MEMORY, 2005, 13 (6), 561–573

Psychology Press
Taylor & Francis Group

When elaboration leads to appropriation: Unconscious plagiarism in a creative task

Louisa-Jayne Stark, Timothy J. Perfect, and Stephen E. Newstead

University of Plymouth, UK

Brown and Murphy's (1989) three-stage paradigm (generation, recall-own, generate-new) was used to assess the effects of participant elaboration on rates of unconscious plagiarism in two experiments using a creative task. Following the generation phase, participants imagined and rated a quarter of the ideas (imagery elaboration), generated improvements to another quarter (generative elaboration), and listened to a quarter of the ideas again without elaboration, with the remaining ideas acting as control. A week later, participants attempted to recall their own ideas, and generate new solutions to the same cues. In Experiment 1 both forms of elaboration equally increased correct recall, and decreased plagiarism in the generate-new task. However, generative elaboration led to significantly greater plagiarism in the recall-own task, but imagery elaboration did not. Participants in Experiment 2 were encouraged not to plagiarise by means of a financial incentive. However, they showed the same pattern as seen in Experiment 1. Therefore, contrary to a simple strength account, the probability of a person plagiarising another's ideas is linked to the particular nature of the elaboration carried out on that idea, rather than its familiarity.

The need to correctly attribute a memory, a thought, or an idea to its origin is important for normal human interaction and is inherent in most facets of everyday life (Johnson, Hashtroudi, & Lindsay, 1993). Inevitably, mistakes in this attribution process may occur in life where two information sources become confused. This occurs in unconscious plagiarism, where an individual may unknowingly plagiarise another by claiming a previously experienced idea as their own novel idea. There have been many documented cases of unconscious plagiarism over the years including high-profile cases where public claims have been made about the originality of the work, for example, Freud's theory of bisexuality (1960), George Harrison's song *My Sweet Lord* (Dannay, 1980), and the makers of the 1997 film *The Full Monty* (as cited by Macrae, Bodenhausen, & Calvini, 1999).

Recent research investigating unconscious plagiarism has been based on Brown and Murphy's (1989) experimental paradigm. Their experimental paradigm involved three distinct stages. In an initial generation phase, groups of four participants took turns to generate category exemplars (see also Brown & Halliday, 1991; Macrae et al., 1999). Following this encoding session, participants were instructed to recall their initial responses (recall-own task) and to generate an equal number of new responses (generate-new task). Plagiarism was scored slightly differently in the two tasks. In the recall-own task, plagiarism was counted whenever a participant recalled an idea that had originally been generated by someone else. In the generate-new task, plagiarism was counted whenever a previously generated idea was re-generated, whether originally by someone else, or by the participant. Thus, in the generate-new task participants can plagiarise themselves. More recently, this paradigm has been extended to more creative tasks such as puzzle tasks (Marsh & Bower, 1993), brainstorming sessions (Marsh, Landau, & Hicks, 1997), and drawing novel space creatures (Marsh, Landau, & Hicks, 1996). Here

Correspondence should be addressed to Louisa-Jayne Stark, University of Plymouth, Drake Circus, Devon, PL4 8AA, UK. Email: lstark@plymouth.ac.uk

http://www.tandf.co.uk/journals/pp/09658211.html DOI:10.1080/09658210444000232

we use the Alternate Uses Test (Christensen, Guilford, Merryfield, & Wilson, 1960).

Brown and Murphy (1989) found that unconscious plagiarism occurred in each of the three phases. The frequency of plagiarism was higher when participants were generating new exemplars (9%) than when they were directly recalling their own exemplars (7%). These repetitions were significantly more frequent than would be expected by chance. Further, plagiarising from others occurred more frequently than inadvertent self-duplication, thus suggesting that people monitor self-generated and other-generated information in different ways (Slamecka & Graf, 1978; Vos, Vesonder, Post, & Ney, 1987).

Using variations in the Brown and Murphy (1989) paradigm, research has shown that delays between initial idea generation and later generation of novel responses significantly increase rates of unconscious plagiarism (Brown & Halliday, 1991; Macrae et al., 1999; Marsh et al., 1996). Additionally, studies have demonstrated that participants are more likely to plagiarise a person of the same sex (Macrae et al., 1999), the person who spoke directly before them (Brown & Murphy, 1989; Linna & Gülgöz, 1994) and ideas from a more credible source (Bink, Marsh, Hicks, & Howard, 1999). Cumulatively, however, in previous studies, unconscious plagiarism tends to be higher when participants generate new ideas than when they recall their own ideas.

One issue of central interest in this work is the difference in the rates of unconscious plagiarism across the recall-own and the generate-new tasks. This is believed to be due to different decision processes being utilised in the two phases (Marsh & Bower, 1993). In the recall-own phase, when participants recall their initial ideas, source-monitoring judgements are required. Participants need to first determine whether an idea is an old idea and second to establish who initially generated it. However, when generating new ideas, less differentiated information is required as participants can rely on judgements of item familiarity (Dodson & Johnson, 1996; Johnson et al., 1993). Therefore, due to the extended use of source monitoring during the recall-own phase, levels of unconscious plagiarism are sensitive to factors related to the attributes of the memory representations. Landau and Marsh (1997) demonstrated this by manipulating the representations of self-generated and computer-generated information. Initially, memory representations were made highly confusable by requiring participants to guess the computer's responses in addition to generating their own ideas. Similar search processes and cognitive operations were utilised to derive each of the ideas and so information from both the sources was more difficult to differentiate. Consequently, rates of unconscious plagiarism in the recall-own phase increased. However, rates of plagiarism in the generate-new phase remained unchanged. This was because the ideas were familiar and could easily be rejected as new ideas. Conversely, when perceptual differentiation was manipulated and the two sources were made easy to distinguish, unconscious plagiarism in the recall-own phase was reduced. This finding has subsequently been replicated by Macrae et al. (1999) who found that source confusion manipulations at encoding and retrieval increased unconscious plagiarism in the recall-own phase but did not increase generative errors.

