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Trusting Traumatic Memory: Considerations from Memory Science¹

Alison Ann Springle¹, Rebecca Dreier^{2,3}, Seth Goldwasser³

¹University of Oklahoma Norman Campus: The University of Oklahoma, Philosophy, Pittsburgh, USA

²University of Tübingen: Eberhard Karls Universität Tübingen, Germany

³University of Pittsburgh Dietrich School of Arts and Sciences, USA

Abstract: Court cases involving sexual assault and police violence rely heavily on victim testimony. We consider what we call the “Traumatic Untrustworthiness Argument (TUA)” according to which we should be skeptical about victim testimony because people are particularly liable to misremember traumatic events. The TUA is not obviously based in mere distrust of women, people of color, disabled people, poor people, etc. Rather, it seeks to justify skepticism on epistemic and empirical grounds. We consider how the TUA might appeal to the psychology and neuroscience of memory for empirical support. However, we argue that neither support the TUA.

¹ Alison Springle is Assistant Professor of Philosophy at the University of Oklahoma; Rebecca Dreier is an MA student at the University of Tübingen; Seth Goldwasser is a PhD student at the University of Pittsburgh.

0. Intro: Court cases involving sexual assault and police violence rely heavily on victim testimony. A common issue that arises in such cases is the trustworthiness of victim testimony. In giving testimony, victims rely on their episodic memory.² Episodic memory is distinguished from other types of memory by its narrative structure and episodic character. When we remember episodically, we do not only remember what has happened, when it happened, and where, but we remember in a particular, experiential way. In other words, episodic memory represents our past experientially, e.g., in perceptual images.³ Episodic memory can interact with emotional memories, i.e., implicit memory of the emotions we felt during an experience. The hippocampus has often been attributed the function of both encoding and retrieving episodic memories (Stevens et. al. 2018: 650)⁴ while the amygdala is often associated with emotional memory since it becomes active when certain emotions stand in connection with one's own past (Stevens et. al. 2018: 651).⁵

There's reason to think that doubts about the veridicality of witness testimony are at least sometimes underwritten by sexist and racist (perhaps implicit⁶) biases (Fricker 2007; Mills 2013; Manne 2017 Ch. 7; Lackey 2018, 2021; Medina 2021). When this is the case, distrusting victims' testimony constitutes a distinct form of testimonial epistemic injustice (Fricker 2007; Lackey 2018, 2021; Medina 2021).⁷ However, the extent to which epistemic injustice is in play depends on the extent to which doubts about the veridicality of witness

² The presumption of innocence (in the United States at least) dictates that, until a verdict is rendered as to the defendant's guilt, the crime is alleged and, thus, so too is the status of victimhood. Nonetheless, we will use "victim" to refer to those testifying to their having been assaulted out of a desire to take them seriously. Readers can substitute "alleged victim" if they wish. Our argument does not depend on this distinction.

³ Episodic memory is an explicit form of memory because it is something we entertain consciously. Explicit memory is contrasted with implicit memory in which information is stored that is not consciously accessible to us.

⁴ This means that the hippocampus affects storage by encoding and retrieval of the information we gather through experience.

⁵ From a philosophical perspective the nature of episodic memory is still debated. Among the major philosophical theories of episodic memory are causal theories (Martin & Deutscher 1966; see DeBrigard 2014 for the discussion of memory traces), constructivist theories (Michaelian 2016), and causal constructivism (Hopkins 2018). While these theories disagree in important aspects, they agree that episodic memory involves some form of encoding of information, some relation between that information and the remembered event, and retrieval of some sort.

⁶ On implicit bias: Holroyd (2012), Saul (2013), Gendler (2014), Nagel (2014), Leslie (2017), and Saul & Brownstein eds. (2016).

⁷ In a longer version of this paper, we consider an alternative version of the TUA ("ALT-TUA") that turns on a claim about pragmatic encroachment. We argue that ALT-TUA involves a distinct version of epistemic injustice involving victim testimony (Gardiner 2021).

testimony might be based on legitimate evidential reasoning.⁸ Accordingly, it is important to consider whether, to what extent, or in which cases there might be good reason to doubt victim testimony.

