

**Are memories of sexual trauma fragmented? A post publication discussion among Richard J. McNally, Dorthe Berntsen, Chris R. Brewin and David C. Rubin**

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In McNally (in press), I briefly summarized the debate between Rubin et al. (2016a; 2016b) and Brewin (2016) regarding fragmentation of memories of trauma. Citing Rubin et al.'s rejoinder, I wrote that they "faulted Brewin's (2014) review of nine studies, adduced by Brewin (2016) to support his claim of fragmented memories in trauma survivors with PTSD. They noted that although seven of the nine studies were supportive, Brewin (2014) failed to include five additional studies predating his review that otherwise satisfied his inclusion criteria but did not find memory fragmentation" (p. 3 in McNally in preprint).

In a personal communication (C. R. Brewin; March 22, 2021), Brewin said that he excluded four of these studies because they did not meet the inclusion criteria for his review, noting that he was unaware of the fifth one (Rubin, 2011). Quoting from his review (Brewin, 2014, p. 78), he wrote: "The inclusion criteria were as follows: Studies were required either to report data from clinical (PTSD [posttraumatic stress disorder], ASD [acute stress disorder] and nonclinical samples on indices of fragmentation or disorganization of a voluntarily recalled traumatic memory or to report data from a clinical sample on indices of fragmentation or disorganization of voluntarily recalled traumatic and nontraumatic memories. Studies using computerized methods designed for other purposes to assess disorganization (e.g., Flesch reading formulas designed to gauge narrative complexity and articulation) were excluded, as their validity in this context is highly questionable (Gray & Lombardo, 2001)."

Elaborating further, Brewin (personal communication; March 22, 2021) explained why he excluded these four studies. In personal communications (Dorthe Berntsen & David C. Rubin,

5/21/21, 6/16/21, 6/28/21), Rubin and Berntsen responded to Brewin's critiques. Brewin (7/19/21) replied again, and his responses are interpolated below. I summarize Brewin's rationales for exclusion, followed by Rubin and Berntsen's replies, in **boldface**.

First, Brewin said that he excluded the Rubin et al. (2008) study because it involved undergraduates scoring high versus low on a measure of PTSD symptoms, and a substantial number of the high-symptom group fell short of the standard cutoff score for PTSD.

**In reply, Rubin & Berntsen said that several studies tabulated in Brewin's (2014) review article also involved nonclinical samples; that is, PTSD status was not confirmed by a licensed clinician who conducted a structured interview. For example, Berntsen, Willert, and Rubin (2003) had Danish undergraduates complete a standardized self-report questionnaire assessing DSM-IV criteria for PTSD, and Halligan et al. (2003, Study 1) recruited individuals who had reported a sexual assault to the police and asked them to complete this questionnaire with the aid of the interviewer who clarified any questions the person might have. To be classified as having current PTSD, participants had to meet diagnostic criteria, plus thresholds for symptom severity, duration, and interference in everyday life. In another example, Rubin and Berntsen mentioned that although Harvey and Bryant (1999) used a structured interview for diagnosing ASD, it was unclear whether it was administered by a licensed clinician.**

In response, Brewin (7/19/21) noted that he never stated PTSD status had to be confirmed by a licensed clinician who conducted a structured interview. Questionnaire assessment of PTSD was acceptable provided that a recognized diagnostic threshold was exceeded. This was not the case for Rubin et al. (2008).

**Rubin and Berntsen replied (August 9, 2021). In science, not all criteria can be made explicit and so some have to be assumed. However, it is difficult to have a scientific discussion when one party argues from criteria that were not explicitly stated and could not be easily inferred. The term**

clinical sample is usually interpreted as a sample in which a licensed clinician has an interview with the participant using something like the CAPS, or at a minimum, signs off on such an interview done by a highly trained assistant. Given that several studies in Brewin's (2014) Table 1 did not satisfy this criterion, our commentary (Rubin et al., 2016) had to assume that this term was not used strictly and that samples with high versus low levels of PTSD symptoms could and should be included. This interpretation was (and is) also supported by the fact that Brewin (2014) included Kenardy et al. (2017) involving children showing only subsyndromal PTSD symptoms (p. 459).

Second, Brewin said that he excluded the study by Rubin, Dennis, and Beckham (2011) because not all participants in the PTSD group had memories of *traumatic* [emphasis added] events, and therefore these participants failed to provide data pertaining to a voluntarily recalled traumatic memory.

