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Phenomenal characteristics of cryptomnesia

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Qualitative characteristics of cryptomnesia, or unintentional plagiarism were investigated. In Experiment 1 we compared accurate and inaccurate source attributions in terms of their level of confidence using instructions that did not require a fixed number of responses. Confidence was lower for plagiarised responses than for correct responses. Nevertheless, participants provided high ratings of certainty for a large proportion of their plagiarised responses. In Experiment 2 the phenomenological differences between plagiarised recall and veridical recall were compared by using an adaptation of the memory characteristics questionnaire (Johnson, Foley, Suengas, & Raye, 1988). Correct responses were associated with more experiential detail than plagiarised responses. However, a considerable number of plagiarised responses were accompanied by a confident memory of at least one qualitative characteristic. Results are discussed in terms of the source monitoring framework developed by Johnson, Hashtroudi, and Lindsay (1993).

Plagiarism is a serious offence in which the intellectual product of one person is appropriated by another person and claimed as his or her own (Mawdsley, 1994). Plagiarism results in giving false credit to those not responsible for a creative act and ignoring the importance of those who have made real contributions. For those reasons societal institutions go to considerable effort to weed out plagiarism and hold accountable those who engage in it. For instance, most colleges and universities have strict policies concerning academic honesty and plagiarism (Mawdsley, 1994). Outside the academic world plagiarism is treated as a civil matter in many countries around the world in which the injured party may sue the perpetrator for damages (Vogt, 1999).

But plagiarism is not always easy to prove. Plagiarised material is often modified and adapted, making agreement over whether a work is merely similar to a previous work or has actually been plagiarised from it difficult (Burghardt, 1995). In addition, famous court cases, like the copyright infringement case involving ex-Beatle George Harrison, suggest that plagiarism can sometimes occur unintentionally when a memory for the work of another is mistaken for an original idea (Bright Tunes Music Corp. v. Harrisongs Music, Ltd, 1976).

For this reason, memory psychologists are well suited to investigate the psychological mechanisms through which plagiarism may occur. Unintentional plagiarism or cryptomnesia consists of

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generating a behavioural product with the belief that this response is novel while it has actually been encountered previously. Brown and Murphy (1989) defined the phenomenon as follows: ''Cryptomnesia refers to generating a word, an idea, a song, or a solution to a problem, with the belief that it is either totally original, or at least original within the present context. In actuality, the item is not original, but one which has been produced by someone else (or even oneself) at some earlier time'' (p.432). This surprising phenomenon, also called unconscious plagiarism (Taylor, 1965) or inadvertent plagiarism (Marsh, Landau & Hicks, 1997), has drawn the attention of memory researchers mainly during the last decade.

Experimental paradigms created to assess unintentional plagiarism usually include three tasks. First, participants, typically in pairs, generate items under the instructions not to duplicate their own or another participant's answers (i.e., *generate-item task*). Some time later participants are asked to recall their own responses to the item generation task (i.e., *recall-own task*). Finally, participants are asked to generate new items that had not been generated during the previous tasks (i.e., *generate-new task*).

In this standard paradigm, unintentional plagiarism can be produced during any of the three stages. In the generate-item task, plagiarism occurs whenever participants repeat their own or another participant's responses. In the recall-own task, plagiarism occurs if the participant claims the other participant's responses as his or her own. In the generate-new task, plagiarism occurs if the participant generates a previously generated item.

Unintentional plagiarism has been observed in each of the three tasks. These results have been obtained using a wide variety of materials and procedures including experiments that involved the generation of exemplars from various semantic or orthographic categories (Brown & Halliday, 1991; Brown & Murphy, 1989; Macrae, Bodenhausen, & Calvini, 1999), finding solutions to word puzzles (Landau & Marsh, 1997; Marsh & Bower, 1993; Marsh & Landau, 1995), the generation of creative ideas such as new ideas concerning ways to reduce traffic accidents (Bink, Marsh, Hicks, & Howard, 1999; Marsh et al., 1997), and drawing novel space creatures (Marsh, Landau, & Hicks, 1996).