What we'll call the "**Traumatic Untrustworthiness Argument**" (henceforth the "TUA") might be considered a legitimate basis for doubting victim testimony. According to this argument: When people are particularly liable to misremember events, we should be skeptical about their reports of those events (P1). People are particularly liable to misremember traumatic events (P2). So, we should be skeptical about their reports of traumatic events (C). For our purposes, the key premise in the TUA is P2. According to P2, trauma negatively impacts the veridicality of episodic memories. The TUA is not obviously based in mere distrust of women, people of color, disabled people, poor people, etc. It's fully general regarding possible subjects of trauma and takes for granted that victims have suffered some form of trauma, as it takes this trauma as the basis for skepticism about victim testimony. It is therefore deserving of consideration.

In what follows, we will assess potential sources of empirical support for the TUA from memory science. In §1, we consider whether there's a link between trauma and false memories that undermines the trustworthiness of traumatic memories. In §2, we consider whether studies on the relationship between episodic and related types of memory and post-traumatic stress disorder suggest that memories of traumatic events are especially liable to be false. In §3 we consider the claim that inconsistencies and spottiness of information in traumatic memories constitute a reason to be skeptical of such memories. In all cases, we find that the TUA does not find much empirical support. Instead, we suggest in §4 that what studies on traumatic and non-traumatic memory highlight is the need for particular forms of care in the way traumatic cases are investigated and tried. In §5 we conclude with a summary.

1. False Memories One might argue that episodic memories of sexual assault might stem from false memories of the sort described by Elizabeth Loftus (1997, 2003). According to Loftus, it is possible to implant "false memories" about one's personal past. In a "false memory," an individual seems to remember an event that did not actually occur in their personal past, and the individual acquires the relevant information from the suggestions of

⁸ We will be focused primarily on cases of sexual assault. Nonetheless, the arguments we make and evidence we appeal to are applicable to cases of police violence as well. Victims of police violence experience trauma as a result of (systemic/oppressive) violence, which enhances encoding for emotionally valenced content. This undermines application of the TUA to these cases as well.

others (as opposed to associative processes in the mind (Otgaar et. al. 2021). Loftus (1997: 74) considers the extent to which imagining a possible past event will increase individuals' confidence that the event happened in their past. 38 college students participated in a three-staged study and were asked about the likelihood of 40 possible events happening in their past (Garry et. al. 1996). Two weeks later participants were split into two groups and randomly assigned a set of events they were instructed to imagine and a set of events that they were not instructed to imagine, with the latter set acting as a control. In the last phase participants were asked questions about the specific events they were to consider in the study and were instructed to report their estimate of the likelihood that the event in question happened in their past. For many scenarios there was an increase in confidence (Garry et. Al. 1996: 212), but for events among the set of those imagined, "24% of subjects who imagined the event increased their subjective confidence that it had happened to them, while the corresponding figure for subjects who had not imagined it was only 12%." (Garry et. al. 1996: 211).⁹

In addition to pioneering studies into the psychological nature of false memories, Loftus proposed three conditions for implanting a false memory, M. First, an individual must become convinced of the plausibility of M. Second, the individual must become convinced that M was personally experienced. Third, an individual must imagine M (typically in a guided way). When these conditions are met, it's likely that a rich but false episodic memory will develop (Loftus 2003: 871).

One might argue that individuals who claim to be victims of sexual assault are likely to be influenced by others (e.g. therapists) in ways that intensify and distort real or imagined events or even lead to the development of false memories. In support of this claim, they might appeal to studies involving sexual assault in children with supposedly repressed memory (Otgaar et. al. 2021: 3). However, it's unclear how far findings on false memory development that only concerned relatively non-traumatic events generalize to traumatic cases of memories of sexual assault. Since these findings do not involve traumatic memories it's not clear they would generalize to traumatic experiences which involve greater emotional valence and normally different ways of processing (Otgaar et. al. 2021: 2). Moreover, for any given case, it would be unreasonable to suspect a victim's memory of being false in the