A neglected area of research that is likely to impact on source judgement is the effect of participant elaboration following exposure to an idea. Elaboration might involve thinking about, evaluating, or developing the idea after the initial generation phase, but before test. Real-life plagiarists inevitably think about appropriated ideas and accordingly invest considerable time and effort into these ideas. The aim of the present work is to explore the possibility that it is this process that is responsible for a plagiarist maintaining their belief in the originality of their work. A number of findings suggest that elaboration should have an impact on rates of unconscious plagiarism. For example, imagination inflation research (e.g., Garry, Manning, Loftus, & Sherman, 1996) demonstrates that a false belief that a fictional event has occurred is created by repeated imagination experiences concerning event information and detail. During this process, and over time, participants come to believe that the imagined event actually occurred. There have been similar results documented within the domain of eyewitness memory. Repeatedly interviewing a witness increases their confidence in their testimony, even for erroneous details (Shaw, 1996).

Elaboration processes are anticipated to be an important component of unconscious plagiarism and provide the focus for this paper. Two specific forms of elaboration were examined. The first was elaboration based on the idea itself. In this condition, participants were required to rate how easily the idea could be visualised and how effective an idea it was. In depth of processing

terms (Craik & Lockhart, 1972), this would be regarded as deep processing since it requires both the formation of an image and the consideration of the meaning of the idea. However, crucially, it does not involve the participant developing the idea in any way. The second form of elaboration did just that. In this condition, participants were required to think of three ways of improving the idea. Because this second form of elaboration involves a degree of generation, it will be referred to as *generative elaboration*, to contrast with the previously described *imagery-elaboration* condition. Given that these forms of elaboration also involve being repeatedly exposed to the ideas that were previously generated, two control conditions were used. In addition to the standard baseline condition of single exposure to the generated ideas, there was a condition in which ideas were re-presented, without any accompanying instructions to elaborate. This enabled us to rule out simple repetition as the basis of any effects observed in these conditions. Also, this permitted a comparison to be made between ideas heard once and twice.

The goal was to determine whether these different types of elaboration had differential impacts on plagiarism rates. Both forms of elaboration require deeper processing of the original ideas and so would be expected to increase the idea's strength in memory. Activation strength is currently the dominant model used to explain unconscious plagiarism (Bink, Marsh, & Hicks, 1999; Marsh & Landau, 1995). In this view, higher rates of plagiarism are anticipated in the recall-own task, as items with greater strength are more likely to be plagiarised (Marsh & Landau, 1995). Marsh and Bower (1993) suggested that as the activation strength of externally generated ideas is increased, their activation level becomes closer to that of self-generated ideas and so intrusions of plagiarised ideas occur. This view also predicts that both forms of elaboration should reduce plagiarism, relative to baseline, in the generate-new tasks. This follows because any increase in strength would lead to greater discrimination between new and old items, and thus reduce intrusions from previously elaborated ideas. Thus the simple strength account of unconscious plagiarism predicts that elaboration should show a dissociation across the two measures of plagiarism, but makes no predictions regarding the two forms of elaboration beyond that predicted by strength. That is, if one form of elaboration leads to stronger memory traces, as indexed by higher recall, one might consequentially expect to see higher rates of plagiarism in the recall-own task, and lower rates of plagiarism in the generate-new task in that condition.

An alternative viewpoint leads to a different set of expectations, however. In line with the source-monitoring framework (Johnson et al., 1993), one might expect participants to make an attribution about an idea that is currently in mind on the basis of the qualitative aspects of that idea. That is, a person might conclude that a particular idea is new because of the cognitive operations that led to it, or they may conclude the idea is a memory because of its perceptual qualities, or because they also can access other ideas associated with the event at encoding. In this view, the different forms of elaboration might have differential effects on unconscious plagiarism because they lead to different kinds of traces being laid down, and so different attributions. This difference is likely to emerge in the recall-own task. This follows because both forms of elaboration would lead to greater discrimination from new ideas than control items, and so show less unconscious plagiarism in the generate-new task. However, in the recall-own task, there is likely to be greater overlap between the processes of originally generating an idea and thinking of ways of improving that idea, than there is between originally generating that idea and imagining it and rating its quality. This follows because generating an idea and thinking of ways of improving an idea both involve generative processes, and participants may erroneously attribute the generation of the ways of improving the idea to the generation of the original idea.

There may also be scope in such a view for an effect due to personal style or personal semantics to emerge. That is, participants may think of ways of improving an idea that makes it ''their kind of idea''. For example, Person A might generate the idea of using a brick as a doorstop. However, Person B might think of improving this by decorating the brick using floral-design wallpaper. Later, Person B might recall the elaborated idea and, focusing on the floral attribute, believe that the idea must have been their own, since they particularly like flowers. This would be a use of personal style. An example of personal semantics would be if a participant had thought of decorating the brick so as to match their wallpaper at home. Recalling the brick as being decorated in the style of one's own home-décor might later be taken, erroneously, as evidence that the idea must have been one's own.

Thus, this view anticipates that elaborative encoding instructions that allow participants to generate ways of improving an idea will lead to substantially more plagiarism in the recall-own task than instructions that merely require participants to imagine an idea and judge it. Even though both may lead to memories of the same strength, as indexed by correct recall, it is the qualitative nature of the traces that will lead to these differential levels of unconscious plagiarism in the recall-own task.

