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Understanding Unconscious Plagiarism: The Effects of Idea Elaboration and Perceived Idea Quality on Later Recall and Recognition of Ideas

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Abstract

Previous research has shown that idea improvement and perceived idea quality have differential effects on recall-own and generate-new plagiarism. Participants completed a generative task in pairs and read some ideas perceived to be of high quality before elaborating on a selection of the ideas. It was expected that other-generated ideas that had been improved or read out loud would be more susceptible to unconscious plagiarism. Participants returned a week later to complete recall-own generated, recall-own read, generate-new and source monitoring tasks. Partner-generated ideas were significantly more likely to be plagiarised following improvement only. Participants were significantly more likely to plagiarise their partner's ideas in the generate-new task. These findings are discussed in relation to previous research and theories of unconscious plagiarism.

Contents

Statement of Ethics
Ethical approval was obtained before testing began; this study was considered to be ethically sound. Participants were briefed before participation and reminded that they had the right to withdraw from the study at any point. Participants were debriefed following their participation and the responses they gave were confidential. The present research involved no element of deception and was not considered to cause participants any harm.

Data Collection
All of the data collected and used in the present research was obtained alongside another experimenter (Emma Ross). While the nature of the methodology required two experimenters to run the study, collaborating to collect the data also enabled a larger sample size.

Introduction

Plagiarism is a concern for many students who are regularly required to produce original pieces of work; they must ensure that all material is referenced appropriately. While plagiarism may be a conscious result of a copying directly from books in a desperate attempt to meet a deadline, it might also be the unintentional product of having thought about another's idea and subsequently attributing that idea to having been one's own – forgetting that it had once been read/heard elsewhere. This source monitoring error constitutes unconscious plagiarism and experimental research conducted on this topic reveals more about why and when it is most likely to occur.
The concept of idea appropriation was researched in the 1980s by Wicklund, Reuter and Schiffmann (1988) who asked participants either to translate or to summarise relatively unfamiliar, simple target ideas. The resulting appropriation effect was measured by participants' claims of already having had that knowledge in their repertoires. The researchers suggested that, perhaps through perceptual processes, activity can bring forth a salient connection between the person (as source) and the idea; the more the participants' activity results in a subjectively perceived new form of the idea, the stronger the resulting appropriation effect.
Unconscious or inadvertent plagiarism was tested experimentally for the first time by Brown and Murphy in 1989. Their experimental paradigm consisted of an initial generation phase, during which participants thought of ideas in a group. Next they were asked to recall their own ideas (recall-own task). A generate-new task followed, which instructed participants to think of new ideas for the original question or category. Brown and Murphy (1989) found that, in all three phases, participants plagiarised other's ideas more frequently than would be expected by chance, particularly in the generate-new task (9% of the time). They also note that plagiarising others occurred more often than self-plagiarism (presenting one's previously proposed idea as being novel in the generate-new phase) which has led to suggestions that people monitor self-generated and other-generated information in different ways.
Brown and Murphy's original paradigm has been adapted by many researchers in a variety of situations to explain why this phenomenon occurs and in which situations or

under which conditions plagiarism is more likely to occur. Researchers have continued to follow Brown and Murphy's three-stage paradigm although it is often adapted according to the researchers' hypotheses. Examples of variables that have been manipulated using variations of this paradigm include: delay between generation and test (Brown & Halliday, 1991); depth of processing at generation (Marsh & Bower, 1993); and source similarity (Landau & Marsh, 1997).

Whether plagiarism is a conscious act or not it is an offence which carries serious consequences. Real-life cases which have been reported in the literature include George Harrison's unconscious plagiarism of a song originally written by Chiffon and Freud's plagiarised theory of bisexuality – which was found to have actually originated from a colleague of his, Fliess, a couple years earlier (both examples cited in Stark, Perfect & Newstead, 2005). Such examples have led to a need to explain exactly why this phenomenon occurs. Not only have those concerned in the above examples copied another person's idea and presented it as their own, they remain very confident that the idea is their own even when questioned and, in George Harrison's case, when the matter is taken to court. Stark et al. (2005) tested confidence in source judgements experimentally by offering participants a financial incentive for avoiding plagiarism. They expected that this would result in participants monitoring the source of ideas they produced in the recall-own and generate-new tasks more carefully. However, although rates of plagiarism decreased slightly in comparison with their other identical (minus the financial incentive) condition, 75% of participants still made at least one intrusion in the recall-own task and 92% did in the generate-new task. Not one participant met the criterion for receiving the reward.

Research on unconscious plagiarism makes a distinction between recall-own plagiarism (incorrectly claiming another's ideas as one's own) and generate new plagiarism (claiming that one's generated idea is novel when in fact it has been previously proposed). Theories that attempt to explain why unconscious plagiarism occurs give different explanations for these two types of errors.

One such theory was proposed by Marsh and Bower (1993) who suggested that a relative-strength model can explain unconscious plagiarism. The assumptions of this are that classes of items exist in memory with varying degrees of average strength and participants set two decision criteria – a strength below which an item is called new and a strength above which an item is believed to be self-generated – when judging the item's source. These claims were tested experimentally by Marsh and Landau (1995) who employed a lexical decision task (LDT) – a reliable indicator of item activation with faster reaction times associated with greater strength – between the generation and test phases. This enabled them to test whether other-generated ideas that are subsequently plagiarised are of greater strength in memory than those which are not. The LDT revealed that other-generated items with greater strength are more likely to be plagiarised, supporting the relative strength model. To test the model further, the sequence of generation was manipulated with half of the participants generating solutions first and the computer generating solutions after a 20 minute delay and the other half generated their solutions 20 minutes after the computer did. The former condition should, according to the relative strength model, result in more plagiarism as the longer delay should decrease the strength of their own-generated ideas compared with other- (in this case computer-) generated ideas. Similarly more self-plagiarism in the

generate-new task is expected. The results supported these hypotheses thereby providing more support for the relative-strength model.