⁹ Various studies reinforce these findings (Loftus & Pickrell, 1995 ; Hyman & Billings, 1998; Wade et al., 2002; Otgaar et al., 2009; Otgaar et al., 2013; Otgaar et al. 2021).

absence of positive evidence that Loftus' conditions for implanting a false memory have been met.¹⁰

2. Stress & Memory A different way one might try to defend P2 of the TUA is by appealing to findings which appear to show that victims who suffer from post-traumatic stress disorder (PTSD) after a traumatic experience perform worse overall on episodic memory assessments (Forest & Blanchette 2018; Zlomuzica et. al. 2018).

However, victims of PTSD often remember the traumatic event veridically and highly vividly (Zlomuzica et. al. 2018). First, although it has been reported that patients suffering from PTSD after a traumatic experience are overall worse at episodically remembering (Forest & Blanchette 2018; Zlomuzica et. al. 2018), most studies show only a "small-to-moderate" effect in memory deficits related to PTSD and that the problem seems to lie in the acquisition of information rather than retention (an issue we'll get into below) (Brewin et. al. 2007; Samuelson 2011: 347). What's more, it has also been shown that they perform as well as healthy subjects when it comes to remembering negative or trauma-related affective or emotional content (Forest & Blanchette 2018: 6). Individuals suffering from PTSD in particular exhibited higher arousal when it came to negative stimuli than healthy subjects which speaks in favor of them being better able to remember negative events than happy or neutral events because higher arousal aids encoding (Zlomuzica et. al. 2018; Forest & Blanchette 2018). This suggests that there may not be any general memory deficit for sexual assault victims because, although negative arousal itself might not bear on the veridicality of the episodic memory, it facilitates the consolidation of arousing aspects of the event in episodic memory which enables a more vivid and possibly detailed recollection. Moreover, when we assess the correctness of the TUA, it is precisely memories *of the traumatic experience* that we need to consider. While it is sometimes reported that these memories are fragmented, lack information, or lack a narrative structure (e.g. Brewin: 2011; Brewin 2016), these findings have not been replicated (Rubin et al. 2016; Engelhard 2019: 92). And other findings point in quite the other direction: it has been reported that the episodic memory of trauma is often more vivid and clear than other memories (Tulvin 2001, 2002; Brewin 2015;

¹⁰ One might object that the Satanic Panic of the 1980s in the US shows that it is possible to implant traumatic memories (specifically in children) and that victims only believed that they were subject to ritual abuse because the memories were implanted according to Loftus' conditions. Still, drawing a connection to Loftus requires further study. The functional differences between traumatic and non-traumatic cases should give us pause about what we can infer from the latter in application to the former.

Zlomuzica 2018: 1). Indeed, a study by Forest and Blanchette (2018) found that while there was poorer episodic memory of affectively neutral content, "[v]ictims did not show any impairment in memory for trauma-related content" (Forest & Blanchette 2018: 6). In part for this reason, Forest and Blanchette (2018) warn that "impairment and deficit words" with respect to the memories of PTSD victims "must be used with caution" because "[they] should not be understood to mean that there is a pathological level of memory function." (Forest & Blanchette 2018: 7).

How can victims of trauma be worse at episodically remembering neutral events but proficient at episodically remembering emotionally valenced aspects of a traumatic event? First, our memory capacity is enhanced when we are in an especially emotional situation. This is so because the stress of traumatic events boosts the activation of the amygdala and leads to stronger emotional memory (Stevens 2018: 653). Furthermore, our memory is enhanced especially for negative memories. Various studies show that we retrieve episodic memories attached to negative emotions with greater detail and accuracy and with less reconstructive memory-errors (Bless & Schwarz 1999; Kensinger 2007; Kensinger et al. 2007). This can be explained by higher activation of the amygdala during encoding and/or consolidation. For instance, the activity in the right amygdala in particular correlates with enhanced visual details of memories. Indeed, the "strong correlation between the amount of activity in the right amygdala and in the right fusiform gyrus during the encoding of negative items later remembered with specific visual detail suggests that interactions between these regions may underlie this enhancement" of episodic memory (Kensinger et al. 2007: 1883).

