Examining the Differences Between Digital and Traditional Sources of Unconscious Plagiarism

by

Jonathan P. Saulter

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Master's Thesis Committee:

Associate Professor Arlo Clark-Foos, Chair
Assistant Professor Zhong Xu Liu, Co-Chair

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Abstract

Unconscious plagiarism occurs when an individual claims a previously experienced idea as their own. Brown and Murphy (1989) were the first to investigate this, finding elevated plagiarism across their three-phase paradigm, which has since been adapted by other studies using creative generation tasks to induce plagiarism, including this one. The effects of unconscious plagiarism are believed to be due to source forgetting. Additionally, technology may adversely affect information individuals are exposed to on digital devices, making unconscious plagiarism more likely. Here we had an individual and a partner generate a response to a writing prompt either on a computer or by hand. They returned one week later to recall their response, generate a new one, and take a source memory test. We predicted that individuals would plagiarize and misattribute the source of their own or others' ideas when using a computer than by hand. Results showed individuals plagiarized more during the generate new phase than recall-own. Specifically, individuals committed more self-plagiarisms during generate new and intruded more new ideas during recall-own. However, these plagiarisms did not statistically differ between conditions. Moreover, those responding on a computer correctly identified the source of their own ideas, whereas those responding by hand misattributed their partner's ideas as their own. Finally, those responding on a computer, but not by hand, were marginally more likely to false alarm by misidentifying new ideas as their partner's or their own. Collectively, these findings further substantiate that unconscious plagiarism is best explained by a source monitoring account.

Chapter 1 Introduction

Imagine that a senior undergraduate student is desperately trying to finish writing his psychology term paper the night before it is due. Although he has written many papers before and has poured over the necessary literature for months, he still finds himself struggling to come up with an original conclusion. The deadline looms closer as the stressed student works into the night. He knows that not only his grade is at stake, but more importantly, his chances at getting into a top graduate school could be sunk if he bombs this paper. After some deliberating, the student devises what he believes to be a brilliant conclusion, potentially cementing him a top mark in the course. Now imagine the student's surprise when he later discovers that his paper's ending was not his own, but rather he had read it in an article about his topic online months earlier. This is because the student misattributed his memory of what was written in the article he read previously as his current flash of insight. This phenomenon is commonly referred to as unconscious plagiarism (Taylor, 1965), but also, inadvertent plagiarism (Marsh, Landau, & Hicks, 1997), unintentional plagiarism (Bredart, Lampinen, & Defeldre, 2003) or cryptomnesia (literally, "hidden memory") (Trossman, 1969). Unconscious plagiarism refers to a memory phenomenon in which an individual may misattribute the information source of his or her memory to themselves instead of its actual originator or they may not recall encountering the information previously and instead claim it as their own (Gingerich & Sullivan, 2013). Although acts of unconscious plagiarism are classified as a form of plagiarism, they sharply differ from dishonest acts of intentional or deliberate plagiarism.

Deliberate Plagiarism

Those who plagiarize can be said to fit into one of two categories – those who deliberately (knowingly) plagiarize and those who inadvertently (unknowingly) plagiarize (Fischer & Zigmond, 2011). Yet, when most people think of plagiarism what likely comes to mind is deliberate plagiarism. This involves the unauthorized, intentional use or close imitation of someone else's words, ideas, thoughts, or other forms of intellectual property by passing them off as one's own (Hannabuss, 2001; Mawdsley, 1994). Often individuals are motivated to deliberately plagiarize for one of three reasons: (1) they have an intense desire to succeed; (2) they believe they will fail or miss out on an opportunity; (3) they lack time, interest, or the energy necessary to complete the task (Fischer & Zigmond, 2011). However, what sharply separates deliberate plagiarism from inadvertent plagiarism is that the plagiarizer commonly chooses to give little to no acknowledgement to the originator of the source – employing a purposeful use of deception that causes it to be a behavior rarely tolerated in social, professional or intellectual circles (Hannabuss, 2001).

Despite plagiarism's decidedly pejorative nature, many individuals routinely engage in it – everyone from struggling students to writers, journalists, scientists, tenure track professors, lawyers, business professionals, accountants, computer programmers and many others (Hannabuss, 2001; Park, 2003). Indeed, anecdotal experience alone suggests that there are countless examples of deliberate plagiarism. There is the desperate student, who, unwilling to put forth the necessary effort, makes the conscious choice to include whole paragraphs an author's text in his essay (Fischer & Zigmond, 2011). Then there is the student who conveniently "borrows" her friend's paper, only to hand it in to her professor as an original she wrote (Fischer & Zigmond, 2011). Yet, anecdotal accounts would suggest that not all instances of plagiarism are committed intentionally. That is, there are occurrences where an individual may mistake his

or her memory of someone else's idea as their own novel insight. Indeed, it is the unintentional nature of unconscious plagiarism that separates it from being classified as a deliberate act of dishonesty and instead makes it a unique memory phenomenon worthy of inquiry.

Unconscious Plagiarism

The reality is that acts of unconscious plagiarism occur more often than we may think. Unconscious plagiarism was first discovered by Flournoy, a Swiss psychologist, in 1900 (Trossman, 1969) and has continued to fill the literature with anecdotes ever since. The earliest instance of unconscious plagiarism involved Sigmund Freud's theory of innate bisexuality (i.e., everyone begins life with no sexual preference), which Freud maintained was his original idea only to later concede that it was suggested to him previously by his colleague, Wilhelm Fliess two years earlier (Taylor, 1965). Similarly, another, but less well-known example, involved Freud unconsciously plagiarizing his pioneering technique of free association whereby individuals say the first thing that comes to mind when prompted with a word (Trossman, 1969). Interestingly, it was not until almost 50 years after coming up with free association that Freud realized his idea was likely attributed to his memories of reading an article during his teens on using mental techniques to help authors develop original writing ideas by Ludwig Borne (Trossman, 1969). Yet, unconscious plagiarism does not only entail unknowingly plagiarizing others' ideas as it can involve self-plagiarism (i.e., believing one's own older idea is new) as well. For instance, B. F. Skinner (1983), lamented in his autobiography how he felt disappointed to find out that the novel research ideas he thought he had cleverly devised as an older academic were nothing more than simple recollections of previous ideas that he had published years earlier in his career.

Unconscious plagiarism is not strictly limited to academic circles as it can also plague creative professionals. Indeed, perhaps the most famous court case involving unconscious plagiarism belongs to George Harrison, who was sued for copyright infringement. That is, he was found guilty of plagiarizing the melody of the Chiffon's classic hit (written by Ronald Mack), "He's So Fine" with his famous song, "My Sweet Lord" (Bright Tunes Music Corp v. Harrisongs Music Ltd., 1976). Harrison admitted to hearing "He's So Fine" prior to writing his song but denied ever intentionally copying its melody and instead claimed that he must have somehow subconsciously plagiarized the Chiffon's song (Self, 1993). Although, the court found no evidence suggesting Harrison intentionally copied the song's melody, he was still found guilty of plagiarism as the Copyright Act did not require "an intent to infringe" to rule in support of copyright infringement (Self, 1993). Undoubtedly, there are many anecdotal examples of unconscious plagiarism throughout the literature which suggest that it is a common memory glitch. Yet despite this, psychological research concerning unconscious plagiarism has had a rather limited history (Carpenter, 2002).