Cryptomnesia has been described as a variant of source forgetting (Brown & Halliday, 1991; Landau & Marsh, 1997; Macrae et al., 1999): in generative tasks (i.e., generate-item and generate-new tasks), inadvertent plagiarism occurs when people misconstrue a memory as an original thought; in the recall-own task, it occurs when people erroneously believe that they are remembering a response that they generated when in fact they are remembering a response generated by someone else.

It should be clear, however, that the errors that occur in the different stages of the paradigm could well reflect different memorial processes. Indeed, several authors have argued that source monitoring is not involved to the same extent in the generative tasks as in the recall-own task (Landau & Marsh, 1997; Macrae et al., 1999). In the two generative tasks, participants simply need to determine whether a response is old or new. The recall-own task is much more complicated because it requires that participants establish whether an old response was self-generated or produced by someone else. It is well established that old/new memory judgements and source memory judgements are dissociable (Johnson et al., 1993). And indeed, it has been shown that factors that reduce the efficiency of source monitoring, such as source similarity and cognitive distraction, increase the incidence of cryptomnesia in the recall-own task but not in the two generative tasks (Landau & Marsh, 1997; Macrae et al., 1999).

According to the source monitoring framework, different characteristics such as perceptual (visual, auditory, olfactory, etc.) details, contextual (spatial and temporal) details, associated thoughts and affective reactions, and cognitive operations are encoded at the time the memory for an event is formed. On average, memories for actually experienced events include more perceptual and contextual details, more associated thoughts and feelings, and less information about cognitive operations than memories for imagined events. These average differences in these experiential details can then be used as diagnostic indications that an event was experienced in real life (external source) versus imagined (internal source). For instance, a recollection that is rich in perceptual and contextual detail, and contains vivid feelings, but includes little information about cognitive operations involved in generating a representation of the event will probably be identified as a memory for a real event. By contrast, a recollection that lacks perceptual, contextual, and emotional detail, but includes a great deal of information about cognitive operations

will probably be classified as a memory for an imagined event (Johnson et al., 1993; Johnson & Raye, 2000).

In this framework, thoughts and feelings associated with experiencing an event are seen as a part of the internal context in which the event is encoded rather than cognitive operations that form a memory for this event. By ''cognitive operations'' Johnson and colleagues are referring to mental activities that were involved in the creation/installation/formation of a target memory (Hashtroudi, Johnson, & Chrosniak, 1990). These cognitive operations may be relatively effortless processes like those involved in recognising a face or a common object, or hearing or reading a word. They may also be more effortful processes such as deliberate imaging (Hicks & Marsh, 1999; Johnson & Raye, 1998), elaborating (Hicks & Marsh, 1999; Johnson et al., 1993). actively searching for a piece of information or drawing conclusions (Johnson & Raye, 1998). Given that more information is likely to be stored about a performed effortful cognitive operation than about an automatic process, and that complex and effortful operations are more often involved in the creation of a memory for an imagined or self-generated event than for a merely perceived event, retrieving information about performed cognitive operations becomes a potential cue for source judgements (Johnson & Raye, 1981). According to the source monitoring framework, memories that contain a great deal of information about cognitive operations are typically internally generated (e.g., Henkel, Franklin, & Johnson, 2000; Johnson et al., 1993; Johnson & Raye, 1998; Lindsay, Johnson, & Kwon, 1991).

In the unconscious plagiarism paradigm, the participant's job in the recall-own task is to accurately discriminate between two types of memories: memories of his or her own responses and memories of the other participant's responses. These two types of memories are likely to differ in terms of their experiential content in that the other participant's responses will only be perceived, whereas the participant's own responses will be both self-generated and perceived.

