table 3. Frequencies (and proportions) of field and observer memories as a function of event type (positive, negative, neutral)

Point of view	Event type			
	Positive	Negative	Neutral	Total
Field	125 (0.62)	128 (0.63)	96 (0.48)	349 (0.58)
Observer	69 (0.34)	66 (0.33)	101 (0.50)	236 (0.39)
Neither	8 (0.04)	8 (0.04)	5 (0.02)	21 (0.03)

[1]In much of the repressive coping style research, participants are classified into groups using median splits or splitting the variables by thirds. However, Wright (Presentation at the Third International Conference on Memory, Valencia, 2001) has recently critisized this approach and has proposed a more statistically sound alternative which treats repressive coping style as a continuous variable. A single metric variable is calculated by taking the standardized score from the MC-SDS and subtracting the standardized score from the STAI. We performed regression analyses on the MCQ ratings for negative memories with this continuous variable as predictor. Repressive coping style was not predictive of any MCQ ratings (all $ps > 0.19$). Therefore, both approaches for treating repressive coping style lead to the same conclusion: repressive coping style did not influence the quality of negative memories in the present study.

Table 4. Mean proportions of observer and field memories as a function of repressive coping style

Point of view	Coping style			
	Repressors ($n = 32$)	Low-anxious ($n = 23$)	High-anxious ($n = 29$)	Defensive ($n = 17$)
Field	0.60	0.67	0.50	0.55
Observer	0.38	0.30	0.47	0.40
Neither	0.02	0.03	0.03	0.05

memories as a function of event type (positive, negative, neutral). The F point of view was reported for 62% of positive memories, 63% of negative memories, but only 48% of neutral memories. In contrast, the O point of view was reported in 50% of neutral memories, but only in 34% and 33% of positive and negative memories respectively. Table 4 shows the proportions of F, O, and N memories as a function of repressive coping style. As can be seen, contrary to Terry and Barwick (1995), repressors did not report fewer O memories than the low-anxious in the present study.

We computed for each participant the proportions of F and O memories for positive, negative, and neutral events. A 3 (event type) $\times$ 2 (perspective: F versus O) $\times$ 2 (anxiety) $\times$ 2 (defensiveness) ANOVA on these proportions was calculated. There was a significant main effect of perspective, $F(1, 97) = 9.13$, $p < 0.01$, $\eta^2 = 0.09$, indicating that the memories were more often recalled with the F rather than the O perspective. The event type by perspective interaction was also significant, $F(2, 194) = 9.75$, $p < 0.001$, $\eta^2 = 0.09$. Planned comparisons indicated that positive and negative memories were more often reported with a F perspective than neutral memories, $F(1, 97) = 9.63$, $p < 0.01$, $\eta^2 = 0.09$, and $F(1, 97) = 13.18$, $p < 0.001$, $\eta^2 = 0.12$ respectively, whereas positive and negative memories were not different in their tendency to produce F memories, $F(1, 97) < 1$. Neutral memories were more often reported with an O perspective than both positive and negative memories, $F(1, 97) = 11.18$, $p < 0.01$, $\eta^2 = 0.10$, and $F(1, 97) = 15.69$, $p < 0.001$, $\eta^2 = 0.14$ respectively, whereas positive and negative memories were not different, $F(1, 97) < 1$. The ANOVA did not reveal any other significant effects.

DISCUSSION

Few studies concerned with the impact of emotion on memory have investigated the qualitative characteristics of emotional autobiographical memories. Moreover, these studies have not compared emotional with neutral memories. The main objective of the present study was to make such a comparison. We asked subjects to recall two positive, two negative, and two neutral autobiographical events and to rate the sensorial and contextual details of their memories. As we predicted, positive memories were more richly recollected than negative ones. More specifically, positive memories contained more sensorial (visual, smell, taste) and contextual (location, time) information than negative memories. When considering emotional versus neutral memories, we found that positive memories contained more sensorial and contextual details than neutral memories; however, contrary to our assumptions, negative memories overall were not more detailed than neutral ones. Indeed, negative memories were not different from neutral ones concerning visual details, taste, and location; these two types of memories differed only

on two memory dimensions with negative memories obtaining superior ratings for time memory while neutral memories received superior ratings for odours. We also found that the setting of negative events was rated as more familiar than the setting of neutral events, whereas the setting of positive events was rated as less familiar than the setting of neutral events. Negative events tended to be more complex than positive events which were themselves more complex than neutral ones. Finally, the ratings of positive and negative emotions experienced during the events indicated that participants were able to recall intense positive and negative events; 'neutral' events were associated with moderate positive and negative emotions, however these emotions were far less intense than for emotional events.