The Study of Unconscious Plagiarism

The first researchers to investigate unconscious plagiarism were Alan Brown and Dana Murphy (1989). Due to Brown and Murphy's (1989) paradigm being widely adapted by many investigations of unconscious plagiarism, including by the present study, it is discussed at length here. Brown and Murphy (1989) conducted three experiments using a three-phase paradigm. During the generation phase, participants, in groups of four, were asked to orally generate an exemplar (e.g., saxophone) for a semantic category (e.g., musical instruments) being instructed to not repeat another participant's answer for the same category. In this fashion, each group of participants provided a total of 16 exemplars for each of the four conceptual categories. Then

during the recall-own phase, participants recalled their answers for each of the four categories. Finally, during the generate new phase, participants provided four new exemplars for each category not provided previously during the first two phases either by themselves or another participant. Brown and Murphy (1989) defined plagiarized items as those produced by a participant during the generation phase and then repeated by another participant later during the same phase or during either of the two testing phases. Brown and Murphy (1989) reported significant plagiarisms across all phases of the first experiment, finding that participants were more likely to plagiarize high frequency items and when those items were generated by a group member who preceded them.

For their second experiment, Brown and Murphy (1989) additionally had participants produce orthographic exemplars (e.g., words beginning with the letters be) and varied task difficulty by having them generate responses to category cues consecutively or in a mixed fashion (i.e., generating four items for one cue then another). Brown and Murphy (1989) again reported significantly plagiarized responses across all phases of the experiment. Specifically, for the generation phase, participants were more likely to plagiarize when category cues were presented mixed rather than consecutively, yet this difference did not hold across category type. For the recall-own phase, participants were more susceptible to plagiarizing orthographic than semantic category cues. The final experiment investigated participants' visual susceptibility to unconscious plagiarism. Testing participants individually, each was presented with index cards containing sematic category exemplars and were asked to provide their own response after every fourth card across the three testing phases. Once more, it was found that participants substantially plagiarized previously seen items across all phases demonstrating that unconscious plagiarism can occur in both written and oral contexts. The study by Brown and Murphy (1989)

has been immensely influential for several reasons. Firstly, it demonstrated evidence that individuals are susceptible of unconsciously plagiarizing information provided by themselves and others across a variety of tasks, contexts, and conditions immediately following a generation task. Secondly, it provided a methodological means to study unconscious plagiarism in a research setting. Finally, it prompted subsequent investigations to uncover additional related factors and methodologies, which have helped increase our understanding of unconscious plagiarism.

Examining other related factors, a follow-up study by Brown and Halliday (1991) investigated whether retention interval affected individuals' rate of unconscious plagiarism using a category exemplar task. Findings showed that individuals who were tested one week after providing category exemplars for the generation phase were significantly more likely to plagiarize others in the recall-own phase by incorrectly repeating others' responses as their own and in the generate new phase by incorrectly repeating others' responses as new compared to those who were tested immediately after. Indeed, the effects of delayed retention intervals between generation and testing phases producing increased rates of unconscious plagiarism in individuals have since been well established in the literature (Bredart et al., 2003; Landau & Marsh, 1997; Marsh & Bower, 1993; Marsh & Landau, 1995; Marsh, Landau, & Hicks, 1997).

Another paradigm that has gained much attention by researchers was developed by Marsh and Bower (1993), who had participants solve Boggle word-search puzzles. This paradigm furthered the work of Brown and his colleagues in two important ways. Firstly, it allowed individuals to engage in creative problem solving rather than simply retrieve exemplars from semantic memory as creative tasks (e.g., writing or composing music) better align with natural contexts in which unconscious plagiarism is more likely to occur. Secondly, the Boggle task

allowed the researchers to sufficiently constrain the number of solutions individuals produced so that repetitions could be more easily identified during the generation and testing phases. Marsh and Bower's (1993) Boggle puzzle procedure requires participants form words by arranging 16 letters in a 4 x 4 on-screen computer matrix based on a set of rules. That is, as a participant generates one word per trial, his or her computer partner generates three words until a participant has produced a total of four words and the computer partner 12 words. Additionally, per prior studies, participants were instructed to not repeat any of their or their computer partner's solutions during the generation phase. Afterward, participants completed the recall-own and generate new phases. Marsh and Bower (1993) found considerably higher rates of plagiarism across all three phases compared to Brown and Murphy's (1989) study, attributing participants' higher rates to the use of a creative generation task, which helps simulate everyday life situations where unconscious plagiarism is likely to occur.

In fact, several subsequent studies have found similar elevated rates of unconscious plagiarism across a variety of creative generation tasks such as, brainstorming sessions (Marsh, Landau, & Hicks, 1997), drawing novel space creatures (Marsh, Landau, & Hicks, 1996), providing solutions to reduce traffic accidents (Bink, Marsh, Hicks, & Howard, 1999), creating original literary works (e.g., writing poems, prose or song lyrics; Defeldre, 2005), and finding new uses for everyday objects (Stark & Perfect, 2006, 2008). Further expanding on the relationship between creativity and unconscious plagiarism, Stark, Perfect, and Newstead (2005) developed another paradigm based on idea elaboration. Adapting Brown and Murphy's (1989) three-phases, Stark et al. (2005) assessed the effects of two different types of elaboration on individuals' rates of unconscious plagiarism. That is, participants engaged in either imagery elaboration which focused on an idea itself by having participants rate how easily the idea could

be visualized and how effective it was or generative elaboration, which required them to consider an idea's development as they were asked to think of three ways the idea could be improved. Stark et al. (2005) found that, overall, participants who were in the elaboration conditions demonstrated significantly higher rates of plagiarism compared to controls who did not engage in elaboration during the recall phases. Yet, of the two forms of elaboration, generative elaborated ideas were far more likely to be plagiarized.

A subsequent study by Stark and Perfect (2006) introduced a third elaboration condition, rich imagery elaboration, where participants imagined ideas that were improved by another participant in the generative elaboration condition. Again, results showed a similar pattern whereby participants in the elaboration conditions plagiarized substantially more ideas than controls overall with most plagiarisms occurring via generative elaboration. Specifically, 75% of participants unconscious plagiarized at least one idea from the generation phase and 71.9% plagiarized two or more ideas during the recall-own phase. However, this time, no significant differences were found in plagiarism rates for the generate new phase. Collectively, Stark and Perfect (2006) speculated that their findings may be attributed to individuals' source monitoring, a cognitive process utilized when determining the origin of information (Johnson, Hashtroudi, & Lindsay, 1993). Teasing apart these theoretical explanations, Stark and Perfect (2007) conducted a follow-up investigation in which they replaced the recall-own phase with a source monitoring task. Results showed how placing a greater focus on the source of an idea resulted in far fewer plagiarisms than were observed in their previous studies (i.e., Stark & Perfect, 2006; Stark et al., 2005) with 85% of participants correctly identifying the source of his or her initially generated idea. However, generative elaboration led to three times the rate of plagiarism compared to imagined elaboration and overall findings provided evidence that idea improvement appeared to

not result in source monitoring failure, but rather source confusion, leading to greater rates of unconscious plagiarism.