Errors of source attribution may occur when qualitative characteristics that are diagnostic cues about the source of a memory are not available to the participant (Lampinen, Neuschatz, & Payne, 1998; Mather, Henkel, & Johnson, 1997; Mather, Johnson, & De Leonardis, 1999). The aim of the present study was to compare qualitative features of true memories and inadvertently plagiarised responses in a recall-own task. Consider some features that were examined in some previous studies that compared qualitative difference of true and false memories in the laboratory (Mather et al., 1997; Neuschatz, Payne, Lampinen & Toglia, 2001; Norman & Schacter, 1997), i.e., memory for auditory information, list position, feelings, and thoughts. When deciding whether a production is yours or that of someone else, accessing information about the perceptual qualities of the speaker's voice is likely to be extremely useful. It is unlikely that, while remembering very well the other participant's voice uttering a word, you will attribute the production of this word to yourself. Hence, a reasonable prediction is that the memories that produce unconscious plagiarism errors will tend to be lacking in detail about the speaker's voice. Accessing contextual details such as information about a target word position in the list of generated items may, in some cases, help to make a decision about the source. For instance, if you remember that the target word is the very first word that was spoken and you did not have the first run for that category of items, then you will not attribute the production of that word to yourself. The availability of information about feelings associated with the target word would probably be less useful. Indeed, with the type of task used here, a feeling or an emotional reaction may occur whether the word has been uttered by you or the other participant. In the same way, remembering images and thoughts associated with a heard word may not, by itself, be a particularly diagnostic cue for source in this situation.

Remembering information about cognitive operations involved in the generation of an item might also help the attribution process. People are more likely to remember details about cognitive operations for words they produced than for words they just heard. Such details may include remembering having used a retrieval strategy or having experienced a retrieval difficulty (e.g., a mild tip-of-the-tongue state) during a word generation. The presence of such details in a memory record should logically lead a participant to make a self-attribution of the target word production.

In this article we report two experiments using the unconscious plagiarism paradigm. In the first experiment we compare accurate and inaccurate source attributions in terms of their level of confidence. As Lampinen et al. (1998) argued, confidence is often a good first approximation when attempting to uncover phenomenal differences

between groups of items. If memories for plagiarise items do contain little information about perceptual and contextual detail then the source judgements should be made with relatively little confidence. Brown and Murphy (1989) previously demonstrated that plagiarised items received lower confidence ratings than correct responses in the recall-own task. However, as Tenpenny, Keriazakos, Lew, and Phelan (1998) point out, this result could be due to the procedure used by Brown and Murphy. In Brown and Murphy's study, participants were required to recall as many items as they produced during the first generation task. In other words, they were required to fill in every space on their response sheets. Tenpenny et al. pointed out that it is possible that a number of plagiarised responses were deliberately, rather than inadvertently, plagiarised because of the need to fill in all the response blanks. The aim of the first experiment was to alleviate this methodological concern.

The second experiment of the present study was designed to compare phenomenal characteristics of memories for actually produced items with those for inadvertent plagiarism errors. Starting from the idea that errors of source attribution may occur when a representation lacks sufficient discriminating information (Mather et al., 1997), it was predicted that the occurrence of inadvertently plagiarised responses will be associated with a comparatively poor remembering of source-specifying experiential content, more particularly information about auditory details, list position, and cognitive operations involved in the generation of an item. Memory for other features such as feelings, images, and associated thoughts is not predicted to differ.

These two experiments were conducted on separate samples of subjects in order to avoid any contamination of the overall confidence rating task on the ratings of specific characteristics.

EXPERIMENT 1

Method

Participants. A total of 40 undergraduate student volunteers participated. Their ages were between 18 and 25 (mean age = 19.78 years).

Materials and procedure. Participants were tested in same-sex pairs (i.e., female–female and male–male). They were instructed that the experiment was an investigation of people's ability to generate proper names. The experimental procedure was divided into three phases: item generation, written recall of the participant's own responses, and confidence ratings. In the item-generation task, participants were told that they would take turns in orally producing exemplars from different categories of people and countries, and that each category would be completed in turn. These categories were female first names beginning with the letter M, male first names beginning with the letter A, names of countries including the letter I, and names of foreign cities including the letter O.

Participants were instructed to produce a new name on each turn and not to duplicate any of their own or of the other participant's previous responses. The order of presentation of the four categories was randomly determined. Participants were asked to produce six exemplars for each category. The experimenter wrote the items down as the participants produced them. Participants were then excused and invited to come back to the laboratory for further testing one week later. After this interval, participants were given a recall sheet listing the four categories with six blank lines under each category label. Participants were instructed to write down the exemplars they had produced during the generation task (recall-own phase). They were given as much time as necessary to complete the task and were required to write as many of the exemplars that they personally produced one week before as they could. Thus, following Tenpenny et al.'s (1998, pp. 533–534) criticism of the classic Brown and Murphy (1989) procedure, participants were not required to write a name on each blank. Finally, participants were asked to rate their confidence in the correctness of each response on a 5-point scale, with 1 = not confident, 3 = somewhat confident and 5 = very confident.