Another influential theoretical account is the source monitoring framework (Johnson Hashtroudi & Lindsay, 1993). This describes how the characteristics of the original memories are an important factor in the consequent accuracy of source memory. For example, the perceptual and contextual information that is encountered when an event is perceived separates memories for perceived events from memories of imagined events. The quality and quantity of semantic detail, affective information and cognitive operations also determine the accuracy of source memory. The judgement processes used at test are important too; source judgements depend on the information available from memory records, which are more accurate if the person is not distracted at encoding, for example. It is clear that the generate-new task - which requires participants only to make an old-new recognition judgement - differs from the recall-own task; here participants must also make a source judgement.

Marsh, Landau and Hicks (1997) predicted that when source monitoring is not the primary task (for example, in a generate-new task), controlled, systematic processing is less likely to be applied and so more source monitoring errors will result. Their study involved a generative phase whereby participants took turns to think of ideas; this was followed by a generate-new task after a delay. They aimed to see whether cryptomnesia in a generative paradigm is more frequent than in tasks whereby the main goal to monitor source, as this is turn may influence the likelihood of participants engaging in heuristic processing over systematic processing. Their results demonstrated that source monitoring errors were more likely when participants were primarily engaged in another activity, such as devising novel solutions to problems. However, when instructed to carefully monitor the source of their novel ideas, plagiarism was reduced. Another experimental manipulation of asking participants to complete a generate-new task under time constraints was found to increase plagiarism – this is likely to be because slow, systematic cognitive processing was not possible. Their final experimental manipulation considered that a less anonymous test situation including just the participant and the experimenter might result in participants spontaneously using more stringent decision criteria; this was precisely what they found. In all four experiments carried out by Marsh et al (1997), source monitoring was generally better when participants completed a modified recognition memory task which encouraged more consideration of source and the application of more stringent decision criteria than when they completed a generative problem-solving task whereby making accurate source judgements was not the primary goal.

Elaboration during the retention interval was introduced by Stark et al (2005) who reasoned that real-life plagiarists are likely to spend time thinking about ideas after hearing them and perhaps developing them. Marsh and Bower's (1993) suggestion that, as the activation strength of other-generated ideas is increased, the ideas may begin to resemble self-generated ideas. This should undoubtedly influence responses in the recall-own task. Stark et al. (2005) asked participants to complete the Alternate Uses Task (Christensen, Guilford, Merrifield & Wilson, 1960) in groups of four. This involves thinking of novel, non-conventional uses for a selection of everyday objects. Immediately following this generation stage was an elaboration phase during which participants improved a quarter of these ideas (generative-elaboration) and imagined a quarter (imagery-elaboration). A quarter of the remaining ideas were represented but not

subjected to any form of elaboration while a quarter served as controls and were not represented or elaborated. The researchers predicted that, in line with the suggestions of the source-monitoring framework (Johnson et al., 1993), the process of improving ideas might result in participants recalling those ideas as being self-generated in the recall-own task as both generating and improving ideas involve generative processes. The researchers also proposed that personal characteristics of the ideas that are associated with the original ideas through the process of improvement may result in plagiarism as if these personal characteristics of the memories are experienced at recall then the participant may assume that the idea must have been their own. This is precisely what was found: Generative elaboration led to significantly more plagiarism than imagery-elaboration, which was not found to differ from the represent and control conditions. Rates of unconscious plagiarism in the generate-new tasks for ideas that had been subjected to elaboration decreased – as this form of deeper encoding made it easier for participants to recognise these ideas as having already been produced.

The increase in recall-own plagiarism errors that has been found in the literature is unlikely to be a product of memory strength alone. Stark and Perfect (2007) found that improving ideas resulted in more subsequent plagiarism (8.8% of other's ideas that had been improved were plagiarised) than imagining or representing the ideas did (3.3% and 3.1% respectively).

Idea quality is another example of a variable that has been manipulated in plagiarism research. Bink, Marsh, Hicks and Howard (1999) found that people are more likely to plagiarise ideas in a generate-new task from a highly credible source than from a less credible one. In their study they led participants to believe that the ideas they heard about how traffic accidents could be reduced had either been proposed by town planners (high credibility) or by students (low credibility) when in fact the ideas were rated for credibility and counterbalanced across conditions. High credibility ideas were more likely to be represented as the participants own, novel solutions at test (13%) than the low credibility ideas (8%). The researchers differentiate between explicit and implicit memory, the latter can be measured using source monitoring (recognition) tasks. They found that source monitoring tasks resulted in participants making more accurate source judgements than did free recall tasks and write that while items may be available, they can not necessarily be accessed. There were no significant differences in explicit memory as measured by free-recall tasks; participants are able to recall ideas from each source equally well and can also recall ideas and determine the source of ideas equally well whether they are perceived to be high or low credibility. However, unconscious plagiarism in the generate-new task was consistently affected by perceived credibility. Bink et al. (1999) discuss suggestions that high credibility ideas spontaneously receive more elaboration during encoding which consequently results in more source-monitoring failures during the generate-new task. To test this they had participant generate an implication for each idea as it was presented to them – this resulted in equal plagiarism in a generate-new task as the low credibility ideas were now just as likely to be plagiarised as high credibility ideas. These results are explained in terms of the source-monitoring framework (Johnson et al., 1993). Cognitive operations experienced at encoding are one of the characteristics of the memory trace that influence later source-monitoring. The generative process of thinking of implications for ideas is likely to strengthen the memory trace resulting in faster accessibility of these ideas and the incorrect feeling that the suggestion is one's own novel idea. More recently, studies

have shown that the feeling of authorship for mental actions is enhanced by effort cues experienced during mental activity; misattribution of effort cues (manipulated by the researchers) during a problem solving task resulted in unconscious plagiarism (Preston & Wenger, 2007).