Source Memory and Unconscious Plagiarism

Although there has been some disagreement concerning the theoretical underpinnings of unconscious plagiarism over the years, many researchers maintain that it is a variant of source forgetting, a phenomenon in which individuals fail to recruit the necessary source monitoring processes to correctly identify the origin of their recollections (Bink, Marsh, Hicks, & Howard, 1999; Brown & Halliday, 1991; Brown & Murphy, 1989; Johnson et al., 1993; Johnson & Raye, 1981, Landau & Marsh, 1997; Macrae, Bodenhausen, & Clavini, 1999; Marsh & Bower, 1993; Marsh & Landau, 1995; Marsh et al., 1997; Schacter, Harbluk, & McLachlan, 1984). This is because source forgetting has key consequences that resemble those often experienced by individuals who engage in unconsciously plagiarism. These include situations where individuals may be unable to discern whether a recalled event was actually experienced or imagined (e.g., getting lost in a shopping mall as a young child), fail to accurately determine which individual is responsible for a particular behavior (e.g., Was it grandma or grandpa who gave me that watch for Christmas?), or experience difficulty recalling the time and context, where and when a specific event occurred (e.g., playing a video game for the first time) (Johnson et al., 1993; Macrae et al., 1999). Additionally, the misattributions caused by unconscious plagiarism complicates matters further given that individuals may have no idea that what they are recalling are actually memories and not their original thoughts, lending further credence that unconscious plagiarism involves memory processes explained by the source monitoring framework (Johnson et al., 1993).

According to the source monitoring framework established by Johnson et al. (1993), several different characteristics are encoded when a memory is formed, these include perceptual details (e.g., visual, auditory, olfactory), contextual details (e.g., temporal and spatial), associated thoughts, affective information (i.e., emotional reactions), and cognitive operations (i.e., activities involved in the creation, formation, or organization of a target memory). Specifically, memories for experienced events contain more perceptual and contextual details (i.e., thoughts and feelings) and less cognitive operations compared to memories for imagined events. When an event for a memory is recalled, an individual compares the differences between these experiential details to determine whether the event is attributed to an external source (occurred in real life) or to an internal source (was imagined). Hence, memories recalled with a great deal of emotional and contextual detail are believed to be generated externally from a real event, whereas those recalled with significantly more cognitive operations are often viewed as internally generated from an imagined event (Johnson et al., 1993; Johnson & Raye, 2000).

Moreover, the source monitoring framework contends that individuals are more apt to experience source monitoring errors or source confusion when his or her memory representations have overlapping properties, which causes difficulty when trying to distinguish them from each other. The opposite is true when memory representations do not share perceptual details, causing them to be more distinctive and thus, less likely to result in an individual making a source monitoring error (Henkel, Franklin, & Johnson, 2000; Johnson et al., 1993; Johnson & Raye, 2000). Although source errors can result when an individual fails to differentiate between the attributes of memory representations, successful source monitoring additionally depends on decision processing strategies employed by the individual (Johnson et al., 1993). That is, decisions may be made using heuristics (i.e., mental shortcuts) to quickly survey the quality and

amount of information being recalled, which involves little effort and is subject to error or may be made systematically, which can be cognitively demanding, but typically more accurate (Chaiken, Lieberman, & Eagly, 1989; Johnson et al., 1993). Notably, these two decision processing strategies are not exclusive, rather they collectively operate to resolve the underlying source of an individual's particular recollection. However, they are also sensitive to an individual's goal state and the characteristics of a task at hand, which make them vulnerable to competing disruptions and interference from other mental processes and consequently, potentially susceptible to judgment error (Johnston et al., 1993).

Collectively, the source monitoring framework illustrates how unconscious plagiarism may truly be an alternative form of source forgetting. Thus, it is reasonable to suspect that in situations in which individuals' source monitoring judgments are problematic, we should find increased rates of unconscious plagiarism whereby those individuals demonstrate a greater likelihood to plagiarize the work of others or themselves (Johnson et al., 1993; Johnson & Raye, 1981; Macrae et al., 1999). One such study by Marsh et al. (1997) provides compelling evidence that source confusion can induce unconscious plagiarism. In a series of experiments using a creative generation task, Marsh and his colleagues examined whether unconscious plagiarism could be reduced when participants were asked to carefully monitor the source of the ideas he or she came up with. They predicted that when source monitoring was not the main objective, participants' systematic processing would be inadequate, which would result in them not using available information enabling them to avoid making source monitoring errors. Indeed, Marsh et al. (1997) found that substantially higher rates of unconscious plagiarism occurred for individuals engaged in a creative generation task, which relied on heuristic decision criteria,

resulting in far greater source monitoring errors compared to those in the recognition task that demanded systematic decision criteria and produced far fewer source errors.

In a subsequent study, Bink et al. (1999) investigated whether a source's credibility may influence an individual's rate of unconscious plagiarism. Having participants engage in a creative generation task, ideas were presented to participants concerning ways of reducing traffic accidents from either an expert or novice source. Results showed participants were significantly more likely to plagiarize ideas when they originated from a more credible source. Yet, most participants were also able to correctly identify new and old ideas on a source monitoring test. Bink et al. (1999) concluded that individuals do not appear to experience source monitoring errors when encoding information but may fail to use necessary source monitoring processes when generating new ideas, thus leaving them more susceptible to unconsciously plagiarize those ideas. Taken together, the source monitoring framework literature provides robust evidence as a leading theoretical explanation for unconscious plagiarism, yet more recent research has begun to consider how people's increasing reliance on technology could affect the way they think about and remember information they are exposed to.

Digital versus Traditional Sources

Technology has reached monumental heights in recent years as it has quickly risen to become a ubiquitous aspect of individuals' everyday lives and activities (Volkom, Stapley, & Amaturo, 2014). For many, technology provides a plethora of tools that are culturally and socially acceptable for intellectual and social purposes, yet despite technology offering enhanced access to vast ideas and information, it also provides an easier means by which individuals could claim that information as their own (Howard & Davies, 2009; Robinson-Zanartu et al., 2005; Williams, 2007). In fact, the practice of using technology to plagiarize others is especially

problematic among university students, who report feelings of less guilt when plagiarizing if the source of their material is internet-based compared to those copying offline or traditional sources (Selwyn, 2008). Individuals' reliance on technology, particularly on the internet, has been a growing concern among educators seeking to reduce students' academic dishonesty (Evering & Moorman, 2012; Willingham, 2019), but more recently it has also caught the attention of psychological researchers as the lines between what we know and what we can access online continue to blur (Marsh & Rajaram, 2019; Storm, 2019). One such area of concern is how, compared to traditional print media, the internet is far more likely to obscure source information (Marsh & Rajarm, 2019). For instance, due to the internet being filled with a litany of misinformation, which is often difficult to separate from factual information (Lewandowsky, Ecker, & Cook, 2017), people struggle to properly evaluate the quality of online-based sources as many of the traditional source cues people rely on are simply not present on the internet (Marsh & Yang, 2017).