The present work utilised the original Brown and Murphy (1989) paradigm of group generation followed by a later test session involving recall of old ideas and generation of new ideas. In addition to the standard methodology there was also an elaboration phase where participants were required to think about a subset of the ideas that had previously been generated. However, rather than using category generation as the original group task, the Alternate Uses Test (Christensen et al., 1960) was used. This task was selected as it has parallels with the category generation task but also requires a degree of participant creativity, within constraints that enable scoring procedures to be employed. This task also has the benefit of creating ideas that can be improved upon, unlike simple category membership. The testing session followed 1 week after the initial generation and elaboration stages. The expectation was that any form of elaboration would lead to a reduction of unconscious plagiarism in the generate-new task. However, the issue of particular interest was the rate of plagiarism in the recall-own task. Here, the strength account would predict that both forms of elaboration would lead to increases in unconscious plagiarism, while the source-monitoring account would predict that unconscious plagiarism would be particularly inflated by elaboration that involves thinking of idea improvements.

EXPERIMENT 1

Method

Participants

A total of 40 undergraduate students participated in the generation phase. However, 2 participants failed to attend the second testing session and so only 38 participants completed the experiment. Participants were undergraduates from the University of Plymouth and received partial fulfilment of a course requirement for their participation in this study.

Procedure

Four participants were randomly assigned to a group and given a seat around a central table. The participants were informed that they would hear a list of category names (e.g., a newspaper) and they would have to think of novel, non-conventional uses for the items (e.g., to make a paper hat). After the experimenter read aloud the first category (either brick, shoe, paper-clip, or button) participants were instructed one at a time to share their idea with the group. The order that participants were asked their ideas was denoted by a Latin square design. This decreased the likelihood that the participant would plagiarise the person who spoke directly before them, as they could not anticipate when they were going to speak (Marsh & Bower, 1993). Moreover, explicit instructions stated that they must listen to all the others' exemplars to prevent themselves from generating the same ideas as another person. The experimenter recorded all the generated ideas. For each of the four categories, each participant generated four novel uses. Accordingly, for each category there were 16 generated exemplars. Examples, of generated ideas included ''to use buttons to play tiddly winks'', ''to use a shoe as a flower pot'', and ''to use a paperclip to decorate a picture frame''.

The elaboration phase immediately followed the generation phase. Of the previously generated ideas, a quarter (one idea from each participant, from each category) was then subject to the following condition treatments. For the *imagery-elaboration* ideas participants rated the ideas on 5-point rating scales for how easy they were to imagine (*1 = difficult to imagine, 5 = easy to imagine*) and how effective they thought the ideas would be (*1 = not effective, 5 = very effective*). For the *generative-elaboration* ideas participants wrote down three ways to improve the given idea. For the *re-presented* items participants heard the ideas a second time but were not instructed to elaborate them in any way. *Control* ideas were not re-presented at this stage.

The order in which participants performed these tasks was counterbalanced across the groups. The experimenter read these ideas aloud in a predetermined random order, instructing the participants to rate, elaborate, or listen to the idea, as appropriate. This task completed the first session, which lasted approximately 40 minutes.

One week later, participants returned to complete the recall-own and generate-new phases individually on computer. In the recall-own phase, participants were shown the four category headings (e.g., *brick*) that they had previously generated to in the first session, with four blank spaces under each. The categories were displayed one by one in a random order for each participant. Participants were instructed to type in all of their own ideas from the first session (16 ideas). Recall was not timed or forced. If participants could not remember all of their ideas, then they were permitted to leave blank spaces. Once this had been completed, the same category headings were repeated in a random order. However, participants were asked to generate four completely new uses for each category that had not been previously generated (in any of the categories). If participants failed to enter four ideas, a message was displayed alerting them that they had not provided four ideas and could not proceed until all the ideas had been typed in. This session lasted approximately 20 minutes.

Results

Unconscious plagiarism was scored if an idea was identical or very similar to an idea previously generated by another participant (e.g., use brick as a doorstop or use a brick to wedge a door open). Furthermore, if a recalled/generated idea was identical or very similar to a previous idea from a different category, the idea was scored as an instance of unconscious plagiarism. Inclusion of these ideas did not alter the pattern or significance of the results. Responses were categorised independently by two raters. In the recall-own phase the raters indicated whether the ideas were correctly recalled, plagiarised, or new ideas (that were not generated in the initial phase). In the generate-new phase, raters determined whether the ideas were new, plagiarised, or duplicated ideas (i.e., ideas that appeared in the generate new phase more then once). The inter-rater agreement across all the ideas was 98.7%. Discrepancies occurred when ideas from the generation phase were similar to ideas produced as new ideas, for example ''to use button as eyes on a teddy bear'' and ''to use buttons as eyes on a snowman''. In instances such as these, the idea was not classified as being plagiarised. However, there were very few examples like these and all were resolved by discussion.

All of the participants exhibited an unconsciously plagiarised error in at least one of the phases (recall-own or generate-new). The overall numbers of ideas correctly recalled and unconsciously plagiarised in each of the tasks are summarised in Table 1.

Correct recall

In total, 460 ideas were reported. Of these ideas 331 ideas (72%) were correctly recalled, where each participant on average correctly recalled (i.e., did not plagiarise) 8.7 (SD = 2.5) of their initial ideas. The top row of Table 1 shows the effects of elaboration on correct recall. A within-subjects ANOVA revealed a main effect of elaboration status on participants' performance, $F(3, 111) = 10.26$, $p < .01$. Multiple pairwise compar-

TABLE 1
Experiment 1

	Elaboration status							
	Control		*Re-presented*		*Imagery elaboration*		*Generative elaboration*	
Task	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Recall	1.42[a]	1.13	2.24[b]	1.24	2.63[b]	0.97	2.42[b]	0.98
UP (RO)	0.53[a]	0.73	0.63[a]	1.05	0.55[a]	0.76	1.7[b]	1.8
UP (GN)	0.95[a]	1.01	1.03[a]	0.88	0.39[b]	0.72	0.61[ab]	0.89

Experiment 1: Mean rates of correct recall and plagiarism within the recall-own (RO) & generate-new (GN) phases for control ideas, ideas that were repeated and ideas the were subject to imagery elaboration and generative elaboration.