Perfect and Stark (2008) considered the role of perceived idea quality and idea improvement in unconscious plagiarism. Participants completed a generative task in groups of four and were then told that their ideas had been rated for quality. If ideas were judged to be 'excellent' or 'satisfactory' they did not need to be improved, while 'very good' ideas required just one improvement and 'good' ideas needed three. In line with their previous research, Perfect and Stark (2008) found that plagiarism in the recall-own task (completed a week later) was not influenced by idea quality, however ideas that had been subjected to the most improvement, in this case 'good' ideas, were more likely to be plagiarised. The generate-new task was affected by the perceived quality of the ideas. Specifically, ideas judged to be 'excellent' were plagiarised more often than those judged to be 'satisfactory' despite both not having been subjected to any elaboration by participants. The 'good' and 'very good' ideas were not plagiarised in this task. The results are discussed in relation to Bink et al.'s (1999) work; the researchers propose a valence-related editing process occurs during the generate-new task. Ideas that were elaborated and ideas with low ratings will not be proposed either because they are labelled as being old or because they are not considered to be good ideas, respectively. The excellent ideas might come to mind and, as they were not elaborated on, they will not be labelled as being old and so they are presented as novel ideas in the generate-new task.

Perfect, Field and Jones (2009) extended this idea and introduced a confederate to their experiment who claimed to be an expert in one of the two topics of idea generation. This experiment had the participant work in a pair (their partner was always a confederate) to take turns generating ideas to questions concerning both health and environmental issues. In each session the confederate would claim to be a Masters student in Health, Nutrition and Fitness or Environmental Sciences. Idea improvement was also looked at. The results demonstrated an interesting double dissociation between recall-own plagiarism and generate-new plagiarism. The recall-own task was influenced by idea elaboration. Specifically, ideas that had been improved by participants were more likely to be plagiarised at test whether the ideas were in their partner's area of expertise or not. However, when completing the generate-new task, the perceived quality of ideas was relevant; participants were more likely to plagiarise their partner's ideas for the ideas that they had generated in their area of expertise.

The present research used the Alternate Uses Task (Christensen et al., 1960); participants work in pairs generating alternate uses for everyday objects. A manipulation of perceived quality was introduced; participants were asked to read out a selection of the 'best' ideas that had been generated in a previous study (these ideas were actually randomly selected). A quarter of the ideas were then subjected to improvement by both participants, a quarter of the ideas were read aloud by participants, a quarter read out to the participant by the experimenter and a quarter were not elaborated at all (control). The process of participants reading a selection of ideas (some of their own-generated and -read and some of their partner's own-generated and –read) aloud introduced a further experimental manipulation in the present research; the impact of hearing another's ideas read in one's own voice. According to the source monitoring framework

this should have implications at test as it makes the source of the ideas subjected to being read aloud less distinguishable at test. Records of cognitive operations are used to identify oneself as the origin of a memory. Hearing an idea read aloud in one's own voice during the elaboration phase of the experiment is likely to resemble the generation phase, as participants said their own ideas aloud and read out the best ideas. Therefore the process of reading a selection of their partner's ideas out in the elaboration stage may result in later recall-own plagiarism. Similar predictions are made with regards to improvement elaboration based on findings of previous research (e.g. Stark et al., 2005). Participants must also attempt to recall the ideas that they were given to read out, i.e. the 'best' ideas: We expect that the process of reading out of other ideas in the elaboration phase might result in source confusion here. Generate-new plagiarism is unlikely to be affected this way as reading ideas aloud in the elaboration phase will increase the strength of the ideas in memory and therefore make them less likely to be presented as novel ideas at test.

As well as asking participants to try to recall their own-generated and –read ideas and to complete a generate-new task, a source monitoring task will be completed by participants to measure plagiarism. This involves presenting participants with a selection of previously generated and new ideas and asking them to identify the source or state if the idea is new. Results from studies applying this type of task have led to suggestions that unconscious plagiarism is a result of poor judgement processes being applied at test; it could be that the ideas are not readily available in memory (Marsh et al., 1997).

Method

Participants

Data from 37 participants was collected. Participants were mostly undergraduate psychology students at the University of Plymouth participating for course credit. Some participants were volunteers. Statistical analyses revealed outliers in the data on certain tasks and so some participants' data were excluded from certain analyses. As a result of these exclusions, data from 35 participants were used in the recall-own tasks and data from 34 participants were used in the generate-new task. 36 participants completed the source monitoring task (as one participant did not have time to complete the task).

Materials

The same predetermined 'best' ideas were used for all participants; a total of 16 ideas for each object were predetermined. Although only 8 were used, another 8 were back-up ideas in case a participant generated an idea before it was given to themselves or their partner to read out. The four new ideas that were presented to each participant in the source monitoring task were also taken from previous research. The four new ideas were the same for every participant.