Another potential concern involves the consequences of offloading one's memories online (Marsh & Rajarm, 2019). That is, due people's perception that the internet provides vast quantities of storage capacity and speed to access information, they are becoming less likely to actively commit information (e.g., phone numbers, addresses, etc.) to memory when they believe that information is otherwise readily accessible to them (Sparrow, Liu, & Wegner, 2011). Notably, researchers caution how people's reliance on the internet may be encouraging increased shallow processing of information – decreased attention only focused on superficial features (Craik & Lockhart, 1972), which could result in reduced memory for the meaning of material (Loh & Kanai, 2016). This is in part thought to be attributed to the fact that most individuals access online material using a device with a screen (e.g., computer, tablet, or smart phone) and

studies show how reading on screen leads to more eye fatigue and slower reading speed compared to traditional print (Ackerman & Lauterman, 2012; Daniel & Woody, 2013). Indeed, studies demonstrate how people have substantially better comprehension for reading traditional print material than they do for reading the same material on a screen (Mangen, Walgermo, & Brønnick, 2013; Kong, Seo, & Zhai, 2018).

Taken Together, these findings suggest that peoples' reliance on technology can negatively impact how they think about and remember information that they are exposed to on digital devices such as computers. Furthermore, these memory consequences align well with conditions under which unconscious plagiarism has been shown to likely occur as evidenced by the source monitoring framework (Johnson et al., 1993). Given that people report feeling strongly connected to digital devices (Vorderer, Krömer, & Schneider, 2016), it is reasonable to conclude that using these devices may induce greater rates of unconscious plagiarism in individuals compared to using traditional materials; an area which is lacking in the literature.

The Present Study

The purpose of the present study is to expand on the unconscious plagiarism literature by determining whether individuals are more likely to unconsciously plagiarize their own or others' ideas when the source of those ideas is digitally based. That is, participants will be randomly assigned to either a digital or traditional condition and asked to answer an open-ended writing prompt. Those assigned to the digital condition will answer the prompt by typing his or her response on a computer and those in the traditional condition will hand write their response using paper and pencil. Per Brown and Murphy's (1989) three-phase paradigm, participants, in groups of two, will initially generate a response and afterward read what their partner wrote. After one week, participants will return individually to recall their original response. Afterward,

participants will be asked to generate an entirely new response and complete a source memory measure regarding the response they and their partner initially generated during the first phase. Participants' responses will be coded such that his or her unique ideas (e.g., to build a fire) and not words are counted separately. Each idea that a participant provides to the writing prompt during the recall and generate new phases will be counted as a plagiarized response if the idea repeats or closely matches an idea originally provided by his or her partner during the initial generation phase.

Hypotheses

1. Firstly, given that individuals who use digital devices are more likely to engage in plagiarism (Evering & Moorman, 2012; Selwyn, 2008; Willingham, 2019), it is predicted that plagiarism rates should be significantly higher for participants assigned to the digital condition compared to those in the traditional condition.
2. Secondly, given that much research posits that unconscious plagiarism is a variant of source forgetting (Bink et al., 1999; Johnson et al., 1993; Landau & Marsh, 1997; Macrae et al., 1999) it is predicted that participants in the digital condition should demonstrate significantly more source memory errors compared to those assigned to the traditional condition. That is, they should be more likely to misattribute the source of others' ideas as their own ideas.

Chapter 2 Method

Participants

Fifty-six undergraduate students were recruited through the University of Michigan-Dearborn's introductory psychology subject pool via viewing an advertisement on SONA (an online psychology research participant management system). However, 14 participants' data were excluded given they did not return for Part 2 of the study, leaving a final sample of 42 participants. Of these, 21 were assigned to the digital experimental condition. Individual participants signed up for a timeslot on SONA and were paired with another individual signed up for the same timeslot for Part 1 of the study and returned individually a week later for Part 2. Participants were screened for eligibility prior to signing up for the study and were only excluded if they were younger than 18 years of age. All participants were compensated with credit that satisfied a partial fulfilment of a course requirement.

Materials

Computer software.

Participants assigned to the digital experimental condition typed out his or her response on a desktop computer in a Microsoft Word document containing the writing prompt. This document was identical in all respects to the paper documents provided to participants assigned to the traditional experimental condition, with the exception that they were displayed on a computer monitor.

Source memory measure.

The source memory measure consisted of 12 statements that were created for each participant based upon his or her initial response and partner's response that they provided for the writing prompt during the generation phase of Part 1 (See Appendix A). Four of these statements consisted of ideas contained in the participant's original response, which made up those that he or she should identify at "Mine." Another four of these statements consisted of ideas contained in his or her partner's response, which made up those that the participant should identify as "Someone Else's." Finally, the last four statements consisted of novel ideas not found in either the participant's or their partner's original responses and these made up those that the participant should identify as "New." The order of these statements was randomly determined prior to the onset of the study and remained fixed for all participants throughout the duration of the study.

Procedure

Participants completed two laboratory sessions that each lasted approximately 30-minutes in duration, spaced one week apart. Both sessions took place on the main campus of the University of Michigan-Dearborn. This study utilized Brown and Murphy's (1989) well-established three phase paradigm in which participants first complete the generation phase (i.e., generate ideas), then the recall own phase (i.e., recall ideas), and finally, the generate new phase (i.e., generate new ideas). During the first session, two participants entered the lab, were greeted by a researcher, and asked to provide informed consent (see Appendix B). Then the two participants were randomly assigned to one of two experimental conditions as a pair/group and not individually. These two conditions included a digital condition, where tasks were completed on a computer and a traditional condition, where tasks were completed on paper.

Afterward, the two participants completed the generation phase whereby they were shown a writing prompt by a researcher and asked to compose a brief response consisting of two to four paragraphs in length. Participants assigned to the digital condition would type their response on a computer and those assigned to the traditional condition would write out their response on paper by hand. Independent of condition, participants were provided the following writing prompt: "Imagine that you have just found yourself stranded on the shore of a remote island. Describe how you would spend your day on this island." Researchers ensured that participants were given enough time to compose his or her response by periodically checking on participants' progress throughout the session. Once both participants had finished, the researcher asked them to exchange places and read the other participant's response. Once finished, participants were thanked for their time and informed that they would return individually for the second session in one week.

During the second session, an individual participant was greeted by a researcher and asked to complete the recall own phase in accordance with their initially assigned condition. Participants were provided with the same writing prompt as before and asked to recall their original response from the first session as accurately as possible. Following this the participant completed the generate new phase whereby they were provided with the same writing prompt; however, this time asked to compose a completely new response. Additionally, researchers instructed participants to be especially careful not to incorporate details from either their own original response or from their partner's response during the first session. Lastly, participants were given a source memory measure that contained 12 statements whereby they were instructed to read and identify each of the statements as being originally created by themselves (i.e., by circling "Mine"), their partner (i.e., by circling "Someone Else's") or being completely new

and/or never seen (i.e., by circling “New”). Once finished, the researcher thanked the participant for attending the session and completing the study.