Results and discussion

In all analyses that follow the alpha level was set at .05.

Item-generation. During the generation task, 12 participants (30%) repeated an item produced by their partner. The 14 plagiarised responses represented 1.5% of all items produced. Self-plagiarism occurred in one subject (2.5%) and represented 0.1% of all items produced.

Recall-own. During the second phase of the experiment, participants were asked to recall the names that they had previously generated in each category. If a participant had already duplicated a response from the other participant during the generation task, then that particular response was considered as correct if it was recalled during the recall-own task.

Two types of error could occur in this task. Participants could either produce names that were actually provided by the other participant (i.e., partner-plagiarism or reproductive error) or names that were provided by none of the participants (i.e., new errors). A total of 13 participants made no plagiarised responses or no new errors. These subjects were removed from the following analyses. Remaining participants recalled an average of 18.59 words (SD = 2.61) representing 77.47% of the maximum number (24) of items that could be recalled in the task. The numbers of correct recall, partner plagiarism and absence of response are presented in Table 1.

Confidence ratings. A one-way ANOVA for repeated measures was used to compare mean confidence ratings assigned to the three categories of responses (i.e., correct recall, plagiarised responses, and new errors). This analysis revealed a significant effect of the category of responses, $F(2, 52) = 42.54$, $MSe = 0.64$. Planned comparisons showed that confidence ratings were higher for correct responses ($M = 4.26$) than for plagiarised responses ($M = 2.53$), $F(1, 26) = 81.69$, and for new-errors ($M = 2.50$), $F(1, 26) = 52.01$. Ratings for plagiarised responses and new errors were not significantly different, $F < 1$.

TABLE 1
Mean numbers (by participant) of correct recall, plagiarised responses, new errors, and absence of response in Experiment 1

	Correct recall	*Partner-plagiarism*	*New errors*	*No response*
Number	13.074	2.630	2.889	5.407
Ratio to maximum number of responses	0.545	0.110	0.120	0.225
Ratio to actually recalled words	0.703	0.141	0.155	–

The ratios of these numbers to the maximum number of responses (24) and to the actual number of responses are also given.

In previous studies (Brown & Murphy, 1989, experiment 2; Marsh & Bower, 1993, experiments 1 and 2), approximately 40–50% of plagiarised responses received at least a somewhat confident rating. Although we used a somewhat different scale, it was also possible to compute the percentage of plagiarised responses that received at least a rating of ''somewhat confident'' (a score of 3 or more) in the present study. This analysis showed that 47.9% of plagiarised responses received a rating of 3–5 (score 3 = 25.4%, score 4 = 9.8%, and score 5 = 12.7%). This percentage is quite similar to those reported in the aforementioned studies. Note that 44.9% of new errors and 87% of correct responses received a somewhat confident or higher rating. These percentages are also rather similar to those reported earlier (31–46% for new errors; 90–98% for correct responses).

In conclusion, data from Experiment 1 showed that confidence was lower for plagiarised responses than for correct responses even when participants were not required to fill all the blanks but were just invited to fill in as many blanks as they could. However, even with less demanding instructions, it is possible that a number of plagiarised responses and new errors were not real cases of inadvertent plagiarism or genuine inadvertent new errors, but simple guesses. A detailed look at participants' responses argues against this conclusion. Consider words that were plagiarised by at least one participant during the recall-own task. It is possible, for each of these words, to calculate the conditional probability that it was produced in the recall task given that the other participant mentioned it in the generation task (i.e., p[Recall | Other Participant]) and the conditional probability that it was produced in the recall task given that nobody mentioned it in the generation task (i.e., p[Recall | No Mention]). For instance, in the recall task, the city name ''Oslo'' was plagiarised by 3 participants out of the 10 who had heard their partner citing this name in the generation task (p[Recall | Other Participant] = 0.30 for that particular name). The same name was plagiarised by only one participant out of the nine whose partner did not produce that name in the generation task, i.e. (p[Recall | No Mention] = 0.11). If we are dealing with actual cases of plagiarism then

$$p(\text{Recall} \mid \text{Other Participant}) > p(\text{Recall} \mid \text{No Mention}).$$