Means within a row that share the same superscript letter do not significantly differ from one another ($p < .05$ after Sidak adjustment).

Recall = Correctly recalled ideas in the recall-own task.

UP (RO) = Unconscious plagiarism in the recall-own task.

UP (GN) = Unconscious plagiarism in the generate-new task.

isons between means were conducted, with a Sidak-adjusted alpha level of .05. These revealed that the baseline condition was significantly lower than all the remaining conditions, which did not differ. This lack of difference suggests that imagery elaboration and generative elaboration produced memories of equivalent strength.

Unconscious plagiarism

Recall-own task. In this task, participants were required to remember as many of their own initial ideas as possible. Unconscious plagiarism occurred when participants recalled someone else's idea as their own. A plagiarised idea was only counted once. Of the 460 ideas that were reported, 129 ideas (28%) were unconsciously plagiarised. In the recall-own phase, 79% of participants (30 of 38) unconsciously plagiarised at least one idea that another group member had originally generated in the encoding session. Additionally, 57.9% (22 of 38) of participants made two or more intrusions.

A within-subject ANOVA revealed that the elaboration manipulation reliably affected rates of unconscious plagiarism, $F(3, 111) = 11.01$, $p < .001$. The means are displayed in the second row of Table 1, and were compared by Sidak-adjusted multiple comparisons as before. These revealed that generative-elaborated ideas were plagiarised more often than any of the other ideas. Therefore, conducting generative elaboration during idea encoding significantly increased the later plagiarism of those ideas. The remaining means did not differ significantly.

Generate-new task. Participants were required to generate four new ideas per category cue, but often participants unconsciously plagiarised another persons' ideas or inadvertently duplicated one of their own previous ideas (self plagiarism). In total, 602 ideas were generated and of these, 474 (78.7%) were new ideas, 113 (18.8%) had previously been generated by someone else, and 15 (2.5%) were participants' own ideas that they had inadvertently re-presented as new. The small remainder were duplicated ideas at test that were excluded from the analysis.

Self-plagiarism. There was a very small number of these types of intrusions and there was no significant main effect of elaboration status on self-plagiarism rates, $F < 1$.

Unconscious plagiarism. In the generate-new phase, 97.4% of participants (37 of 38) plagiarised by reproducing an old idea that had been previously generated by another group member. Moreover, 68.4% (26 of 38) made two or more of these intrusions. The effects of elaboration on rates of these errors can be seen in Table 1. A within-subjects ANOVA revealed a significant main effect of elaboration status on the rate of unconscious plagiarism for others' ideas, $F(3, 111) = 4.51$; $p < .05$. Follow-up tests were conducted as before, and revealed that the mean for the imagery-elaborated ideas was significantly lower than both control and re-presented ideas, but that no other comparison was significant.

Discussion

There were three measures of interest in this study. On two of them, recall and plagiarism in the generate-new task, there were equivalent levels of performance in the two elaboration conditions relative to the two control conditions. The only difference observed between the two forms of elaboration occurred in the rate of unconscious plagiarism seen in the recall-own task. In this task, generative elaboration led to considerably higher rates of plagiarism than imagery elaboration, which did not differ from the two control conditions.

This pattern is interesting for a number of reasons. First, the results strongly refute a simple strength account. There are two measures of memory strength available. The most direct is correct recall and on this measure neither form of elaboration exceeds the re-presented control. More pertinently, the two forms of elaboration did not differ, with in fact numerically higher recall for imagery elaboration. Thus, this measure refutes the idea that generative elaboration produces the strongest memories. Exactly the same conclusion can be drawn from the indirect measure of strength, the ability to avoid generate-new plagiarisms. Here again the two forms of elaboration are not statistically different, although they do reduce plagiarism on the generate-new task relative to either control or re-presented ideas. Further, it is the imagery condition that is numerically the lowest, suggesting stronger memories than generative elaboration. Thus both measures are consistent with imagery elaboration producing memories that are strong, if not stronger than the generative elaboration. Additionally, the generate-new plagiarism data, although not the recall data, suggest that both forms of elaboration pro-

duce stronger memories than re-presentation. Finally, both recall and generate-new plagiarism data indicate that re-presentation creates stronger memories than single presentation.

Using these measures of strength to predict plagiarism in the recall-own data produces a series of predictions that are not met. Strength would predict more recall-own plagiarism of re-presented ideas than control data; this was not found. Nor was there the expected increase in plagiarism following imagery compared to either re-presented or control. Conversely, in recall-own plagiarism, whilst strength would predict no difference in recall-own plagiarism (or perhaps a difference favouring imagery elaboration), a large difference favouring generative elaboration was found. Thus, a strength account is wrong on almost all accounts.

Whereas a memory strength account cannot explain the elevated levels of unconscious plagiarism seen in the generative-elaboration condition, a source-monitoring account readily explains this pattern. These data are in line with the idea that participants make attributions about the qualitative aspects of ideas that come to mind in the recall task. Ideas that were originally generated by someone else, but have been added to by the participant, were more than three times as likely to be plagiarised than control ideas or imagined ideas, and more than twice as likely to be plagiarised as repeatedly presented ideas. In fact, the magnitude of the effect was particularly surprising. On average, in the generative-elaboration condition, participants recalled an average of 2.4 items, and plagiarised a further 1.7 items. Thus, plagiarised items constitute 41% of all responses in that condition. Previous studies have shown much lower rates of plagiarism, more in line with the levels seen in the control condition here. The highest rates of plagiarism reported previously were those in the recall-own phase in Macrae et al. (1999). They reported plagiarism levels of between 14% and 24%, which are still well below the rate in this study.