Chapter 3 Results

Unconscious Plagiarism Measure

The present study utilized a creative generation task in which participants produced responses to an open-ended writing prompt during each of the three task phases (i.e., generation, recall own, and generate new). All participants' responses were coded such that his or her unique ideas and not words were counted separately. For instance, if a participant responded that they would "build a campfire," their response was coded as one idea. Moreover, each idea that a participant provided in his or her response was counted as plagiarized if that idea repeated or closely matched an idea originally provided by their partner during the initial generation phase. Following established conventions of research concerning unconscious plagiarism as per Brown and Murphy (1989), the proportion of errors (i.e., plagiarisms) produced by participants during each task were calculated and analyzed separately via 2 (error type) x 2 (condition) analyses of variance (ANOVAs). These results are summarized in Table 1, which contains treatment means displaying the percentage of incorrect responses as a function of task (recall own, generate new), error type (partner plagiarisms, self-plagiarisms, intrusions, correctly recalled responses, new ideas), and condition (digital, traditional).

Generation.

During the generation phase participants were asked to provide a response to an open-ended writing prompt and afterward exchanged places and read their partner's response. Given that participants would have no material in which to plagiarize from his or her partner, responses were not analyzed for plagiarism errors for this task.

Recall own.

During the recall own task, participants were instructed to recollect their own response provided during the initial generation task. During this task participants could plagiarize ideas that were either previously provided by his or her partner (i.e., partner plagiarisms) or they could produce intrusions (i.e., new ideas) that they incorrectly believed were included in their original response but were not. Proportions were calculated to obtain participants' percentage of partner plagiarisms, correctly recalled ideas, and intrusions for the recall own phase. That is, to calculate a participant's percentage of partner plagiarisms, the sum of the participant's ideas that were counted as plagiarized (i.e., repeating or closely matching his or her partner's original response) were divided by the sum of the participant's total ideas recalled. Similar proportions were calculated to obtain each participant's number of intrusions and correctly recalled ideas. A 2 (error type: partner plagiarism, intrusions) x 2 (condition: digital, traditional) mixed-model ANOVA revealed a significant main effect of error type, $F(1, 40) = 73.99$, $p < .001$, $\eta_p^2 = .649$. Bonferroni-adjusted comparisons showed that participants committed more intrusion errors ($M = .23$) than partner plagiarisms ($M = .02$). However, there was no significant main effect of condition, $F(1, 40) = .277$, ns. Additionally, there was no significant interaction between error type and condition, $F(1, 40) = .112$, ns.

Generate new.

For the generate new task, participants were instructed to produce an entirely new response to the writing prompt without including ideas he or she had originally provided in their initial response or they had seen in their partner's response. For this task, participants could plagiarize his or her partner's efforts (i.e., partner plagiarism) or they could plagiarize ideas from their original response (i.e., self-plagiarism). Like the previous phase, proportions were

calculated to obtain participants' percentage of partner plagiarisms and self-plagiarisms with the remaining percentage of participants' ideas being counted as his or her new ideas they provided during this phase. For instance, to calculate a participant's percentage of self-plagiarisms, the sum of the participant's ideas that were counted as self-plagiarized (i.e., repeating or closely matching his or her original response) were divided by the sum of the participant's total ideas provided in their response for this phase. Similar proportions were calculated to obtain participants' number of partner plagiarisms and new ideas. A 2 (error type: partner plagiarism, self-plagiarism) x 2 (condition: digital, traditional) mixed-model ANOVA revealed a significant main effect of error type, $F(1, 40) = 14.09$, $p < .01$, $\eta_p^2 = .260$. Adjusted comparisons indicated that participants demonstrated more self-plagiarisms ($M = .14$) than partner plagiarisms ($M = .06$). Moreover, the main effect of condition was not significant, $F(1, 40) = .653$, ns. Further results of this analysis showed no significant interaction between error type and condition, $F(1, 40) = .869$, ns.

Task performance.

Additionally, a 2 (task: recall own, generate new) x 2 (condition: digital, traditional) mixed-model ANOVA was performed on the proportion of partner plagiarisms to determine which of the two tasks (i.e., recall own or generate new) led to a greater proportion of participants who unconsciously plagiarized his or her partner's ideas from the initial generation task and whether participants' task performance significantly differed between the two conditions. Findings revealed a significant main effect of task, $F(1, 40) = 11.93$, $p < .01$, $\eta_p^2 = .230$. Adjusted comparisons showed how participants were more likely to plagiarize his or her partner's ideas during the generate new task ($M = .06$) than they were during the recall own task

(M = .02). However, the main effect of condition was not significant, $F(1, 40) = .033$, ns. Furthermore, there was no significant interaction between task and condition, $F(1, 40) = .041$, ns.

Source Memory Measure

Inferred recognition.

Inferred recognition refers to the frequency of ideas that participants successfully recognized and the frequency of ideas he or she erroneously misattributed to the wrong source. That is, inferred recognition is calculated by taking a participant's number of correctly recalled responses and then dividing that sum by the total number of possible responses of the source measure to obtain the participant's proportion of correctly inferred ideas that were expressed by them (i.e., Mine), their partner (i.e., Others), or were never expressed (i.e., New). Participants' inferred recognition proportions were calculated given that participants were not asked to indicate whether an idea was old or new, but rather if an idea was initially expressed by them, their partner, or was never expressed. In this way, participants should have been able to recognize an idea depending on if he or she experienced it, even if they did not recall the idea's source. Table 2 presents proportion averages of participants' correct source attributions by source, item type and condition.

A 2 (source: mine, others) x 2 (condition: digital, traditional) mixed-model ANOVA revealed a significant main effect of source, $F(1, 40) = 907.06$, $p < .001$, $\eta_p^2 = .958$. Bonferroni-adjusted comparisons indicated that participants recognized more of his or her own ideas as belonging to themselves (M = .30) than to their partner (M = .01). However, the main effect of condition was not significant, $F(1, 40) = 1.15$, ns. Additional analyses revealed that there was a significant source by condition interaction, $F(1, 40) = 10.89$, $p < .01$, $\eta_p^2 = .214$. Independent-samples t-tests revealed that participants in the digital condition were more likely to recognize

their own ideas as being produced by themselves (M = .32, SD = .03) compared to those in the traditional condition (M = .28, SD = .06), $t(40) = 2.88$, $p < .01$, $d = 0.19$. Whereas participants in the traditional condition showed the opposite pattern in which they were more likely to recognize their partner's ideas as their own (M = .02, SD = .05) compared to those in the digital condition (M = .00, SD = .00), $t(40) = -2.34$, $p < .05$, $d = 0.15$. Similarly, a 2 (source: others, mine) x 2 (condition: digital, traditional) mixed-model ANOVA revealed a significant main effect of source, $F(1, 40) = 22.29$, $p < .001$, $\eta_p^2 = .358$. Adjusted comparisons indicated that participants were more likely to correctly recognize others' ideas as belonging to their partner (M = .19) than to themselves (M = .09). Further analyses revealed that the main effect of condition was not significant, $F(1, 40) = .000$, ns. However, the source by condition interaction was not significant, $F(1, 40) = .033$, ns.

Conditionalized source identification measure.