Traumatic memory is connected to high negative arousal. As it has been observed that PTSD patients are just as good as healthy subjects at remembering negative content, it is not surprising that the former's traumatic memory is intact (Forest & Blanchette 2018: 6; Zlomuzica et al. 2018; Stevensen et al. 2018: 356).

In sum, studies appear to confirm the consistency and veridicality of traumatic memories. They also suggest a mechanistic explanation for why traumatic memories might even be remembered better (as we will argue presently).

3. Gaps & Inconsistencies A proponent of the TUA might argue that evidence of missing information and inconsistency with respect to the narrative structure of the remembered traumatic experience is reason to be skeptical of an individual's testimony about that experience. Even if an individual did experience a trauma, they may not be able to recount it accurately. Moreover, there are neurophysiological explanations of the likelihood of missing

information and inconsistency in the narrative of the traumatic experience, namely, the impact of traumatic stress on hippocampus function.

However, the claim that gappy memory cannot be trusted to be veridical threatens all memory, since, due to a variety of constraints, we cannot possibly remember every detail of an experience. With respect to episodic memory, we typically remember only what we consider important, “central” details and not other, “peripheral” details. Gappiness is a feature of both non-traumatic and traumatic memory. The TUA is motivated by the intuition that traumatic memories differ from other types of memory in terms of veridicality. If traumatic memories differ from non-traumatic ones, this cannot be a function of the former’s gappiness. The proponent of the TUA must look elsewhere to impugn traumatic memories or else risk losing memory as an epistemic source altogether.

In addition, the neurophysiological explanations of the likelihood of missing information and inconsistency in the narrative of the traumatic experience need to be considered in the context of a broader neurological picture of traumatic memory. Both the hippocampus and amygdala are involved in encoding, storing, and retrieving remembered events. The hippocampus is responsible for explicit memory and coherent memory structure. Its job is to put a remembered experience into chronological order and perspective. Activation of the amygdala is quick, enabling instantaneous responses to danger and rapid association of stimuli with potential threats (~39ms). It catalogs past sensory experiences (threats, anger) as implicit memories. By contrast, the hippocampus works more slowly when consolidating memories on the order of minutes, hours, days and even weeks. And unconsolidated memory at early stages can be disrupted and is generally fragile, but after some time the memory becomes resilient. Studies have shown that increased cortisol levels due to stress correlates with a higher activation of the amygdala during a traumatic event, and that higher stress levels degrade the function of the hippocampus (Samuelson 2011; Stevens et. al. 2018; Haskell & Randall 2019). This provides a plausible explanation why victims, shortly after a trauma, will not be able to retrieve all the information which has been encoded, and why traumatic memories are often fragmented, incomplete, or nonlinear. However, after a few days, the hippocampus is often able to complete encoding, and a traumatic memory often becomes more fully accessible. Traumatic memories also often manifest as “flashbulb memories,”—memories that are especially vivid (Haskell & Randall 2019). Stress can actually enhance memory storage such that victims of traumatic events often have full and vivid memories about the beginning of a sexual assault. Increased adrenaline is correlated

with increased memory intensity and memory enhancement—memories of stressful or traumatic events are sometimes said to be “burnt” into our minds.

Another reason victims may remember the beginning of a sexual assault more accurately than other moments is that the brain encodes what one pays attention to, and one coping strategy for dealing with a sexually traumatic experience as it is occurring is distraction. Distracting oneself during the traumatic experience may explain why memories of the beginning of the experience are especially vivid, while memories of the middle or end are not. This may also help to explain why memories about sexual traumas tend to be fragmented. The upshot is that sexual and other types of trauma are likely to produce highly veridical memories of the beginnings of a traumatic experience, and the veridicality of such memories is consistent with the fact that victims may struggle to remember other parts of the assault in detail or coherently. This is also consistent with victims remembering the central facts about the full event (Haskell & Randall 2019: 21).¹¹

It appears, then, that the neurophysiological mechanisms underlying the encoding and retrieval of traumatic memory can explain inconsistent and spotty memories in a way that does not impugn the veridicality of traumatic memories.

