False memories and how they can impact our lives

There is a consensus among researchers that human memory is prone to distortions. The study of false memories addresses this phenomenon, examining individuals' recollection of past events. This paper aims to discuss the nature of false memories and what effect they may have on our lives. In particular, this essay focuses on how false memories can be elicited in experimental or other settings, how research in false memories has improved our understanding of the cognitive effects of trauma, and how memory distortions can be elicited also among healthy people. The overall application of false memory research findings will be discussed along with the limitations of this line of research.

The nature of false memories

Smeets, Merckelbach, Horselenberg, and Jelicic (2005: 918) define false autobiographical memories as " recollections of events that never happened or that are recalled very differently from how they actually happened". Researchers have attempted to examine those erroneous recollections using a variety of techniques including imagination inflation, personalized suggestions and drawing on real life situations (Smeets et al. 2005). The most widely discussed implications of this research involve eyewitness reports and individuals' memory of traumatic experiences (e. g. Brennen, Dybdahl, & Kapidzic´ 2007). Researchers have employed various research methods to address those phenomena including interviewing, Deese-Roediger-McDermott (DRM) lists DRM lists and diverse experimental designs. Research consistently shows that individuals are prone to over-remember trauma, although these memories are open to change (Brennen et al. 2007; Engelhard, van den Hout, & McNally, 2008; Giosan, Malta, Jayasinghe,

Spielman, & Difede 2009; Strange & Takarangi, 2012; 2015). Strange and Takarangi (2012; 2015) used an experimental research design to examine individuals' recollection of traumatic events using a United Kingdom public service announcement film against texting while driving that depicted a fatal car accident for five people including a baby. The researchers manipulated the experimental conditions by identifying all events being depicted in the film and then removing a number of short clips. Participants were asked to watch the film and then returned 24-hours later for a recognition test showing them 18 new and old short clips. Their findings reveal that 95% of the participants identified correctly which clips they had originally watched or not but they also claimed that they had watched 26% of the missing clips. A significant finding was also the fact that participants were more likely to exhibit memory distortions regarding the prime traumatic events depicted in the film rather than peripheral ones. Strange & Takarangi (2015) following a similar methodology investigated individuals' erroneous recollections separating their participants into four experimental conditions: Static (S), Static + Warning (SW), Static-Warning-Label (SWL) and Control (C). All participants watched the film and the control group received no indication regarding any missing footage, those in the Static (S) condition were shown static frame for those clips that were missing, those in the Static + Warning (SW) received a warning as well in the beginning of the film regarding the missing clips, those in the Static-Warning-Label (SWL) was also shown an additional label during the static frame of the missing footage. In the following day, just like their first study, participants were called for a surprise test that asked them to decide whether 18 short clips were part of the film they had watched or not. Their findings showed that participants overall

identified correctly the clips that they had initially watch, while 27-39% also claimed that they had watched footage that was not included in the original film and participants remembered inaccurately more often central than peripheral events. Further comparisons between the different experimental conditions suggest that memory distortions can be malleable as there was an improvement in the experimental conditions compared to the control group.. In particular, the visual static made no difference, warnings were more effective than the static condition, and the provision of both a label and a warning did not differentiate substantially from the plain static condition. The authors interpreted their findings based on various memory models (e. g. Fuzzy Trace Theory, Associative Activation Theory) that equally predict that most memory distortions would occur in relation to the most critical of the events that individuals experienced.

The most common experimental design that is employed in false memories research is the Deese-Roediger-McDermott paradigm (DRM; Deese 1959; Roediger & McDermott 1995). It involves lists of words, where each list is tailored around one word that is called “ critical lure” and is not present in that list. Among healthy subjects, false recognition can reach up to 80% (Stadler, Roediger, & McDermott 1999) and it is a method that has often been employed in order to examine false memories among Post-Traumatic Stress Disorder (PTSD) patients. Research findings have been often inconsistent (Bremmer, Shobe, & Kihlstorm 2000; Zoellner, Foa, Brigidi, & Prseworski 2000; Brennen et al. (2007) and Brennen et al. (2007) addressed those inconsistencies using an adaptation of the DRM method that include both neutral and war-related DRM lists in order to examine the false

memories of a group of patients with PTSD and a group without PTSD but exposed to war trauma. Their findings reveal that PTSD patients mistakenly recalled more war-related words offering support to the argument that source-monitoring may be impaired among PTSD patients due to assumed links between PTSD and dissociation (Ehlers & Clark 2000; Zoellner et al. 2000; Brennen et al. 2007). Jelinek, Hottenrott, Randjbar, and Moritz (2009) also investigated the production of false memories among 48 traumatized patients (20 full or partial PTSD patients and 28 non-PTSD patients) and a control group of healthy individuals (N= 28) using a visual variant of the DRM method. In particular, they asked from their participants to watch four pictures (each one appearing for 40sec in a monitor) that depicted different scenes (classroom, beach, funeral, room surveillance) and then were asked to decide on a recognition test whether a list of 48 items were present in those pictures. Their analysis showed that PTSD participants showed a higher rate of false memories compared with traumatized and non-traumatized individuals but this difference was not statistically significant. Furthermore, PTSD participants did not exhibit higher confidence in falsely remembering critical lures which is in accordance with Brennan et al. (2007) tentative evidence that such differences may be present only in relation to trauma-related critical lures.

The impact of false memories in our lives

The string of research that has addressed the effect that false memories can have in our lives has focused on the way in which individuals' recollect past events and how this can influence their decisions and judgement in the present and future. Research consistently shows that people are susceptible

to remember persistently events that may have never happened or recollect past events erroneously and even change their preferences based on those erroneous recollections.