A conditional source identification measure (CSIM) represents the proportion of times a participant identified a correct source out of all the times the idea was recognized (Murnane & Bayen, 1996). In the present study, ideas initially expressed by either the participant or their partner could be recognized as either belonging to the participant (i.e., Mine) or to their partner (i.e., Other). That is, items presented as "Other" yet claimed by the participant as "Mine" were considered recognized – this is known as the inferred hit rate. A CSIM score for these items was calculated by taking the sum of the frequency of items that were correctly identified as being "Mine" or "Others" and dividing it by the larger frequency set of items identified as either being attributed to the participant (i.e., Mine) or their partner (i.e., Others). However, CSIM scores do not account for items incorrectly identified as New, nor do they reflect process-pure measures of source memory (Murnane & Bayen, 1996). Additionally, the average conditional source

identification measure (ACSIM) accounts for the average of the individual CSIM scores for both sources. CSIM and ACSIM data for each condition are shown in Table 3. To analyze the CSIM scores, a 2 (source: mine, others) x 2 (condition: digital, traditional) mixed-model ANOVA revealed a significant main effect of source, $F(1, 40) = 32.65$, $p < .001$, $\eta_p^2 = .449$. Bonferroni-adjusted comparisons indicated that participants were more likely to correctly identify the source of their ideas as belonging to themselves ($M = .97$) than to their partner ($M = .71$). However, there was no significant main effect of condition, $F(1, 40) = .573$, ns. Moreover, there was no significant source by condition interaction, $F(1, 40) = .552$, ns.

False alarms.

The false alarm rate refers to the proportion of times a participant erroneously attributed a new source (i.e., New) as belonging to either themselves (i.e., Mine) or their partner (i.e., Other). This tendency to misattribute a new source as an old source, either to one's self or to another is commonly referred to as the "It had to be me" effect and the "It had to be you" effect, respectively, and has been consistently reported with modified recognition memory tasks used to assess source monitoring (Johnson, Raye, Foley, & Foley, 1981; Marsh & Bower, 1993; Marsh & Landau, 1995; Marsh et al., 1997). A participant's false alarm rate was calculated by taking the sum of the frequency of "New" items that were incorrectly identified as being "Mine" or "Others" and dividing it by the larger frequency sum of items correctly identified as being "New" along with those items incorrectly identified as "New" which instead belonged to the participant (i.e., Mine) or their partner (i.e., Others). False alarm data by condition are presented in Table 3. To determine if participants' false alarm rate differed by condition, an independent-samples t-test was performed. This revealed that participants in the digital condition were marginally more likely to misattribute new ideas as their own or their partner's ideas ($M = .30$,

SD = .28) compared to those in the traditional condition (*M* = .16, *SD* = .17), $t(40) = 1.97$, $p = .055$, $d = 0.29$.

Chapter 4 Discussion

The results of this study demonstrate how individuals who engage in a creative generation task are more likely to unconsciously plagiarize their own or others' ideas by later claiming those ideas as novel. Our findings also refute a common criticism of unconscious plagiarism research put forth by Tenpenny, Keriazakos, Lew, & Phelan (1998). Namely, that unconscious plagiarism rarely occurs when individuals attempt to produce truly original material. Furthermore, our findings parallel several previous studies' results in which participants who engaged in similar creative tasks likewise showed elevated rates of plagiarism (Bink et al., 1999; Defeldre, 2005; Marsh et al., 1996; Marsh et al., 1997; Stark & Perfect, 2006, 2008; Stark et al., 2005). More importantly, participants' plagiarism rates here resemble analogous rates demonstrated by individuals in Brown and colleagues' pivotal studies (i.e., Brown & Murphy, 1989; Brown & Halliday, 1991). Indeed, our participants' partner plagiarism rates were markedly higher in the generate new phase than they were in the recall-own phase, further replicating findings reported by Brown & Murphy (1989).

Yet, contrary to this study's primary hypothesis, individuals' plagiarism rates did not statistically differ between conditions. Concerning the results of our source memory measure, another very surprising pattern emerged. That is, participants in the digital condition were more likely to correctly identify their own ideas, whereas those in the traditional condition were more apt to misattribute their partner's ideas as their own. Likewise, and somewhat surprising, participants in the digital condition were marginally more likely to false alarm by misidentifying new ideas as their partner's or their own. Collectively, these findings add to a substantial

literature purposing that unconscious plagiarism is largely attributed to source forgetting as predicted by the source monitoring framework (Bink et al., 1999; Johnson et al., 1993; Landau & Marsh, 1997; Macrae et al., 1999).

Unconscious Plagiarism

The main aim of this study was to help fill a vacancy in the literature by determining whether individuals who engage in a creative generation task are more likely to unconsciously plagiarize their own or others' ideas when the source of those ideas is digitally based. This study's primary hypothesis was that plagiarism rates would be significantly higher for participants assigned to the digital condition compared to those in the traditional condition given previous reports suggesting individuals who use digital devices (e.g., computers) are more apt to engage in plagiarism (Evering & Moorman, 2012; Selwyn, 2008; Willingham, 2019). That is, given individuals' burgeoning reliance on technology (Volkom et al., 2014), its potential to negatively influence individuals' ability to recall information in which they are exposed to (Loh & Kanai, 2016; Marsh & Rajaram, 2019; Storm, 2019), and how these effects complement conditions under which source forgetting may occur (Johnson et al., 1993; Marsh & Rajaram, 2019), it was expected that participants would be far more likely to unconsciously plagiarize ideas when their responses were generated on a computer compared to when generated using traditional paper and pencil.

Most pertinent here, individuals' plagiarisms in the recall-own and generate new phases did not significantly differ between conditions – a most surprising result. Although, it should be noted that this finding does not conclusively mean that no differences exist in individuals' plagiarism rates between typing a response on a computer and those that are handwritten, rather only that this result is inconclusive. Nevertheless, one potential explanation for the lack of

finding a statistical difference in participants' plagiarism rates between conditions is that our manipulation of participants' perceived difference of the two conditions was weak. Perhaps our participants did not find generating a response to a writing prompt by typing his or her ideas on a computer in a word processing program that much different than they normally would writing down their ideas using pencil and paper. This is quite possible given that our participants were university students, who are likely already very familiar and comfortable with frequently using digital and traditional means to generate ideas daily, essentially making transitioning between the two formats rather seamless.

Additionally, it was observed that participants were much more likely to intrude new ideas not mentioned previously into his or her response than they were to include plagiarized ideas from their partner during the recall-own phase. This was a most unexpected result as this pattern of plagiarism has not been witnessed during the recall-own phase of previous studies of unconscious plagiarism that have also employed a creative generation task via the Brown & Murphy (1989) paradigm. However, one possible explanation for this result involves considering a source monitoring account. It has been shown experimentally that retrieval methods used by individuals differ between the recall-own and generate new phases (Gingerich & Sullivan, 2013).

Namely, during the recall-own phase, participants must distinguish between different sources of information pertinent to the immediate task (i.e., their own and others' ideas), yet this ability may be compromised by competing factors such as the similarity of sources or other distractions (Johnson et al., 1993; Landau & Marsh, 1997; Macrae et al., 1999). However, this process further depends on an individual's careful play of decision strategies that are driven by their end goal, which wrestles between the use of systematic (slow, but accurate) and heuristic (fast, less accurate) processes (Chaiken et al., 1989; Johnson et al., 1993). Of the two decision

strategies, systematic processes have been experimentally found to be more prone to disruption, leaving individuals more likely to make rapidly inaccurate judgments, particularly when under pressure (Marsh et al., 1997; Mitchell & Johnson, 2000).