The present findings concerning positive versus negative memories replicate previous works (Destun and Kuiper, 1999; Larsen, 1998; Raspotnig, 1997) and are consistent with the idea that positive autobiographical events tend to be more elaborated, more rehearsed, and more easily accessed because they are consistent with the generally very positive view that most people have of themselves (Taylor and Brown, 1988). When considering negative versus neutral memories, our results seem to be in contradiction with the numerous studies that have shown that negative events tended to be better recalled than neutral ones, at least for the central details of the events (see Christianson, 1992 for a review). Moreover, if negative information tends to capture attention to a greater extent (Williams *et al.*, 1996) and to be more often thought about and told to others (Schacter, 1996), negative memories should be more detailed than neutral ones because elaboration and reactivation of memories enhance their phenomenal qualities (Suengas and Johnson, 1988).

We think that negative memories were not more detailed than neutral ones in the present study because retrieval cues were rather vague. Indeed, retrieval conditions such as the amount and the specificity of cues are critical factors which determine the accessibility of properly stored memories (Koutstaal and Schacter, 1997; Roediger, 2000). Conway and Pleydell-Pearce (2000) proposed that the self may control the elaboration of retrieval cues in order to construct memories relevant to its current goals. These authors have also argued that access to negative emotional experiences might be inhibited because it has the potential to disrupt current operations of the cognitive system. In contrast, positive and neutral autobiographical knowledge would not be subjected to such an inhibition. The control processes exerted by the self during retrieval may be more or less effective depending on retrieval conditions. They may be more effective when retrieval conditions are vague because in this case people must rely on their own retrieval models and on strategic search processes that are controlled by the self. In contrast, they may be less effective when retrieval cues are more specific and when negative information is of relevance to current goals (for example, to cope with a similar negative event). In the present experiment, the only cues given to the participants were the emotional reaction in the events (positive, negative, neutral) and a time restriction (the last 12 months). Thus, subjects could recall whatever events they wanted within these limitations. In such a poorly defined condition, the self has the opportunity to exert powerful control on the access to autobiographical knowledge. Thus the construction of detailed negative memories may have been avoided because they were not useful to perform the task (they were not relevant to current goals) and because they risked provoking disruptions by the reinstallation of negative emotions. In contrast, studies that have shown a superiority of recall of negative over neutral events have used retrieval cues that were richer: participants were often asked some precise questions about a well-identified event which they had

experienced previously or they had to recognize such events (see Christianson, 1992). In this case, access to negative information is needed to perform the task and more cues are given to the subjects, thus the control over the accessibility of negative memories may be less effective. Overall, it may be the case that access to negative autobiographical knowledge tends to be inhibited, but when cues are specific and when the information is relevant to current goals, access to negative information becomes possible. To test this hypothesis, it may be fruitful in further research to compare positive, negative, and neutral memories with systematic variations in retrieval conditions and also to consider the goals of the individual in a particular situation. This would clarify the contribution of retrieval processes and of the self in the construction of emotional memories.

The second purpose of the present study was to compare the point of view within memories for positive, negative, and neutral events. We found that emotional events (positive as well as negative) were more often associated with F memories and less often associated with O memories than non-emotional events. This might have been the case because participants tended to focus more on the emotional components of their memories when recalling emotional events. This type of focus is indeed associated with the F perspective (Nigro and Neisser, 1983, Experiment 4). However, we did not find any differences in frequencies of F and O perspectives between positive and negative memories. This goes against our initial assumption that people should be more reluctant to focus on their emotional reaction when constructing negative memories and should consequently recall negative events less often in the F perspective. We may conclude from these results that when trying to remember personal events from our past, our memories will more probably take the field perspective if those events involved an emotional reaction (either positive or negative). However, the design of the present study does not permit to know how this occurs. Memory perspective could be determined either by the emotional response at the time of encoding or by the focus on this response during recall. Further research should try to control both the encoding and retrieval phases in order to shed light on this issue.

Finally, we were interested in the influence of the repressive coping style on the qualitative characteristics of emotional memories. Numerous studies have shown that repressors have a more limited recall of negative autobiographical events (e.g. Davis and Schwartz, 1987; Newman and Hedberg, 1999), and take more time to access negative memories (Myers *et al.*, 1992). All these studies investigated the quantitative aspects of recall for negative events in repressors. To our knowledge, the present research is the first to have considered qualitative aspects of emotional memories in repressors. We found that repressors' negative memories were not different from those of the other groups. Moreover, contrary to Terry and Barwick (1995), repressors did not differ from low-anxious subjects regarding their tendency to report O memories. Replication of our results is necessary but it may well be the case, as already suggested by Davis and Schwartz (1987), that repression functions as an all or none phenomenon: repressors could have reduced accessibility (Davis, 1990) or availability (Schimmack and Hartmann, 1997) for negative memories, but, nevertheless, once a negative event has been recalled, the associated memory may not be impoverished regarding sensorial and contextual details.

In summary, we examined phenomenal characteristics of autobiographical memories for positive, negative, and neutral events. We found that memories for positive events contained more sensorial and contextual details than memories for both negative and neutral events. In contrast, memories for negative events were not more detailed than memories for neutral events. We also found that emotional (positive as well as negative)

and neutral events tended to be recollected with different perspectives. Finally, repressors were not different from other individuals with regard to qualitative characteristics of their negative memories. This research thus shows that the emotional meaning of an event can influence the way this event will be subsequently experienced in memory.

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