There are a number of potential factors that may contribute to the high levels of plagiarism seen in the present study. This study is the first to use the Alternate Uses Task in this manner. Although it is not an overly demanding task, there may be certain task-specific factors operating that make it difficult for participants to complete. For example, the ideas may be less discriminable from each other than on some of the previously used tasks. Similarly, the use of an extended delay is not typical of the literature, but is consistent with previous work showing that delays increase rates of plagiarism (Brédart, Lampinen, & Deleldre, 2003; Brown & Halliday, 1991; Macrae et al., 1999; Marsh et al., 1996). In addition, the fact that in three out of four conditions participants encountered the ideas twice may also contribute to the higher rates of plagiarism. Nevertheless, while these factors might account for a general increase in plagiarism errors, they cannot account for the particular increase seen only in the generative-elaboration condition. However, because the general levels of plagiarism observed in this study were high, there was a concern that the levels were elevated as a result of participants not using a strict enough decision criterion to monitor their responses given in the recall-own and generate-new phases. Therefore, it was decided to conduct a replication of the study with an additional manipulation that encouraged participants to think more carefully about their answers before making a response.

EXPERIMENT 2

This study replicated Experiment 1 except for one detail. Participants were offered a financial incentive for not plagiarising any previously generated ideas, in order to encourage them to monitor their decision processes more carefully. Participants were told that a prize of £50 would be shared between all participants who avoided plagiarised errors. They were told that in the previous study this would have resulted in two or three participants sharing the money. The expectation was that this manipulation would encourage participants to monitor the source of their ideas carefully, and so reduce the overall plagiarism rates from Experiment 1. There was no strong expectation that this would affect the pattern of effects seen previously, although it did allow the testing of the possibility that the particularly high rates for the generative-elaboration items were due to this factor. As a manipulation check, participants were also asked to rate how hard they tried to not plagiarise any of the previously given ideas at the end of the study.

Method

Participants

A total of 40 undergraduate students participated in the idea-generation stage of the study. However, 4 participants did not attend the second

test session and so only 36 participants completed the experiment. Participants were undergraduates from the University of Plymouth and received partial fulfilment of a course requirement for their participation in this study. None had taken part in Experiment 1.

Procedure

The procedure was identical to the Experiment 1, except for the incentive not to plagiarise. Before they began, participants were instructed that there was a reward available for all the participants who did not plagiarise any of the previously generated ideas. They were informed that a £50 cash prize would be equally split between the participants who did not re-produce any ideas from the initial session (previously given by themselves or any of the other participants). It was made clear that in previous studies only 5–10% of participants have been able to successfully do this. Consequently, their share in the money should be sizeable. At the end of the study, participants were asked to indicate how hard they tried to not plagiarise any of the previously given ideas using a 5-point rating scale from 1 = *not hard at all* to 5 = *very hard*.

Results and discussion

Unconscious plagiarism was scored in the same way as in Experiment 1. The same two raters were used and the inter-rater agreement was 99.3%, again with discrepancies resolved through discussion. When participants were asked how hard they tried to not plagiarise any of the previous ideas, 86.7% of participants responded with a 4 or higher. The mean rating on the 5-point rating scale was 4.4 (SD = 0.9).[1] Excluding those who had given a lower rating than 4 did not alter the results and so all the data were retained. The number of correctly recalled ideas and the number of plagiarised ideas in the generate-new and recall-own tasks are given in Table 2.

Correct recall

In total, 417 ideas were reported, 347 (83.2%) of which were correctly recalled (i.e., not plagiarised). Each participant on average correctly remembered 9.6 (SD = 2.9) ideas. A within-subjects ANOVA revealed that there was a significant main effect of elaboration status on rates of recall, $F(3, 105) = 7.31$, $p < .05$. Differences between the means were examined by Sidak multiple comparisons with an adjusted alpha level of .05. These revealed that the ideas that had received generative elaboration or imagery elaboration or had been re-presented were recalled more often than control ideas. As in Experiment 1 there were no other significant differences, thus providing no evidence for differential memory strength as a result of elaboration type.

TABLE 2
Experiment 2

	Elaboration status							
	Control		*Re-presented*		*Imagery elaboration*		*Generative elaboration*	
Task	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Recall	1.75[a]	1.25	2.8[b]	1.16	2.47[b]	1.18	2.58[b]	1.0
UP (RO)	.25[a]	.50	.31[a]	.82	.47[a]	.81	.92[b]	1.0
UP (GN)	.58[a]	.60	.47[a]	.77	.28[a]	.57	.58[a]	.69

Experiment 2: Mean rates of correct recall and plagiarism within the recall-own (RO) & generate-new (GN) phases for control ideas, ideas that were repeated and ideas the were subject to imagery elaboration and generative elaboration.

Means within a row that share the same superscript letter do not significantly differ from one another ($p < .05$ after Sidak adjustment).

Recall = Correctly recalled ideas in the recall-own task.

UP (RO) = Unconscious plagiarism in the recall-own task.

UP (GN) = Unconscious plagiarism in the generate-new task.

[1] Due to an administration error, seven participants did not receive this rating scale to complete.

Unconscious plagiarism

Recall-own task. Unconscious plagiarism was scored in the same way as in Experiment 1. In the recall-own phase, of the 417 ideas that were produced, 70 (16.8%) were unconsciously plagiarised. During this task, 75% of participants (27 of 35) unconsciously plagiarised at least one idea that another group member had originally generated. Additionally, 44.7% of participants (17 of 35) made two or more intrusions. As shown in Table 2, the elaboration manipulation reliably affected rates of unconscious plagiarism, $F(3, 105) = 6.32$, $p < .05$. Follow-up tests revealed that the generative-elaboration ideas were plagiarised at a higher rate than baseline ideas, re-presented ideas, and the imagery-elaborated ideas. The remaining comparisons between cell means were not significant. Therefore, as in Experiment 1, generative elaboration alone increased the later plagiarism of ideas.