Moreover, research examining the cognitive mechanisms individuals use when devising novel solutions to creative problems purposes that when faced with a complex task, individuals are likely to constrain their creative output by retrieving domain specific ideas or by modifying an existing idea in a novel way (Ward, 1994; Smith, Ward, & Schumacher, 1993). Thus, given that this study's participants were university students, who are often mentally burdened with a variety of daily stressors, it is reasonable to suspect that these distractions, coupled with the complex task of accurately recalling their initial response, may have led them to incorporate significantly more typical, yet new ideas into their responses rather than unconsciously plagiarizing their partner's ideas.

Another possibility for individuals' elevated rate of intrusions could be attributed to the overly ubiquitous nature of this study's writing prompt. In other words, perhaps our writing prompt's topic of being on a remote island was all too familiar to most individuals. Indeed, this is probable given that most people have likely built up a robust repository of commonplace ideas involving similar situations collected from various famous works of literature, books, films, magazines, television shows, documentaries, and other sources that they have been exposed to over the years. Furthermore, it is possible that many of these ideas could have entered participants' minds when attempting to recall his or her initial response. Considering voluminous research concerning memory's fallibility when recalling information (Braun, Ellis, & Loftus, 2002; Braun-LaTour, LaTour, Pickrell, & Loftus, 2005; Loftus, 2005), this could be particularly salient if participants had recent exposure to these intrusive ideas during the delay period

between the generation and recall-own phases, which may have led them to incorporate more of these intrusive ideas into their response.

Another unexpected finding of the current research was that participants were statistically more prone to self-plagiarize than they were to partner plagiarize during the generate new phase. This was an unanticipated result given, of the two task phases, the generate new phase allows participants the best opportunity to be creative in the face of their prior experience, which roughly simulates real world conditions under which individuals have been shown to unconsciously plagiarize the work of others (Defeldre, 2005; Perfect & Stark, 2008). Moreover, this outcome contradicts much of the previous unconscious plagiarism literature reports. However, the work of Perfect, Field, and Jones (2009), who investigated underlying factors that influence and contribute to plagiarism errors made in the recall-own and generate new phases, may provide a possible explanation. Specifically, expanding on their previous idea elaboration paradigm (e.g., Stark & Perfect, 2006; Stark et al., 2005), they had participants devise improvements to real-world problems with either a novice or expert partner. Interestingly, they found that participants were more likely to self-plagiarize with a novice rather than an expert partner and partner plagiarize with an expert rather than a novice partner during the generate new phase. Hence, it is possible that our participants, who may have viewed his or her partner as a novice by not initially generating what the participant believed to be very credible ideas for answering the writing prompt, were inadvertently more inclined to self-plagiarize than partner plagiarize during the generate new phase.

Source Memory

This study's secondary hypothesis was that participants in the digital condition would demonstrate significantly more source memory errors compared to those assigned to the

traditional condition. That is, participants should have been more likely to misattribute others' earlier ideas as their own ideas. This prediction steams from substantial research contending that unconscious plagiarism is best explained by a source monitoring account (Bink et al., 1999; Brown & Halliday, 1991; Johnson et al., 1993; Landau & Marsh, 1997; Macrae et al., 1999; Marsh & Bower, 1993; Marsh & Landau, 1995; Marsh et al., 1997; Stark & Perfect, 2006; Stark & Perfect, 2007; Stark et al., 2005). Coupled with this, additional research has demonstrated how using technology is associated with memory commitment issues (Sparrow et al., 2011), decreased attention to the meaning of material (Loh & Kanai, 2016), and slower processing speed (Ackerman & Lauterman, 2012; Daniel & Woody, 2013), suggesting that individuals should be expected to experience more source monitoring issues when generating his or her responses on a computer compared to using traditional materials.

Interestingly, we did see noticeable differences in participants' source attributions between conditions on our source memory measure, which further substantiates unconscious plagiarism as a variant of source forgetting. Consequently, these differences did not occur in-line with our initial predictions. More specifically, our analyses revealed a most unexpected pattern in that participants in the digital condition were much more likely to correctly identify their own ideas compared to those in the traditional condition, who were more apt to misattribute their partner's ideas as their own. Indeed, this outcome between conditions is almost precisely the opposite pattern of what we would have expected. Nevertheless, one possible interpretation may be sought in the source monitoring framework. It tells us how memories that contain more experiential cues (e.g., feelings) are likely to be correctly attributed to an external source (i.e., a real event), making an individual more likely to make a correct source judgment (Johnson et al., 1993; Johnson & Raye, 2000). Additionally, this process is also context dependent in that, if an

individual is more relaxed, it is probable they will engage in systematic processing, causing them to correctly identify their recollection's source.

However, the opposite would likely result for those who feel under pressure, causing them to engage in heuristic processing and make more source judgment misattributions (Chaiken et al., 1989; Johnson et al., 1993; Marsh et al., 1997; Mitchell & Johnson, 2000). Considering this, perhaps it is possible that given our participants were university students who routinely use computers and may associate a certain level of comfort with these devices, which is likely given university students often report feeling strongly connected to their digital devices (Vorderer et al., 2016), our participants were able to retain more details of their experience and thus, were better able to identify the source of their own ideas over their partner's ideas in the digital condition. Likewise, it is possible that participants in the traditional condition did not associate these same feelings of comfort with generating a response using traditional materials. Instead, perhaps they felt pressured to exert more intellectual effort, which has been found to increase plagiarism rates (Preston & Wegner, 2007), and invertedly relied on more heuristic processes, ultimately causing them to be more likely to misattribute the source of their partner's ideas as their own.

Finally, our analyses revealed a somewhat surprising result in that participants were marginally more likely to false alarm by misidentifying new ideas as their partner's or as their own ideas in the digital condition; however, similar effects were not seen for those in the traditional condition. These errors are intriguing because they represent items identified by participants that should have been otherwise completely new within the context of the study and thus, if anything, should have produced similar results across conditions. Moreover, this finding alludes to the possibility that the memories of those in the digital condition were somehow more

vulnerable to the suggestion of new items being represented in the study, when they were not, compared to those in the traditional condition.

One possible explanation for this result, although highly speculative, is that there may be something about generating a writing response on a computer that makes individuals potentially more susceptible to misinformation (Loftus, 2005) and even possibly creating false memories (Loftus & Pickrell, 1995) with that information by integrating it into their existing memory and then later misattributing these false ideas to themselves (i.e., the "It had to be me" effect) or to others (i.e., the "It had to be you" effect). It is also possible that this result may be specific to this study, which could have been influenced by one of its limiting factors. Nevertheless, this study's limitations will be discussed next.

Limitations

Indeed, this study had several potential limitations that should be acknowledged. Firstly, this study's sample was exclusively composed of undergraduate university students. This can be problematic for research studies as these students are typically subject to a host of daily stressors and obligations due to being enrolled in school, which may adversely affect their participation as they are not shared with other adults within the population (Leppink et al., 2016). Thus, for these reasons, the findings of this study may not be representative of the results one may obtain in the general population. Secondly, due to the increasing presence of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which led to a global pandemic (Worobey et al., 2020), data collection for this study was discontinued prematurely, resulting in a smaller sample size than would have otherwise been obtained.