To examine this we calculated these two conditional probabilities for each word that was

plagiarised. These words were substantially and significantly more likely to be recalled when they had been mentioned by the other participant (M = 0.33) than when nobody had mentioned them in the generation task (M = 0.06), $t(33) = 6.54$.

In addition, as in previous studies (Bower & Marsh, 1993; Brown & Murphy, 1989), participants provided high ratings of certainty for a large proportion of their plagiarised responses.

Taken as a whole the results of Experiment 1 replicate findings of previous researchers that participants will sometimes plagiarise the responses of other subjects when attempting to recall their own productions. In addition, it demonstrates that plagiarised recalls and veridical recalls differ in terms of confidence. In Experiment 2 we further explored this phenomenon by examining phenomenological differences between plagiarised recall and veridical recall at a more fine-grained level by using an adaptation of the memory characteristics questionnaire developed by Johnson and her colleagues (Johnson et al., 1988).

EXPERIMENT 2

Method

Participants. A total of 42 undergraduate student volunteers participated. Their ages were between 18 and 23 (mean age = 19.8 years).

Materials and procedure. The materials and procedure were identical to Experiment 1, except that the third phase consisted in answering a memory characteristics questionnaire. Participants were presented with a questionnaire inspired by Johnson et al.'s (1988) MCQ. For each recalled name they were asked to respond to five questions about the specific circumstances of a name's production (most of these questions were adapted from Norman & Schacter's 1997 procedure): (1) Do you remember what the word sounded like when you produced it? (*memory for sound*); (2) Do you remember whether that word was one of the first items you produced (first or second position), one of the last items you produced (fifth or sixth position), or was in an intermediate position? (*memory for list position*). For these two questions, the participants were instructed to respond to each question by using a 5-point scale, with 0 = no memory for that characteristic and 4 = very clear memory for that characteristic. Other questions were: (3) Do you remember reacting in some way or having feelings while producing that word? (*memory for feelings*); (4) Do you remember having a mental image while producing that word? (*memory for imaging*); and (5) Do you remember having a specific thought relating to this word while producing it (*memory for thoughts*). The questionnaire also included one question about cognitive operations related to the production of this name: (6) Do you remember using a retrieval strategy for finding that name; for instance, listing people that you know to find the first names, visualising and reading a map of the world to find the names of countries, etc. (*memory for strategy*). For the last four questions, the participants used a 9-point scale, with −4 = very clear memory that this did not happen, 0 = do not remember whether this happened or not and +4 = very clear memory that this happened. Such a scale was used in order to avoid confusion between the lack of memory for a feature (for instance, no memory of having reacted in some way) and the memory that this feature was not present (remembering well that no particular reaction occurred when producing the word). Participants were asked to take time to think carefully about each of the questions they answered.

Results and discussion

Item-generation. During the generation task, 14 participants (33.3%) repeated an item produced by their partner. The 18 plagiarised responses represented 1.8% of all items produced. Self-plagiarism occurred in three subjects (7.1%) and represented 0.3% of all items produced.

Recall-own. Eight participants made no plagiarised responses or no new errors. These subjects were removed from the following analyses. Participants recalled an average of 20.68 words (SD = 3.18) representing 86.15% of the maximum number of items that could be recalled in the task. The numbers of correct recall, plagiarism, new errors, and absence of response are presented in Table 2.