Loftus and Bernstein (2005: 101) define such rich false memory as “ the subjective feeling that one is experiencing a genuine recollection, replete with sensory details, and even expressed with confidence and emotion, even though the event never happened”. Usually individuals will be presented with some piece of often misleading information about an event that will distort their memory about that event. This distortion can be manifested when the individuals’ memory gets tested. In daily life these distortions can be generated by photographs or leading questions that can create the strong impression that someone has experienced one specific event in the past. For example, an adult may believe that he or she had visited a place as a kid after seeing a picture of the place. Such effects can even impact criminal cases or litigations. Anecdotal evidence has often documented such phenomena among eyewitnesses’ stories and in stories about alien abduction and satanic abuse. Such an example is the litigation brought by Patricia Burgus against her former psychiatrist Dr. Braun for malpractice according to which Dr. Braun has used “ repressed memory therapy, including hypnosis” (Holdem 1998, p. 6) which led to her holding the belief that she is the high priestess of a satanic cult. Medical and court records support that she held these beliefs but the lack of the controlled conditions of an experimental research design does not allow us to draw safe conclusions regarding her memory distortion.

Crombag, Wagenaar, & van Koppen (1996) is a frequently cited study as it was able to show how a leading question can plant in one’s memory a false suggestion regarding a traumatic event. The researchers questioned Dutch participants regarding their memories about a news story that took place 10 months earlier in 1992, when a plane that crashed into an apartment building in Amsterdam, killing the four crew members and 30 people that were inside the apartment at the time of the crash. The leading question that researchers posed to their participants was whether they had seen the television film of the moment the place hit the apartment building, as in reality such footage did not exist. If the participants replied positively then they were further questioned. Indeed, more than half of their participants (55%) answered that they had seen the fire and in a second study, this percentage was raised to 66% confirming the malleability of memories. Similar were the findings of another study that followed an analogous methodology (Ost, Vrij, Costall, & Bull 2002) regarding the car crash in which Princess Dianna died and a 45% of a British sample claimed that had seen a film of the actual car crash. Nourkova, Bernstein, and Loftus (2004) cite an earlier unpublished doctoral dissertation (Abhold 1995) that showed that experimentally manipulated misinformation can distort the memory for a witnessed life-and-death situation. Nourkova et al. (2004) examined the malleability of the memory in a sample of undergraduate students from the Moscow State University regarding the terrorist bombings in two apartments in Moscow in 1999 and the terrorist attacks on the World Trade Center. In particular, they attempted to plant the false memory of having witnessed a wounded animal in those critical events. Their findings showed that 12. 5% of the participants that received the experimental manipulation regarding

their memory of the Moscow bombings agreed that they had witnessed a wounded animal in the accounts of the bombings. The authors also found that for the misled participants, the critical event exhibited lower personal significance but higher historical significance. These findings suggest that traumatic memories are not immune to false memory even if individuals hold strong emotions about those events. However, the authors also highlight that false memory was successfully implanted only with regards to the Moscow bombings as the context of Moscow apartment made the scenario of witnessing a wounded animal more plausible which is in accordance with theoretical arguments regarding the processes involved in the creation of false memories (Mazzoni, Loftus, & Kirsch 2001).

These effects of false memories have also been confirmed in laboratory settings that have shown that it is possible to plant memories for events that can be impossible or even traumatic (Loftus & Bernstein 2005) utilizing suggestive methods (e. g. misinformation) and amplify them using imagination exercises. Mazzoni and Memon (2003) examined whether imagining an event can create false memories in a sample of 82 British students. In the process of the experiment, a group of participants imagined a relatively frequent event and received information about an impossible event, while another group imagined the same event that never occurs (“ Having a nurse remove a skin sample from my finger”) and received information about a common event (“ Having a milk took extracted by a dentist before the age of 6”). Furthermore, all participants completed three different versions of the Life Events Inventory (LEI) that rates participants’ likelihood of experiencing sets of events in their lives. Their findings showed

that imagination was an adequate condition for the production of false memories irrespective of familiarity with the event.

Several studies examined the consequences of false memories showing that they can impact on individuals' judgements and food preferences. For example, Bernstein, Laney, Morris and Loftus (2005b) found planting a negative false memory about food (e. g. false feedback about getting sick at young age due to eating dill pickles or hard-boiled eggs) can make subsequently people show less interested into consuming those foods. In other research, (Bernstein et al. 2005a) the experimental conditions were manipulated to let people believe that as kids, they had been sick as a result of consuming strawberry ice cream or chocolate cookies. A change in participants' food preferences was manifested among those participants who believed the false feedback regarding the ice-cream, as 40 % subsequently demonstrated less preference to consuming ice-cream. This finding, though, was not found among those that believed the false feedback regarding the chocolate cookies suggesting that other factors such as the novelty of a food can determine the consequences of false memories. These findings show that false memories not only can impact how we think or feel about past experiences but they can also influence our future decisions altering our preferences and judgements.

Conclusion

Research in false memories has gained a lot of attention since the '90s as psychologists began to systematically examine their development as a means to fully understand memory distortions in healthy and traumatized individuals. Indeed, research has shown that those distortions can impact

individuals' decision about the present and the future and their persistence can be a great challenge especially during criminal investigations. . However, " false memory" is a quite broad term that may often make it challenging to include all the types of memory illusions studied by cognitive psychology. For example, an argument that has been raised is whether the experimental procedures employed to test false memory actually increase individuals' confidence to the planted memories, create false beliefs or false memories of those events (Wade, Sharman, Garry, Memon, Mazzoni, Merckelbach, Loftus 2007). However, understanding the nature of false memories can assist psychologists understand memory illusions and use this knowledge to inform their practice with traumatized individuals.

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