Generate-new task. In total, 563 ideas were generated and of these, 481 (85.4%) were new ideas, 69 (12.3%) were unconsciously plagiarised ideas, and 13 (2.3%) were participants' own ideas that they had inadvertently re-presented as new.

Self-plagiarism. There were a very small number of these types of intrusions, only 27.8% (10 of 36) of participants plagiarised one of their earlier ideas. Only two participants made more than one intrusion. Moreover, there was no significant main effect of elaboration status on self-plagiarism rates, $F < 1$.

Unconscious plagiarism. In the generate-new phase, 91.7% of participants (33 of 36) plagiarised by reproducing an old idea that had been previously generated by another group member. Moreover, 55.6% (20 of 36) made two or more of these types of intrusions. A within-subjects ANOVA revealed that there was no significant main effect of elaboration status on the rate of unconscious plagiarism, $F(3, 105) = 1.65$, $p = .182$. As in Experiment 1, the lowest level of unconsciously plagiarised ideas was in the imagery condition.

Experiment 2 therefore largely achieved its aims. Rates of plagiarism were reduced from the previous study, although the magnitude of the reduction was larger in the recall-own task. Overall, in the recall-own task, mean number of plagiarised ideas per person dropped from 3.4 (Experiment 1) to 1.9 (Experiment 2). The equivalent figures for the generate-new task were 3.0 and 1.9. Thus, it appears that our incentive did result in participants making fewer intrusions on average. However, interestingly, this effect did not translate to the number of participants making any kind of plagiarised response. In Experiment 1, 79% of participants made a plagiarised response on the recall-own task, and 97.4% of participants did so on the generate-new task. In Experiment 2, 75% of participants made a plagiarised response in the recall-own task, compared to 91.7% in the generate-new task. In fact, in Experiment 2, there was no one who met the criterion of totally avoiding plagiarised responses.

Against the background of reduced rates of plagiarism, the basic pattern of findings seen in Experiment 1 was replicated. In the recall-own task, there was a significant effect of elaboration type, which was entirely due to the generative-elaboration condition. Although the mean number of plagiarised ideas per person dropped from 1.7 in Experiment 1, to 0.9 in Experiment 2, this remained at around double the rate seen in the other conditions. In contrast, the mean number of plagiarised responses in the imagery elaboration condition was only 0.4, which was in line with the rates seen for re-presented items (0.3) and control items (0.3).

The effects seen in the generate-new task were less clear-cut, although still in line with the previous results. In Experiment 1 the ideas that were subjected to both the baseline measures (control and repeated ideas) were plagiarised significantly more than the imagery-elaborated ideas and numerically more than the generative-elaborated ideas. However, in the second experiment, there was a significant reduction in the plagiarism in the control and re-presented condition compared to Experiment 1, and consequently there was little difference between the plagiarism levels across the manipulation of elaboration. However, once again the lowest rate of plagiarism was seen in the imagery-elaboration condition, again suggesting that imagery produces strong memories.

As before, a strength account cannot account for these data. The recall data suggest that control items are weaker that the other three kinds of item, which do not differ. Numerically, the highest recall is seen for re-presented items. The plagiarism data in the generate-new phase suggest no differences in strength but numerically it is imagery elaboration that minimises plagiarism to the greatest degree. Thus, neither measure suggests that generative-elaboration produces ''strong'' memories, but it is this condition that shows

double the rate of plagiarism in the recall-own task, compared to the other conditions.

One pattern that is hard to explain is why the incentive manipulation only reduces plagiarism in the control and re-presented conditions. Clearly a simple threshold shift that might be utilised in a strength model such as a signal detection theory cannot explain this finding. However, since our main focus was on comparison of the two forms of elaboration, this pattern was not central to the current argument. What is pertinent is the replication of the pattern of reduced generate-new plagiarism for imagery compared to generative elaboration in Experiment 2. Although neither study showed a significant difference, overall generate-new plagiarism following imagery was about half that seen for generative elaboration. As we argued above, if the ability to reject ideas as being old rests on a measure of strength then this pattern would be consistent with imagery elaboration producing stronger memories. This pattern therefore serves only to strengthen the claim that the increased plagiarism for recall-own following generative elaboration could not be due to strength. Of course it is also possible that plagiarism in the generate-new task does not stem from strength alone. There may also be a metacognitive component such that participants apply a ''memory criterion'' (Mazzoni & Kirsch, 2002) to generated ideas. Thus, when an idea comes to mind, any associated imagery that is produced might lead to the conclusion that the idea is old and should be rejected. On the assumption that the imagery-elaboration condition creates more visual traces, this might explain why fewer generate new ideas are plagiarised following imagery.

GENERAL DISCUSSION

Overall the financial incentive used in Experiment 2 resulted in few systematic changes between the experiments. Both experiments produced substantial rates of unconscious plagiarism. Although the extent to which participants plagiarised was reduced in Experiment 2, relative to Experiment 1, the results from each experiment followed largely the same pattern. In both, elaboration status influenced correct recall, with poorest performance in the control condition. For plagiarism in the recall-own task, both experiments showed that only generative elaboration caused elevated levels of plagiarism. For plagiarism in the generate-new task, the pattern was less consistent. In Experiment 1 only imagery elaboration decreased plagiarism relative to the baselines, while in Experiment 2 plagiarism of the baseline ideas was reduced and there were no significant differences between conditions. Taken together, these results are inconsistent with a strength-based account of unconscious plagiarism, and are more supportive of a source-monitoring account of unconscious plagiarism errors.