Phenomenal qualities of true memories and plagiarised responses. One-way ANOVAs for repeated measures were used to compare mean ratings assigned to the three categories of responses (correct recall, plagiarised responses,

TABLE 2
Mean numbers (by participant) of correct recall, plagiarised responses, new errors, and absence of response in Experiment 2

	Correct recall	*Partner-plagiarism*	*New errors*	*No response*
Number	14.706	2.853	3.088	3.353
Ratio to maximum number of responses	0.613	0.119	0.129	0.140
Ratio to actually recalled words	0.712	0.138	0.150	–

The ratios of these numbers to the maximum number of responses (24) and to the actual number of responses are also given.

and new errors). In a first set of analyses, the absolute value of ratings was taken as the dependent measure. It was important to use the absolute value rather than signed values because four characteristics were rated on scales starting from -4 to +4. In these scales, the subjective memory for a feature is indicated by a positive as well as by a negative deviation from zero.

The analyses revealed a significant effect for the category of responses for each qualitative characteristic under study: memory for sound, $F(2, 66) = 17.94$, $MSe = 0.93$; memory for list position, $F(2, 66) = 26.13$, $MSe = 0.48$; memory for feelings, $F(2, 66) = 6.71$, $MSe = 1.07$); memory for imaging, $F(2, 66) = 7.15$, $MSe = 0.85$; memory for thoughts, $F(2, 66) = 12.88$, $MSe = 0.72$; and memory for strategy, $F(2, 66) = 4.55$, $MSe = 0.96$. Descriptive data are presented in Table 3. Planned comparisons revealed the same pattern of results whatever the considered characteristic: participants' ratings were higher for correct recall than for plagiarised responses, Fs$(1, 33)$ were respectively 24.17 (*sound*), 42.49 (*list position*), 16.82 (*feelings*), 15.01 (*imaging*), 8.21 (*thoughts*), 12.29 (*strategy*); and for new errors, Fs$(1, 33)$ were respectively 49.62 (*sound*), 48.05 (*list position*), 5.51 (*feelings*), 11.37 (*imaging*), 7.28 (*thoughts*), 24.68 (*strategy*). No significant difference appeared between plagiarism and new errors (all Fs < 1.85).

TABLE 3
Mean ratings on each target characteristic as a function of the category of responses

	Correct recall	*Plagiarism*	*New errors*
Sound	2.474	1.459	1.129
List position	1.864	0.795	0.823
Feelings	2.251	1.134	1.745
Imaging	2.696	1.931	2.001
Thoughts	2.637	1.983	2.053
Strategy	2.926	2.055	1.991

The preceding analyses indicated that participants' ratings deviated from 0 (i.e., a lack of remembering of a qualitative characteristic) to a greater extent for true memories than for plagiarised responses and new errors. It was also interesting to assess what these differences reflected for the last four qualitative features (*feelings*, *imaging*, *thoughts*, and *strategy*). In other words, did these differences reflect that participants reported remembering qualitative features more often for correct recall than for the other two categories of responses, or did they reflect that participants remembered more clearly the absence of these features for correct recall than for plagiarised responses and new errors?

In order to investigate this point, the proportion of positive ratings (from 1 to 4), zero ratings, and negative ratings (from -1 to -4) was calculated for each category of response in each participant. Descriptive data are presented in Table 4. These proportions were submitted to two-way 3 (category of response: correct recall/plagiarism/new error) $\times$ 3 (ratings: positive/zero/negative) ANOVAs with repeated measures on both factors. These analyses revealed a significant "category of response $\times$ ratings" interaction for each target feature [*feelings*: $F(4, 132) = 6.14$, $MSe = 0.11$; *imaging*: $F(4, 132) = 4.52$, $MSe = 0.10$; *thoughts*: $F(4, 132) = 4.73$, $MSe = 0.09$; and *strategy*: $F(4, 132) = 4.64$, $MSe = 0.10$]. Planned comparisons showed that, for every feature, the proportion of positive ratings was higher for correct recall than for plagiarised responses [*feelings*: $F(1, 33) = 26.93$; *imaging*: $F(1, 33) = 10.32$; *thoughts*: $F(1, 33) = 9.46$; and *strategy*: $F(1, 33) = 10.19$] and for new errors [*feelings*: $F(1, 33) = 13.35$; *imaging*: $F(1, 33) = 9.95$; *thoughts*: $F(1, 33) = 20.68$; and *strategy*: $F(1, 33) = 12.59$]. No significant difference appeared between plagiarised responses and new errors (all Fs < 2.25). However, comparisons revealed no significant differences in negative ratings across the three categories of responses for any of the target qualitative features (all Fs < 1). Whatever the feature, the proportion of zero ratings was significantly higher for plagiarised responses than for correct recall [*feelings*: $F(1, 33) = 14.15$; *imaging*: $F(1, 33) = 12.46$; *thoughts*: $F(1, 33) = 7.99$; and *strategy*:

TABLE 4
Mean proportion of positive, zero, and negative ratings as a function of the response category and the target qualitative feature

	Category of response								
	Correct recall			*Plagiarism*			*New error*		
	+	*0*	−	+	*0*	−	+	*0*	−
Feelings	0.504	0.244	0.252	0.202	0.498	0.300	0.319	0.365	0.316
Imaging	0.620	0.135	0.245	0.413	0.345	0.242	0.429	0.321	0.250
Thoughts	0.587	0.179	0.234	0.393	0.364	0.243	0.368	0.354	0.278
Strategy	0.681	0.126	0.193	0.465	0.327	0.208	0.477	0.326	0.197

$F(1, 33) = 10.44$] and did not differ between plagiarised responses and new errors (all Fs < 2.15). This proportion of zero ratings was significantly higher for new errors than for correct recall for three features [*imaging*: $F(1, 33) = 12.35$; *thoughts*: $F(1, 33) = 10.34$; and *strategy*: $F(1, 33) = 12.51$] but not for one feature [*feelings*: $F(1, 33) = 3.99$; $p = .054$].

The results just presented could lead one to think that plagiarised responses and new errors were systematically associated with a very poor subjective remembering of qualitative characteristics. If this was the case, one would expect plagiarised responses and new errors to be very infrequently associated with a maximum rating score (4 for questions 1 and 2; 4 or −4 for questions 3 to 6) for one or several qualitative characteristics. In order to investigate this point, the number of occurrences of very confident rating scores among the six items of the MCQ was computed for each of the 702 responses (500 correct responses, 97 plagiarised responses, and 105 new errors) taken individually. In the present experiment, each response could be associated with 0 (the participant gave the higher score for none of the MCQ items) to 6 (the participant gave the higher score for every MCQ items) higher rating score(s). The descriptive results of this analysis are given in Table 5. From the data displayed in Table 5 it appears that about 50% of plagiarised responses and new errors have been associated with a very confident rating score for at least one qualitative characteristic.

As in Experiment 1, p(Recall | Other Participant) and p(Recall | No Mention) were calculated for each word that was plagiarised during the recall-own task. Again, these words were substantially and significantly more likely to be recalled when they had been mentioned by the other participant ($M = 0.35$) than when nobody had mentioned them in the generation task ($M = 0.04$), $t(51) = 8.36$.

TABLE 5
Numbers and percentages (in italics) of occurrence of maximum rating scores to the MCQ items in the three categories of responses

	N maximum rating scores in the MCQ						
	0	*1*	*2*	*3*	*4*	*5*	*6*
Correct recall	98	105	88	56	66	51	36
	19.6	*21.0*	*17.6*	*11.2*	*13.2*	*10.2*	*7.2*
Plagiarism	46	13	11	13	9	4	1
	47.4	*13.4*	*11.3*	*13.4*	*9.3*	*4.1*	*1.0*
New error	53	12	9	19	6	5	1
	50.5	*11.4*	*8.6*	*18.1*	*5.7*	*4.8*	*0.9*

In conclusion, results of Experiment 2 indicated that participants reported remembering more experiential detail associated with the production of a word when this production was her/his own than when it was not. However, there was a considerable number of plagiarised responses and new errors that were accompanied by a very confident memory of at least one qualitative characteristic.

GENERAL DISCUSSION

Memories can vary both in terms of their accuracy and in terms of their experiential content. And indeed, prior research has shown that there are subtle differences between true and false memories in terms of how participants experience them (Lampinen et al., 1998; Payne, Neuschatz, Lampinen, & Lynn, 1997). Participants' true memories tend to include more perceptual and contextual detail than do participants' false memories. In the present research we have shown that this conclusion also holds for the memory illusion known as unconscious plagiarism.