Procedure

Participants were invited to the lab in pairs. They were briefed before the experimenters asked them to take turns in generating alternative uses for a number of objects, specifically a brick, a shoe, a paper clip and a button. Participants were told that if the object were a newspaper, possible alternative uses could be: to make paper hats, to

make place mats or to make curtains. Participants were also told that they would be given a selection of the best ideas that were generated in previous research that they should read aloud. These ideas were actually selected at random from examples given in previous research. The order in which they generated or read ideas was counterbalanced using a Latin square design. During the generation phase, one of the experimenters recorded the ideas the participants generated and read out on to a record sheet while another experimenter was recording the generated ideas on to cue cards (to match the format of the pre-determined 'best' ideas) and sorting all the ideas into piles to be given to each participant in the subsequent elaboration phase. As participants were separated for the elaboration phase, each generated and read idea needed to be written out onto cards twice. Both participants generated four ideas for each of the four objects and read out four ideas for each object. This resulted in a total of 64 ideas being presented in the first stage; 32 that were generated and 32 that were read out. Participants were then separated and taken into a different room by one of the experimenters. Here they were presented with a selection of the ideas from a variety of sources. Specifically the sources could either be: Own-generated, own-read, partner-generated or partner-read. The elaboration phase involved participants thinking of and writing down a way in which a selection of the ideas given to them could be improved. Participants were given an example of how an idea might be improved: If the object were a newspaper and the alternate use were to make paper hats, one way of improving this idea would be to laminate the paper, another improvement would be to stick a flower on it and another might be to paint the newspaper. Participants were only required to think of one way of improving each idea. One quarter (16) of the ideas presented in the generation phase were improved. Participants read 16 ideas out loud. The experimenter read another 16 ideas aloud and the remaining 16 ideas that were not represented at all constituted a control set of ideas. Both participants improved, read and heard the same set of ideas although, because participants were separated, they did not hear any ideas being read out in their partner's voice. Further counterbalancing also using a Latin square design determined which ideas form of elaboration each idea should be subjected to. This ended the first session which took approximately half an hour. Participants returned to the lab individually to complete the second session after a delay of one week. The first part involved trying to recall the four ideas for each of the four objects that they initially generated (recall own-generated) and the 'best' ideas that they were initially given to read out (recall own-read). Participants were reminded that these were the ideas that they generated and read out initially, while they were in the first room with the other participant. They were also told that they could leave blanks if they could not remember all of the ideas. Participants then completed a generate-new task and a source monitoring task. The generate-new task required that they think of four completely new alternative uses for each of the four objects. Here participants were instructed not to leave blanks. The source monitoring task asked participants to identify the source of 32 ideas read out to them by the experimenter. 16 of these ideas were new while the other 16 were made up of own-generated, own-read, partner-generated and partner-read (four of each). Participants were asked to indicate next to the ideas where they thought that they had come from (if it was own-generated, own-read, or from their partner – either partner-generated or –read) or if the ideas were completely new. The test phase followed this agenda to allow for comparisons with previous research on

unconscious plagiarism using similar paradigms. Finally, participants were debriefed and any of their questions were answered by the experimenters.

Results

When an individual proposed an idea that was the same as one previously presented, this was considered to be plagiarism. If the idea was similar – but not exactly the same – it was not considered to be plagiarism. As we allowed for the duplication of ideas across objects we considered that if the idea was not recalled for the right object it was either plagiarism or incorrect. For example, if a participant proposed that an alternate use for a brick could be a doorstop and their partner proposed that an alternate use for a shoe could also be a doorstop. If the participants recalled their partner's proposal this was counted as plagiarism. The reason we allowed for the duplication of ideas across objects was because we considered that the task was quite difficult and we were working within time restrictions.

Correct recall in the recall-own tasks

Before considering intrusions in the tasks asking participants to recall their own-generated ideas and recall their own-read ideas we consider the amount of correct recall in these two tasks. Specifically, we want to see how many of the ideas that they generated and they read out were correctly recalled in the two tasks that were completed after a delay of one week. We are also interested in whether these ideas were improved, read out, heard or control in the elaboration phase. Data from two participants were excluded from analyses of this task as statistical tests showed their data to be 'outliers'. Therefore 35 participants completed this task.

In the 'recall-own generated' tasks participants were asked to try to recall the four ideas that they came up with for each of the four objects. In this task a total of 384 ideas were produced out of a possible 560 (a total of 176 ideas were not recalled, i.e. left blank). Out of the 384 ideas that were produced, a total of 23 were incorrect (i.e. they were neither correct nor plagiarised from another source). Of the correctly recalled ideas in this task, 97 had been improved in the elaboration phase, 89 read, 79 heard and 69 were control ideas that had not been subjected to any form of elaboration. This demonstrates that participants were more likely to recall their own ideas that had been improved in the elaboration phase, followed by the ideas that they read out, then the ones they heard and that they were least likely to recall their own generated ideas that had not been elaborated in anyway, i.e. the control ideas. The general response rate for the recall-own read task was very low – floor effects were obtained and therefore no analyses of the results of this task will be included here.

The mean and standard deviation scores for correctly recalled ideas in these two tasks are displayed in Table 1. The mean scores displayed are out of a possible total of four (as four of each participant's own-generated ideas were subjected to each elaboration condition). A one-way ANOVA revealed that there was a significant effect of elaboration on recall in the recall-own generated task, $F(3, 102) = 3.69$, $p = .016$. An LSD post-hoc test showed that the significant differences were between improvement and control conditions ($p = .002$) and read and control conditions ($p = .006$).