Marsh and Bower (1993 see also Brown & Murphy, 1989; Marsh & Landau, 1995) originally suggested that in the recall-own task participants plagiarise ideas that have a high activation strength. They maintained that increasing the activation level of externally generated ideas makes these ideas more comparable to self-generated ideas. Therefore, the ''overlap'' between the ideas increases, and accordingly so does the rate of unconscious plagiarism in the recall-own phase. Conversely, increasing activation strength allows ideas to be rejected as old in a generate-new task, and so would be expected to lower plagiarism when new responses are required.

Our strategy in interpretation of our data to test these ideas has been to take the recall performance as an indicator of memory strength, and use this to make predictions about plagiarism rates in the two tasks. Clearly, given that there were no significant differences between the forms of elaboration in the two studies, a simple strength model fails to account for our data because recall did not differ between either of the elaboration methods but plagiarism in the recall-own tasks did. The same arguments apply to comparisons involving the re-presented ideas. A strength hypothesis would also have predicted that representation, which improved recall, would also have increased plagiarism in the recall-own task relative to baseline, but it did not.

If one adopts a similar strategy, and takes plagiarism in the generate-new condition as a proxy measure of strength, one runs into similar difficulties. Assuming that stronger memories are easier to reject as old in the generate-new task, but harder to distinguish from old in the recall-own, leads to the prediction that the two forms of plagiarism should be negatively correlated across conditions. This is clearly not the case. For instance, in Experiment 2, generative elaboration leads to numerically the highest rates of plagiarism in both tasks. Thus, however we operationalise memory strength, our data do not seem to conform to the predictions from the strength hypothesis.

One surprising aspect of the data in these studies was performance in the re-presented ideas condition. Merely re-presenting ideas, without instructions to elaborate in any way, had a substantial impact on rates of correct recall. In fact, in both experiments recall rates for this condition did not differ from the elaboration conditions, and were significantly higher than control ideas. However, given the increased recall seen in this condition, it is important to note that this was not reflected in higher rates of unconscious plagiarism in the recall-own task. Clearly our re-presentation control condition involves presenting participants with ideas to hear again, in the context of other ideas that they are being asked to imagine/elaborate. It would be naïve to assume that participants do not carry over some of the processing from the elaboration conditions to the re-presented ideas. What impact is this likely to have had? Foremost it can only serve to reduce differences in processing between the re-presented and the other conditions. If we were able to demonstrate robust effects, this would suggest that perhaps the effects we obtained are underestimates of the true effects.

We were able to explore this issue by comparing those ideas that were re-heard *before* any elaboration instructions were given, with those that followed either the imagery or generative elaboration. For correct recall and generate-new plagiarism there were no significant effects of presentation order in either experiment. However, for unconscious plagiarism in the recall-own phase, order was significant, $F(2, 35) = 4.73$, $p < .02$, with re-heard ideas presented first producing 0.36 plagiarisms, ideas following imagery rating 0.27, and those following generative elaboration 1.33. Thus, these data mimic exactly the pattern seen in the full data set, suggesting that those who carry out generative elaboration first carry this over to listening, and hence produce more plagiarisms. Those who begin with imagery elaboration show no such effect. The same broad pattern was observed in Experiment 2 (listen first 0.07, image first 0.25, generative elaboration first 0.70), but this did not reach statistical significance, $F(1, 35) = 1.83$, $p < .18$. Thus together the data suggest that listening a second time does not increase plagiarism, compared to baseline, except when preceded by the generative-elaboration instruction.

There are a number of potential reasons why generative elaboration increased plagiarism in the recall-own task. One, in line with the source-monitoring framework, is that the different forms of elaboration resulted in qualitatively different kinds of traces being laid down at encoding. When participants generated their ways of improving an original idea, they will have stored a record of the associated cognitive operations (Johnson & Raye, 1981; Johnson et al., 1993) that went into generating those improvements. It is this additional information (including the quality and detail) at recall that assists the participant in distinguishing between internally and externally generated ideas and inferring their origin (Johnson & Raye, 1981). During generative elaboration, participants may have carried out processes similar to those involved in generation of ideas in the first instance. Consequently, the memory representations would resemble the representations of their own ideas. Thus, at recall when source-monitoring judgements are made, if the perceptual detail for an externally generated idea is lacking but there is an abundance of associated cognitive operations, then the sources of the two types of ideas may be confused (Landau & Marsh, 1997; Marsh & Bower, 1993). Such a process would result in the original sources of the idea being misplaced and others' ideas incorrectly claimed to have been self-generated. Conversely, processes used in constructing images and rating the quality of ideas do not resemble those utilised in generation, and so the representations will not be confused at test. This idea is consistent with past research (Landau & Marsh, 1997; Macrae et al., 1999; Marsh & Landau, 1995).

These additional cognitive operations seen in the generative-elaboration condition may also involve some element of personal style or personal semantics that serve as a semantic cue. In reality monitoring literature, it is well documented that internal and external events differ (see Johnson & Raye, 1981) and internal memories provide additional cues that allow the origins of the ideas to be distinguished. Johnson and Raye (2000) maintain that the source of information is not stored with a memory but is inferred through an automatic heuristic process that is based on an evaluation of various information features. Therefore this additional personal information may incorrectly influence participants' source monitoring judgements.

While participants were performing generative elaboration by devising novel uses for ideas, they may have associated personally relevant information to the idea. Other participants' ideas may have cued memories of times when they have seen or used the item in that way (e.g., to use a shoe to hide money in). As a result of thinking about and

improving the idea, the source may be confused and the idea may feel more personally relevant. What is personally relevant might consist of personal semantics (e.g., remembering using their shoe to hide money) or personal style (e.g., that they are the kind of person who hides money). This familiar style of the idea may be achieved through participants re-working the idea throughout the elaboration period. The effort exerted may serve to change the expression of that idea to fit the person's own style. Consequently, when the participant later recalls the idea, they may remember the personally relevant information, or recall the idea in a way that is familiar, natural, and in their own style. This idiosyncratic information may then serve as a misleading discriminative cue, and hence participants may erroneously decide that the idea was something that they had originally generated. Such effects would not occur with ideas that were merely rated or imagined because they are not so closely tied to self, or self-style. Therefore it is not the strength or effort *per se* that is responsible for the increase in recalled intrusions but rather the nature and kind of elaboration.