It is interesting to note that the qualitative differences between true and false memories found in most previous studies have been obtained after relatively short retention intervals (Mather et al., 1997; Norman & Schacter, 1997; Schooler, Gerhard, & Loftus, 1986). It is arguably the case that qualitative differences between true and false memories should fade with time as information about the surface forms of items becomes less and less available. Previous research has shown that these differences remain for as long as 48 hours (Neuschatz et al., 2001) but the present study is the first we know of to demonstrate that differences between true and false memories remain robust for as long as one week. It is likely that there is some limit beyond which true and false memories will no longer differ, but where that limit lies has yet to be determined empirically.

One way of evaluating the qualitative characteristics of memories is to simply ask participants how confident they are in their responses. Although this measure has problems (see Lampinen et al., 1998) it provides a good first pass at the question of subjective quality. Previous work has shown that participants are more confident in their correct responses than in their plagiarised responses (e.g., Brown & Murphy, 1989). In these experiments, participants were required to recall the totality of the words they produced in the generation task. This procedure was criticised by Tenpenny et al. who pointed out the possibility that ''some of the items plagiarised in the recall-own-phase were deliberately repeated because of the need to fill in all blanks'' (Tenpenny et al., 1998, p. 534). The aim of the first experiment was to evaluate whether participants would still be less confident in rating plagiarised responses than in rating correct responses when they were not required to write a word on each blank. Results of Experiment 1 showed that participants were less confident in their plagiarised responses than in their correct responses when this methodological artifact was eliminated.

The second experiment was designed to compare qualitative characteristics of memories for actually produced words with those of memories for inadvertent plagiarism errors. It was predicted that information about the perceptual qualities of the speaker's voice, the target word position in the list, and cognitive strategies involved in the generation of the target word should be more available for true memories than for plagiarised responses. On the contrary, the availability of information about feelings, images, and thoughts associated with a heard word was not expected to differ in true memories and plagiarised responses. The results of this experiment showed that true memories included significantly more information about each of the six qualitative features at study than did plagiarised responses and new errors. Participants reported remembering more auditory and contextual information for true memories than for plagiarised responses and new errors. Complementary analyses also indicated that participants subjectively remembered that they experienced a feeling, they had a mental image, they had a specific thought, or they resorted to a retrieval strategy more often for the words that they actually produced than for plagiarised responses and new errors. For every feature, the proportion of zero ratings (i.e., the feature is not included in the memory) was higher for plagiarised responses than for true memories. Thus, the obtained pattern of results differed from our prediction, as differences between correct recall and plagiarism were not expected with respect to the subjective availability of information on feelings, imaging, and associated thoughts. However, it is possible that we underestimated the usefulness of these characteristics to a source judgement. Indeed, memory for a feeling can be very useful if the participant is able to remember whether the feeling occurred before or after the word was actually uttered. If an emotional reaction to a word occurred before that word was actually produced, then the participant will presumably attribute the production of this word to her/himself and not to the other participant. Similarly, remembering having had thoughts or images related to the target word before this word was uttered could certainly help the attribution process. We did not consider this temporal relation between the occurrence of a feeling, a thought, or an image and the production of the target word. Some comments from participants have drawn our attention to this aspect. This point deserves more systematic investigation in future research.

This research supports the source monitoring account of unconscious plagiarism in the recall-own task. The SMF predicts that memories for internally generated items and externally perceived items will vary systematically in terms of their experiential content (Johnson et al., 1993). The results thus provide evidence that buttresses other recent findings showing that variables that are known to influence source monitoring accuracy also influence plagiarism errors in the recall own task (Landau & Marsh, 1997; Macrae et al., 1999).

Like much previous research on the qualities of false memories, the present research demonstrated both differences between accurate memories and plagiarised responses. In particular, a large proportion of the plagiarised responses were made with high levels of confidence and with high ratings of at least one experiential detail. This finding suggests that errors of this sort can at times seem quite compelling to subjects. At any rate, it is important to note that plagiarised responses may be remembered in a way in which the plagiariser sincerely believes that the response was an object of their own creation.

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