Table 1 shows the mean and standard deviation scored for correctly recalled ideas in the recall-own generated task

Task	Elaboration	Mean	Standard Deviation
'Recall Own Generated'	Improve	2.77	.84
	Read	2.63	.91
	Hear	2.43	1.01
	Control	2.09	.98

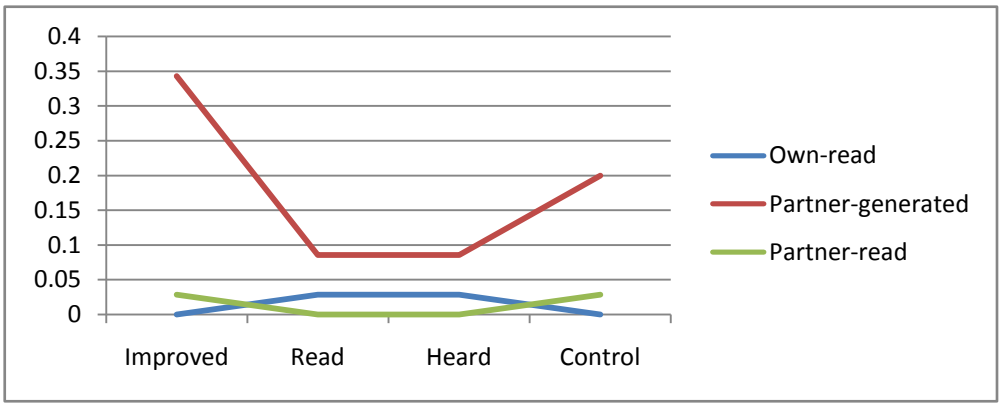
Plagiarism in the recall-own tasks

Out of the 384 ideas that were produced in the 'recall-own generated' task, 27 were plagiarised. Of these 27, 13 had been improved, 3 read out, 3 heard and 8 were controls. Differentiating between the three possible sources of each of the intrusions and considering which elaboration condition the plagiarised responses had been subjected to breaks these scores down further and the means displayed in Table 2 show this. Again the total possible is four. A within-subjects ANOVA reveals a significant effect of source, F (2, 68) = 10.96, $p = .001$, and a significant effect of elaboration, F (3, 102) = 2.70, $p = .05$. An LSD follow-up analysis showed that partner-generated ideas were significantly more likely to be subsequently plagiarised than own-read or partner-read ideas (see figure below). There was not a significant difference between the plagiarising of own-read or partner-read ideas. The ANOVA also revealed a significant interaction between source and elaboration that almost meets the requirements for significance, F (6, 204) = 2.57, $p = .058$. A test for simple main effects showed that only partner-generated ideas that were subsequently plagiarised in the recall-own generated task were more likely to have been improved than read or heard (p = .027).

Table 2 shows the mean and standard deviation scores for plagiarism in the recall-own generated task.

Task	Source	Elaboration	Mean	Standard Deviation
'Recall-own generated'	Own-read	Improve	.00	.00
		Read	.03 (1%)	.17
		Hear	.03 (1%)	.17
		Control	.00	.00
	Partner-generated	Improve	.34 (9%)	.59
		Read	.09 (2%)	.37
		Hear	.09 (2%)	.28
		Control	.20 (5%)	.53
	Partner-read	Improve	.03 (1%)	.17
		Read	.00	.00
		Hear	.00	.00
		Control	.03 (1%)	.17

Graph to show plagiarism in the recall-own generated task (mean scores)



Plagiarism in the Generate-New Task

In this task participants were required to generate four completely new ideas for each of the four objects. Data from three participants were excluded in this task due to poor performance. Before excluding these outliers, an interaction was present between task and elaboration. A test for simple main effects showed that ideas that were originally generated were more likely to be plagiarised in the generate-new task if they had been read in the elaboration phase as opposed to improved (p = .005) and were more likely to be plagiarised if they had been read as opposed to heard (p = .031). If the ideas were originally read out, they were more likely to have been heard ideas than control ideas (p = .048). This interaction disappears when outliers are excluded. The 34 participants whose data were included produced a total of 466 novel ideas out of a possible total of 560. Out of 78 previously generated ideas that participants incorrectly presented as being novel, 12 were originally own-generated ideas, 17 own-read, 29 partner-generated and 20 partner-read. A within-subjects ANOVA showed that there was a significant effect of source only, F (1, 33) = 4.61, p = *.039*. This demonstrates that participants were more likely to re-present their partner's ideas as being novel in this task as opposed to their own.

Source Monitoring

Source monitoring was the last task completed by participants in the test phase. A list of 32 ideas were read out, each list was specific to the participant and consisted of 16 completely new ideas, 4 ideas that their partner generated, 4 their partner read, 4 of their own read and four that they themselves had generated. Participants were required to identify whether the idea was one of their own-generated, own-read, one of their partner's (either generated or read) or a completely new idea. When scoring the participants' responses, the form of elaboration that the ideas had been subjected to was also considered. As there were 8 partner ideas and four own-generated and own-read ideas, all scores for partner ideas were halved for the SPSS analysis.

Correct Identification of Ideas

A within-subjects ANOVA revealed a significant effect of source, F (2, 70) = 26.44, $p < .001$. LSD follow-up analyses revealed that participants were most likely to correctly identify their own-generated ideas, followed by partner ideas. They were least likely to correctly identify their own-read ideas.

Source Confusions

A within-subjects ANOVA revealed that there was a significant effect of original source, F (2, 70) = 33.13, $p < .001$. Post-hoc analyses revealed that there were significant differences between all sources ($p < .05$); own-generated ideas were least likely to be allocated to another source, followed by partner-ideas. Own-read ideas were most likely to be misidentified. The ANOVA also revealed significant differences between the incorrect identifications of the source confusions, F (2, 70) = 22.33, $p < .001$. Post-hoc tests showed that the significant differences were between own-generated and own-read, as well as between own-read and partner ideas. So, where source confusions did occur, the incorrect identification made was least likely to be own-generated (so participants did not plagiarise ideas), followed by partner ideas. Where source confusions did occur, the incorrect identification made was most likely to be own-read. There was a significant interaction between original source and incorrect identification of ideas, F (4, 140) = 5.52, $p < .001$. Tests for simple main effects demonstrated that when ideas were originally own-generated, they were significantly more likely to be incorrectly identified as being a partner idea than an own-read idea ($p = .044$). When ideas were originally own-read, they were significantly more likely to be incorrectly identified as being a partner idea than an own-generated or new idea ($p < .001$). Finally, when ideas were originally partner, they were significantly more likely to be incorrectly identified as being own-read ideas than own-generated ideas.