That is, the presence of the pandemic may have inadvertently influenced the findings of this study. Thirdly, it should be noted that the current research was conducted in a laboratory on

a university campus, which is an artificial setting that is not necessarily reflective of a real world setting in which creative idea generation may lead to unconscious plagiarism. Although, this study attempted to circumvent this by having individuals generate original responses to an open-ended writing prompt. Finally, because we used a mixed experimental design, which required participants to return individually for his or her second session, this study partially suffered from attrition issues. Although every attempt was made to ensure participants returned to complete their second session, this limitation may have influenced our overall findings. Taken together, the results of this study and its limitations point out the need for future research.

Future Directions

Unconscious plagiarism not only abounds in the literature with numerous anecdotal examples, suggesting that it occurs more often than individuals would like to admit, it is a real-world memory phenomenon with a limited research history (Carpenter, 2002; Defeldre, 2005; Perfect & Stark, 2008), which together, make it a worthy topic of future investigation. As far this author is aware of, this is the only study to examine potential differences in digital and traditional sources of unconscious plagiarism. Although, our results indicated that individuals were more likely to plagiarize ideas during a creative generation task, we did not find a substantial difference in plagiarism rates for those generating their responses on a computer. Thus, future studies could expand on this by seeing if other forms of technology that individuals routinely use (e.g., smart phones, tablets, or gaming consoles) that individuals might more easily differentiate from their traditional counterparts, could lead to increased rates of unconscious plagiarism. It may additionally be advantageous to investigate whether other creative generation tasks such as Marsh and Bower's (1993) Boggle puzzles or Stark et al.'s (2005) idea elaboration could elicit higher levels of plagiarism in individuals when delivered through a digital format.

More importantly, given that unconscious plagiarism is largely regarded as a memory phenomenon which often occurs in the real world (Defeldre, 2005), in a variety of contexts (Macrae, 1999), and to everyday people (Gingerich & Sullivan, 2013), it may be compelling for future investigators to see if differences between digital and traditional sources of unconscious plagiarism operate outside of the confines of a research laboratory. For example, future studies could investigate whether individuals are more apt to plagiarize in conversation when using their smart phone compared to when using a landline phone during a normal day. Finally, another way in which future studies could examine differences in individuals' plagiarism rates while using technology could be by comparing these differences between younger and older individuals. Indeed, given previous research suggesting that older adults are significantly more likely to plagiarize others' ideas than younger adults (McCabe, Smith, & Parks, 2007) and how older adults are less likely to be accustomed to using technology than younger adults (Olson, O'Brien, Rogers, & Charness, 2011), this may be a fruitful area for future investigations.

Tables

Table 1. Percentage of Incorrect Responses

Condition	Task					
	Recall-Own			Generate New		
	Partner Plagiarisms	Correct Recall	Intrusion Errors	Partner Plagiarisms	Self-Plagiarisms	New Ideas
Digital	2.05%	66.42%	21.94%	6.35%	12.15%	81.50%
Traditional	2.56%	62.98%	24.06%	6.38%	16.02%	77.60%

Table 2. Proportion Averages of Correct Source Attributions

Condition	Item Type and Source								
	Mine			Others			New		
	Mine	Others	New	Mine	Others	New	Mine	Others	New
Digital	.96	.00	.04	.27	.57	.16	.11	.19	.70
Traditional	.85	.07	.08	.27	.59	.14	.07	.08	.85

Table 3. Conditionalized Source Measures and False Alarms

	Source and Measure							
	CSIMs				ACSIMs		False Alarm Rate	
	Mine		Others					
Condition	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Digital	1.0	.00	.71	.27	.86	.14	.30	.28
Traditional	.93	.13	.71	.28	.82	.15	.16	.17

Note. CSIM, conditionalized source identification measure; ACSIM, average conditionalized source identification measure.

Appendix A: Source Memory Measure

ID: _____ SESSION: _____ INITIALS: _____

Please identify for each of the items listed below whether it was created by you, someone else or is entirely new by circling your selection for each question.

---

1. **Other statement**

   Mine Someone Else's New

2. **New statement**

   Mine Someone Else's New

3. **Other statement**

   Mine Someone Else's New

4. **New statement**

   Mine Someone Else's New

5. **New statement**

   Mine Someone Else's New

6. **Other statement**

   Mine Someone Else's New

7. **Mine statement**

   Mine Someone Else's New

8. **Mine statement**

   Mine Someone Else's New

9. **Other statement**

   Mine Someone Else's New

10. **Mine statement**

    Mine Someone Else's New

11. **New statement**

    Mine Someone Else's New

12. **Mine statement**

    Mine Someone Else's New

Appendix B: Informed Consent

THE UNIVERSITY OF MICHIGAN-DEARBORN
EXEMPT STUDY CONSENT
THE EFFECTS OF CRYPTOMNESIA
HUM00168716

Principal Investigator: Jonathan Saulter, M.S. Student (University of Michigan-Dearborn)
Faculty Advisor: Arlo Clark-Foos, Ph.D. (University of Michigan-Dearborn)

Purpose of the study: You are invited to participate in a research study about the effects of cryptomnesia.

Description of Subject Involvement: If you agree to be part of the research study, you will be asked to participate in two sessions during both of which you will be shown a writing prompt and asked to generate a brief response and read another participant's response. In addition to these tasks, during the second session, you will be asked questions regarding some of the items you may have seen in the responses.

Benefits of the research: Although you may not benefit from this study directly, the data you provide by participating will help others learn more about how our memory works, which could allow future researchers to better understand cryptomnesia and even aid in developing new techniques or strategies that could be used in academic, business or legal settings.

Risks and Discomforts: There are no risks associated with this study because data collection is completely anonymous, and the topic is not sensitive in any way. The only minimal risk that could occur is that you may experience minor muscle strain in your hands while generating the writing response. If this occurs, please let your experimenter know right away and you will be allowed to take a break or discontinue participation without any penalty.

Compensation: We expect your participation in this study to take about 30 minutes per session and you will be compensated with .5 subject pool credits for each session. By participating in both sessions, you will be compensated with a total of 1 subject pool credits.

Voluntary nature of the study: Participating in this study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time without penalty. You may choose to withdraw early for any reason, in which case your data will automatically be deleted by the analysis software and you will still receive full compensation for participation. However, if you withdraw after you have completed the tasks, you may choose to have your data withdrawn (deleted) or leave it to be analyzed and stored in an anonymous form.

Confidentiality: We plan to publish or present the results of this study but will not include any information that could identify you. There are some reasons why people other than the researchers may need to see information you provide as part of this study. This includes organizations responsible for making sure the research is done safely and ethically such as the

Dearborn IRB. To keep your information safe, the researchers will never store information about your identity and all data will be kept in an anonymous form that can never be linked to you in any way.

Storage and future use of data: The data from this study will not be made available to other researchers for other studies following the completion of this study and will not contain information that could be used to identify you in any way.

Contact Information: If you have questions about this research study, including questions concerning scheduling or compensation for participating, you may contact the principal investigator, **Jonathan Saulter, jsaulter@umich.edu** or the faculty advisor for this study, **Dr. Arlo Clark-Foos, acfoos@umich.edu.**

The University of Michigan Institutional Review Board Health Sciences and Behavioral Sciences has determined that this study is exempt from IRB oversight.

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