This research was motivated by trying to understand real-world plagiarism. Across two studies, the results indicated that generative elaboration has a powerful effect on plagiarism rates when people later try to recall their own ideas. These data suggest that real-world conditions that require people to take ideas and work on them are likely to result in those people coming to believe that the original idea was their own. This may therefore constitute a possible mechanism by which creative artists, who may have worked on and invested considerable time and effort into a basic idea, may come to believe someone else's idea is their own. Moreover, the results from Experiment 2 suggest that this process may occur even when people are warned about plagiarism and are consciously trying to avoid it.

Manuscript received 15 September 2003
Manuscript accepted 1 April 2004
PrEview proof published online 9 July 2004

REFERENCES

Brédart, S., Lampinen, J. M., & Deleldre, A, C. (2003). Phenomenal characteristics of cryptomnesia. *Memory*, *11*, 1–11.

Bink, M. L., Marsh, R. L., & Hicks, J. L. (1999). An alternative conceptualisation to memory 'strength' in reality monitoring. *Journal of Experimental Psychology; Learning, Memory and Cognition*, *3*, 804–809.

Bink, M. L., Marsh, R. L., Hicks, J. L., & Howard, J. D. (1999). The credibility of a source influences the rate of unconscious plagiarism. *Memory*, *7*, 293–308.

Brown, A. S., & Halliday, H. E. (1991). Crypomnesia and source memory difficulties. *American Journal of Psychology*, *104*, 475–490.

Brown, A. S., & Murphy, D. R. (1989). Cryptomnesia: Delineating inadvertent plagiarism. *Journal of Experimental Psychology; Learning, Memory and Cognition*, *15*, 432–442.

Christensen, P. R., Guilford, J. P., Merrifield, P. R., & Wilson, R. C. (1960). *Alternate uses (form A)*. Beverley Hills, CA: Sheridan Supply.

Craik, F. I. M., & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior*, *11*, 671–684.

Dannay, R. (1980). *Current developments in copyright law*. New York: Practicing Law Institute.

Dodson, C. S., & Johnson, M. K. (1996). Rate of false attributions depends on how questions are asked. *American Journal of Psychology*, *106*, 541–557.

Freud, S. (1960). The psychopathology of everyday life. In J. Strachey (Ed. & Trans.), *The standard edition of the complete work of Sigmund Freud*. London: Hogarth Press.

Garry, M., Manning, C. G., Loftus, E. F., & Sherman, S. J. (1996). Imagination inflation: Imagining a childhood event inflates confidence that it occurred. *Psychonomic Bulletin & Review*, *3*, 208–214.

Johnson, M. K., Hashtroudi, S., & Lindsay, D. S. (1993). Source monitoring. *Psychological Bulletin*, *114*, 3–28.

Johnson, M. K., & Raye, C. L. (1981). Reality Monitoring. *Psychological Review*, *88*, 67–85.

Johnson, M. K., & Raye, C. L. (2000). Cognitive and brain mechanisms of false memories and beliefs. In D. L. Schacter & E. Scarry (Eds.), *Memory, brain and belief.* Cambridge, MA: Harvard University Press.

Landau, J. D., & Marsh, R. L. (1997). Monitoring source in an unconscious plagiarism paradigm. *Psychonomic Bulletin and Review*, *4*, 265–270.

Linna, D. E., & Gülgöz, S. (1994). Effect of random response generation on cryptomnesia. *Psychological Reports*, *74*, 387–392.

Macrae, C. N., Bodenhausen, G. V., & Calvini, G. (1999). Contexts of cryptomnesia: May the source be with you. *Social Cognition*, *17*, 273–297.

Marsh, R. L., & Bower, G. H. (1993). Eliciting cryptomnesia: Unconscious plagiarism in a puzzle task. *Journal of Experimental Psychology; Learning, Memory and Cognition*, *19*, 673–688.

Marsh, R. L., & Landau, J. D. (1995). Item availability in cryptomnesia: Assessing its role in two paradigms of unconscious plagiarism. *Journal of Experimental Psychology: Learning, Memory and Cognition*, *21*, 1568–1582.

Marsh, R. L., Landau, J. D., & Hicks, J. L. (1996). How examples may (and may not) constrain creativity. *Memory & Cognition*, *24*, 669–680.

Marsh, R. L., Landau, J. D., & Hicks, J. L. (1997). Contributions of inadequate source monitoring to unconscious plagiarism during idea generation. *Journal of Experimental Psychology; Learning, Memory and Cognition*, *23*, 886–897.

Mazzoni, G., & Kirsch, I. (2002). Autobiographical memories and beliefs: A preliminary metacognitive model. In T. J. Perfect & B. L. Schwartz (Eds.), *Applied metacognition.* Cambridge: Cambridge University Press.

Shaw, J. S. III. (1996). Increases in eyewitness confidence resulting from postevent questioning. *Journal of Experimental Psychology: Applied*, *2*, 126–146.

Slamecka, N. A., & Graf, P. (1978). The generation effect: Delineation of a phenomenon. *Journal of Experimental Psychology: Human Learning & Memory*, *4*, 592–604.

Vos, J. F., Vesonder, G. T., Post, T. A., & Ney, L. G. (1987). Was the item recalled and if so by whom? *Journal of Memory and Language*, *26*, 466–479.