4. Two Suggestions for Gauging Traumatic Memories The neurophysiological evidence we’ve so far considered suggests that victims of trauma are not in general worse at remembering traumatic events. Not only can victims of trauma later remember new trauma-related content in the same way as non-victims, some studies (Forest & Blanchette 2018; Zlomuzica et. al. 2018) even suggest that they can coherently and clearly remember their traumatic experiences. This suffices to undercut P2. There’s no reason to think it’s true and, in fact, some reason to think it’s false. So the neuropsychological evidence does not warrant skepticism about a victim’s capacities to remember traumatic events. It does, however, warrant care in the way we go about gathering information from victims about traumatic events.

First, interviewing victims immediately after a traumatic experience could undermine a victim’s capacity to receive justice in court. Due to the effects of increased amygdala

¹¹ One might argue that since amygdala activation/affective processing is triggered by perceived threats rather than genuine ones, if a subject engages in self-distraction to cope, then the especially vivid parts of the resulting memory may not be accurate. However, this worry turns primarily on an issue about stressful/traumatic experience in relation to perception rather than to memory, where the latter is what is at issue in the TUA. Moreover, there’s no reason to think that memories of a trauma are more likely to stem from illusory threats than in non-trauma cases in which there’s a stress response.

activity on the hippocampus or of the time required to consolidate, what a victim can recall immediately after a trauma is not the same as what she can recall after a few days. As a result, reports taken immediately after a traumatic event may fail to match the report given in court which, in turn, may arouse suspicion in a jury (Haskell & Randall 2019).¹² At the same time, reports taken much later are subject to the forgetting curve, severely reducing the details recalled. Ideally, reports should be taken after consolidation has occurred but before too much has been forgotten. Alternatively, and especially in the case of traumatic memories, it may be advantageous to take several reports at later intervals to see which details are retained as central. Changes in the report over time should not, by themselves, be seen as undermining the veridicality of the memory. Like gappiness, changes in detail, loss of detail, and retention only of central details over time are germane to non-traumatic memories.

Second, some questions may be better probes than others when it comes to assessing what happened on the basis of a traumatic memory. For example, during a sexual assault trial victims are often asked what they were wearing or how they behaved in the hours before the assault. This information would not necessarily be stored as trauma related content but instead as everyday or even happy content. According to Forest and Blanchette (2018), traumatized victims may be worse in remembering positive and neutral content; but inability to remember such details does not impugn the veridicality of the more central details of the event nor of the details that are associated with the negative emotional content of the event.

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¹² There are also other reasons taking reports immediately after a traumatic event is not a good practice. For instance, a victim may not yet be emotionally ready or willing to talk about the experience (Otgaar et. al. 2021: 3)

¹³ Importantly, however, it does not follow from these studies that victims of trauma are always worse at remembering neutral or positive content. In particular, the content used in these studies were completely independent from the assault—the results might be different if we ask for the non-traumatic content of events occurring before the trauma. So these findings do not warrant skepticism towards victims' reports of such details.

¹⁴ It's also worth noting that some of the questions victims are asked, e.g. about what they were wearing or how they behaved, may be biased or asked in search of reasons to blame the victim, e.g., for wearing a short dress or being nice to the offender before the event. And this in turn might have suggestive effects that could satisfy Loftus' conditions for implanting false memories. In other words, questions that ask victims to remember details they may not remember particularly well and which suggest to victims that they might be at fault for what happened might result in false or distorted memories. This would be an especially insidious case of epistemic injustice (Spear 2019, cf. Stark 2019).

5. Conclusion The idea that traumatic memories are unreliable may strike many as intuitive as it fits with a cultural tendency to, at least in some contexts, distrust emotional content. But Premise 2 of the TUA is an empirical claim about the reliability of traumatic memories. It therefore demands empirical support. Current memory science suggests that this demand cannot be met. While future studies could suggest otherwise, for now there seems to be no good reason to distrust traumatic memories.

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