The within-subjects ANOVA also shows that a three-way interaction between original source, elaboration and incorrect identification was present, although not quite significant ($p = .058$). The figures displayed in table 3 indicate that ideas that had been read out in the elaboration phase and were incorrectly identified as being partner ideas were most likely to have originally been own-read ideas (see Table 3*).

Identification of New Ideas

A within-subjects ANOVA showed a significant effect of source, F (2, 70) = 4.00, $p = .023$. Follow-up analyses indicated that participants were significantly more likely to (incorrectly) state that new ideas were actually partner or own-read ideas than own-generated ideas ($p < .05$). There was not a significant difference between the likelihood of incorrectly reporting new ideas as being own-read or partner ($p = .473$).

Graph to show the incorrect identification of new ideas in the source monitoring task

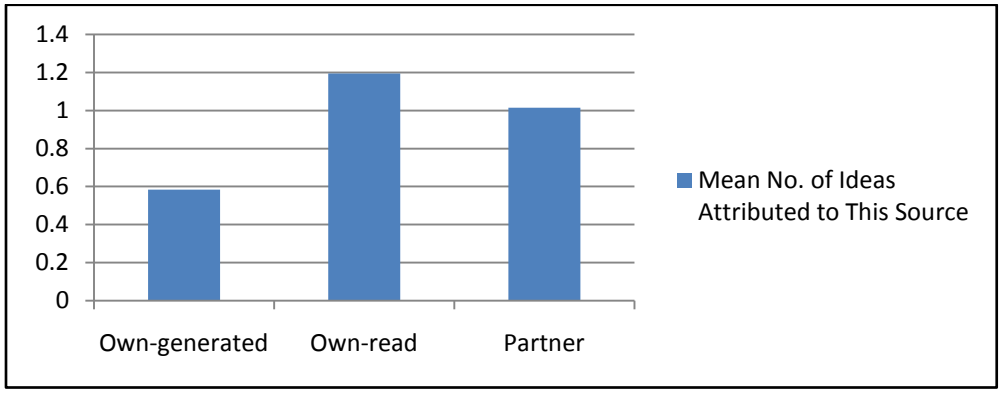


Table 3 shows the mean overall sources and percentages of identifications in the source monitoring task considering both the original source of the idea and its elaboration and, in some cases, the incorrect identification that was made. Correctly and incorrectly identified new ideas are included. The grey shaded areas highlight correct identifications.

Item Origin	Elaboration	Response			
		Own-generated	Own-read	Partner	New
Own-generated	Improve	34 (94%)	1 (3%)	0	0
	Read	28 (78%)	1 (3%)	4 (11%)	4 (11%)
	Heard	81 (29%)	1 (3%)	5 (14%)	1 (3%)
	Control	89 (32%)	1 (3%)	3 (8%)	0
Own-read	Improve	4 (11%)	16 (44%)	13 (36%)	2 (6%)
	Read	1 (3%)	12 (33%)	19* (53%)	4 (11%)
	Heard	3 (8%)	15 (42%)	12 (33%)	6 (17%)
	Control	4 (11%)	17 (47%)	9 (25%)	6 (17%)
Partner	Improve	6 (17%)	6.5 (18%)	19.5 (54%)	4.5 (13%)
	Read	3 (8%)	5.5 (15%)	21 (58%)	6.5 (18%)
	Heard	3.5 (10%)	12 (33%)	18 (50%)	3.5 (10%)
	Control	1 (3%)	6.5 (18%)	22.5 (63%)	5 (14%)
New	NA	21 (4%)	43 (7%)	36.5 (6%)	439 (76%)

Discussion

Our research design was fairly complex and involved manipulations of idea quality (to establish whether participants would be more likely to plagiarise ideas perceived to be better) as well as idea elaboration (with the aim of investigating the effects of improving ideas and reading them out, compared with simply hearing them read out and not being elaborated on at all).

In the recall-own generated task participants correctly recalled 69% of their original ideas. As expected, an effect of elaboration was observed; participants were most likely to correctly recall the ideas that they improved, followed by the ideas that they read, then the ideas that they heard and the control ideas were least likely to be correctly recalled. Numerically the ideas followed this pattern although there was only significance between improvement and control and read and control. This was expected as elaboration increases idea strength in memory making correct recall more likely.

In both the recall-own generated and recall-own read tasks we asked participants to *try* to recall the ideas that they came up with/were given to read out. We specifically stated that we would prefer that they left blanks rather than guessing and therefore we can safely assume that participants were sufficiently confident with the responses they put down in these tasks. The analysis of the recall-own generated data indicates that participants still plagiarised despite receiving such instructions. It can also be assumed that participants would have been using more systematic than heuristic judgement processes as the test phase took 30 minutes – giving participants sufficient time to think carefully about their answers. It could be suggested that participants may have been at a disadvantage in the test phase as they completed it individually (not with the other participant in their pair that they completed the initial phase of the study with). In the absence of this retrieval cue they may have been more susceptible to unconscious plagiarism. Macrae, Bodenhausen and Calvini (1999) reported that, in the recall-own task, participants were less likely to plagiarise when their partner was present. However, although participants in the present research did not complete the test phase in pairs, the experimenter was present and this could have acted as a retrieval cue as well as encouraging participants to monitor source more accurately; Marsh et al. (1997) reported that the presence of an experimenter results in the application of more stringent decision criteria by participants.

Participants were significantly more likely to plagiarise ideas that their partners originally generated and were subsequently improved in the elaboration phase. Interestingly, improvement did not have the same effect on ideas that were own or partner-read.

A potential explanation for this finding is influenced by early research which involved participants working in groups of four to generate ideas and showed that participants were more likely to plagiarise responses given by the person speaking directly before them (Brown & Murphy, 1989). Although the process of each pair generating and reading out ideas was counterbalanced, it is likely that, while their partner was generating their idea, individuals may have been concentrating on generating one of their own. This could be because generating ideas in the initial phase took noticeably longer more time than reading ideas out did. While counterbalancing ensured that participants could not predict exactly when they would have to generate an idea, it is likely that they might use the increased amount of time to think about what they might say next. If this were the case, then this would explain our findings as participants' preoccupation would make them less likely to code the idea in memory as one of their partner's ideas. This prediction could be tested experimentally: Participants could be instructed to delay the reading out of an idea (i.e. count to 10) so that the amount of time taken resembled that of idea generation. If their partner was using the extra time to generate an idea of their own and preoccupying them then we would expect participants to do the same in this increased amount of time. Depending on whether this results in the read and subsequently improved ideas and partner-generated and improved ideas

being equally likely to be plagiarised at test, the aforementioned hypothesis could then be accepted or rejected. The work of Preston and Wenger (2007) could be applied here to form a similar explanation of why participants were significantly more likely to plagiarise partner-generated ideas only following improvement. They demonstrated how the feeling of authorship for mental actions in enhanced by effort cues experienced during mental activity. As previously stated, the extra time that the participants had while their partner was thinking of an idea - although not controlled for - was likely to have been a time when the participant thought of what they might say next. Preston and Wenger (2007) found that misattribution of effort cues (manipulated by the researchers) during a problem solving task resulted in unconscious plagiarism. In this situation, while their partner is in the process of generating an idea, the participant is also thinking of what they might say next (which takes effort). At the end of this time period (when the partner proposes an idea) both participants will move on to another task which might involve either participant reading an idea out or the participant generating an idea. It is clear that for these ideas to be tested experimentally a number of factors would need to be controlled for: The time taken for participants to generate an idea – we are aware that this took more time than reading an previously proposed idea did but we would need to establish exactly how much longer and whether this length of time was consistent, i.e. whether one participant in a pair was noticeably quicker than the other.

The effect seen with improvement of partner-generated ideas was not observed for ideas that were partner-generated and subsequently read out. It was hypothesised that participants might be more likely to plagiarise these read ideas as hearing another's idea read out loud in one's own voice may draw similarities to the original generation phase whereby participants thought of an idea and said it out loud. However the results indicate that this was not the case. Context effects could have been the reason behind this. The initial generation was completed in pairs and participants were then separated for the elaboration phase (which was completed immediately after the generation phase). The fact that participants completed generation and elaboration in different rooms may have given them a means on which to differentiate the ideas they read out initially (either own-generated or own-read) from their partner's ideas which they read aloud in a second room.

Although this was unexpected, it is plausible as the relative-strength model postulates that elaborating on an idea may result in it crossing the threshold for being a self-generated idea due to an increase in strength – reading an idea is unlikely to increase strength in such as way as improvement does. Also the source monitoring framework suggests that record of cognitive operations is one factor which results in other-generated and then improved ideas subsequently seeming like own-generated ideas. Reading ideas out loud does not require cognitive operations like idea generation or idea improvement does. It has been stated before that improving an idea changes the nature of the idea itself (Stark et al., 2005). Simply reading an idea would not do this. The effect that has been consistently found with improvement (Stark et al., 2005; Stark & Perfect, 2006; 2008) was found again in the present study and indicates that improvement is a reliable way of inducing plagiarism. Previous research (Perfect et al., 2009) looking at participant's memory for partner ideas enabled the researchers to confirm that unconscious plagiarism observed following improvement is a result of a mistaken sense of source ownership and not just a general source monitoring impairment. Improving an idea involves using generative processes and resembles the

process of idea elaboration. It is also likely to involve the idea becoming personally relevant – as the improvements that an individual generates to another participant's idea may be reminiscent of them personally (Stark, et al., 2005). Reading an idea out loud does not have this strong an effect; participants are not required to think about the idea in any depth. If there was to be an effect, it might be that this would be observed in the task requiring participants to recall their own read ideas, as opposed to recalling their own-generated. This is because the process of reading an idea out loud in generation and reading another person's idea out loud in the elaboration phase was exactly the same (participants were passed a card with an idea written down on it and they were asked to read it out). Previous research asking participants to imagine ideas has found that this does not make participants more likely to plagiarise these ideas (Stark et al., 2005). The present research found that reading ideas did not make participants any more likely to plagiarise them than hearing the ideas read out by the experimenter did or not elaborating on them in any way did (control ideas). Therefore, here it will be concluded that reading ideas out loud does not make participants more likely to plagiarise, while improvement does make plagiarism more likely. The source monitoring framework seems to be the most adequate model to explain this data as the relative-strength model assumes that ideas that were read out or even heard would be more likely to be plagiarised than control ideas; this was not found.

Trying to recall the ideas that participants were given to read out in the generation phase (which were perceived by participants to be the best ideas generated in a previous study) was admittedly a difficult task. Floor effects were observed here. Recalling the perceived 'best' ideas that participants read out was a struggle for many participants; out of a possible total of 16, the number of ideas that each participant attempted to recall (and were correct, plagiarised or incorrect) was approximately 5. Comparing this with approximately 11 ideas put down in the recall-own generated task demonstrates that analysis of this data was not justifiable. This means that we were not able to see whether the reading out of ideas in the elaboration phase would result in more source confusions in the recall-own read task.

It is hard to say what we might change to obtain valid findings on the recall-own read task. It could be suggested that a shorter delay between generation and test might be appropriate or using fewer ideas in total, i.e. asking participants to generate 2 ideas and to read 2 out for each object is a possibility. However, the recall-own generated and generate-new tasks were completed after a week without much difficulty. In fact, performance on the generate-new task was generally good and ceiling effects were observed with regards to correctly proposing novel ideas in this task

A significant effect of source was observed in the generate-new task indicating that participants were more likely to plagiarise ideas that had come from their partner (either generated or read) than their own-generated or –read ideas. This makes sense according to the relative-strength model (Marsh & Bower, 1993) as partner ideas are likely to be weaker in memory and consequently may not meet the threshold for previously generated ideas when making the old-new recognition judgement. An effect of elaboration was not observed although we expected that ideas that had been elaborated would be significantly less likely to be plagiarised (i.e. reported as being novel) than control ideas in the generate-new task. Based on the findings of previous research looking at the impact of perceived idea quality on plagiarism, we expected that there would be more plagiarism of ideas that participants were given to read out (and

perceived to be the best ideas) than own- or partner-generated ideas. For example, Perfect et al., (2009) reported that when participants believed their partner was an expert in a domain, they were more likely to plagiarise their partner's ideas in their domain of expertise only. In the present study this can be likened to the difference between a partner's own-generated and own-read (which were perceived to be the best ideas generated in a previous study). However, this was not observed. Perfect et al., (2009) suggest a valence-based effect was the reason for their findings in the generate-new task; ideas that have a positive valence but were elaborated come to mind and are recognised as being previously generated. However, ideas that have a positive valence but were not elaborated on will be presented as novel at this point.

Our research did not replicate previous research showing that plagiarism in the generate-new task is affected by perceived quality of ideas (Bink et al., 1999; Stark & Perfect, 2008; Perfect, et al., 2009). However, two of the referenced examples involved generating solutions to real-life problems and the use of (perceived) experts in the experimental paradigm. Perhaps this is more realistic than our paradigm and implicates more on subsequent plagiarism as a result. The other study which did use the alternate uses task (Perfect & Stark, 2008) involved rating the ideas and therefore participants were able to distinguish 'excellent' ideas from 'satisfactory' ideas (the former being associated with a positive valence and the latter with a negative valance). However, the present study only involved informing participants that the ideas they were given to read out were considered to be the best ideas generated in previous research – participants were not given any indication as to how good their own-generated ideas were. This is likely to have made the generated and read ideas less likely to be distinguished on the grounds of quality. It could be that this effect is only observed when there is a noticeable difference in the quality – or perceived quality - of ideas.

Ceiling effects were observed with correctly proposed novel ideas in the generate-new task; participants (excluding the outliers who did not complete the task properly) correctly proposed an average of just under 15 novel ideas out of a possible total of 16. This could be an indication that the task was too easy.

The source monitoring task was completed after the recall-own and generate-new tasks by all participants so it is possible that order effects might have affected the data. Using a between-subjects design could have avoided this, although it would have resulted in less data.

In the source monitoring task it was found that participants were most likely to correctly identify their own-generated ideas (overall 85% of all own-generated ideas were correctly identified), followed by their partner's ideas (56%), and they were least likely to correctly recall their own-read ideas (42%). Performance on the source monitoring task then was better than on the recall tasks. For example, 69% of own-generated ideas were recalled in the recall-own generated task while 85% of own-generated ideas were recognised in the source monitoring task. This was as expected; it has been found before that performance on recognition tasks is better than on recall tasks. It seems, therefore, that the ideas are available in memory but are not being accessed – perhaps because of the use of inappropriate retrieval strategies.

With regards to source confusions in the source monitoring task, a significant effect of source was observed; participants were most likely to incorrectly identify the source of their originally own-read ideas, followed by their partner's ideas. They were least likely to attribute their own-generated ideas as being from another source. There was also an

effect of elaboration; participants were least likely to incorrectly identify ideas that had been improved.

Overall, identification of new ideas in the source monitoring task was good; 76% of all the new ideas were correctly identified. With regards to the misidentification of new ideas in the source monitoring task, participants were significantly more likely to attribute new ideas to having been own-read or partner ideas (overall, 7% and 13%, respectively) than own-generated (4%). However, although the overall attribution of new ideas to partner was 13%, the source monitoring task did not distinguish between partner-generated and partner-read ideas, and so there were 8 'partner' ideas in the task, compared with 4 own-generated and 4 own-read so there was not a significant difference between the attribution of new ideas to having been own-read or partner.

The fact that participants were more likely to attribute new ideas to their partner or as one of the ones they read out demonstrates the "it had to be you" effect (Johnson Raye, Foley & Foley, 1981). Although this does not constitute unconscious plagiarism, it is a source monitoring error worthy of mention here. When a new idea feels familiar to participants but lacks the appropriate memories of cognitive operations that are associated with own-generated ideas, they will attribute this idea to being an own-read or a partner idea. The fact that participants were unlikely to incorrectly identify new ideas as being own-generated (even following improvement) shows that unconscious plagiarism was less likely in this task, although source monitoring errors were present.

With regards to students' rightful concerns regarding unconscious plagiarism mentioned at the beginning of this report, the findings from the present study could be good news: Simply reading another person's ideas out loud is not likely to result in later plagiarism. Students should, however, be wary if they find themselves thinking of the idea in too much detail and thinking about how it might be improved, as this process of generative-elaboration is significantly more likely to result in later unconscious plagiarism after a period of just one week. If the period of delay between generation and test were longer then it is likely we would have found even more plagiarism. Although not studied here, the source monitoring framework also posits that other factors decrease the accuracy of source monitoring. Distraction, time pressure and severe stress at recall are examples of such factors (Johnson et al., 1993). These are all points which students must bear in mind in order to successfully avoid unconscious plagiarism.

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