**In reply, Rubin and Berntsen said that all participants in the PTSD group met diagnostic criteria** for PTSD, including exposure to a Criterion A traumatic event.

In response, Brewin (7/19/21) noted that although the PTSD group met diagnostic criteria, the memories sampled did not meet his stated inclusion criteria because they were not always traumatic: "Throughout we use the term stressful memories because not all of our memories are of traumatic events as defined by the current DSM" (Rubin et al., 2011, p. 847).

**Rubin and Berntsen replied (August 9, 2021):** Again, we find an unstated criterion. Brewin's (2014, p. 78) criterion stated only that memories had to be traumatic not that they had to be traumas in the full DSM sense. Using the word traumatic in the context of nonclinical control groups seems logically incompatible with the unstated criterion of a full DSM trauma, since many nonclinical controls do not present with a DSM trauma. Using this argument for a clinical group requires that the authors of the paper state clearly that the

trauma they are analyzing is a DSM trauma. Given that Brewin (2014) did not explicitly state this criterion and given the less strict definition of a clinical sample from the first point, we had to assume that the word traumatic did not imply a full DSM trauma was needed.

Moreover, in Rubin et al. (2011), each participant reported on three stressful memories. In the PTSD sample of 75 participants, an average of 1.99 of each participant's three memories met the A1 criteria, 2.53 met the A2 criteria and 1.87 met both. Rubin et al., (2011 p. 847) refer to these numbers noting that "most of the stressful memories do meet the A1, A2, and overall A criteria". This statement directly follows Brewin's justification for not including the Rubin et al. (2011) because not all of its memories were "traumatic." Brewin chose not to extend his quote to include this.

Third, Brewin said that he excluded the Hagedaars, van Minnen, and Hoogduin (2009a) study involving comparisons between PTSD patients and patients with panic disorder (and agoraphobia), because it lacked a nonclinical comparison group.

In reply, Rubin and Berntsen noted that they were referring to the Hagedaars, van Minnen, Hoogduin, and Verbraak (2009b) article, not to the van Minnen et al. (2009a) study that one of the authors inadvertently inserted in the reference list instead of the van Minnen et al. (2009b) one. Rubin and Berntsen said that they did not consider it supportive of Brewin's theory because there was no difference between patients with PTSD and those with panic disorder - a syndrome not known for having incoherent memories of panic attacks. Rubin and Berntsen also noted that van Minnen et al. (2009b) concluded that disorganized memories are not unique to trauma and that strong emotions occurring when people recall memories of panic or trauma may impede adequate retrieval of both.

In response, Brewin (7/19/21) noted that Hagedaars, van Minnen, Hoogduin, and Verbraak (2009) predicted that panic memories would be similar to PTSD memories because they are

also likely to be encoded under conditions of extremely high arousal. Both they, and Brewin, found this consistent with dual representation theory. Moreover, this new study did include a healthy control group and was therefore eligible to have been included in Brewin's (2014) review. Rubin and Berntsen failed to report that, in accord with dual representation theory, there was significantly more disorganization in the memories of the PTSD group than in the controls.

*Rubin and Berntsen replied (August 9, 2021): Hagedaars et al. (2009) state (emphasis added): "The finding that both PDA panic memories and PTSD trauma memories were characterized by disorganization suggests that disorganization is not uniquely associated with PTSD memories (an der Kolk & Fisler, 1995). This may be because a panic attack has a similar impact on memory as a trauma. It is also plausible that not the traumatic event but rather the strong emotions evoked by recalling the event are responsible for the disorganization, for example by disabling adequate memory retrieval. The healthy participants probably did not experience similar strong emotions during retrieval, and indeed, their memories were not disorganized. Hence, memory disorganization or fragmentation may just be an epiphenomenon reflecting anxiety or fear experienced during recounting (Zoellner & Bittenger, 2004, p. 155)" (Hagedaars et al. 2009, p. 419).*

We do not understand how Brewin manages to read the possibility of memory disorganization or fragmentation being just an epiphenomenon as supporting his theory. Nonetheless, Hagedaars et al. (2009) belonged in his review and was missing.

Fourth, Brewin said that he excluded the Jelinek et al. (2010) study because it involved a reanalysis of data from a previous study included in Brewin (2014) and because it concerned a measure (i.e., a comparison between the worse moment in a trauma narrative versus the remainder of the narrative) incompatible with inclusion criteria and therefore

discrepant from the measures in the studies included in the Brewin (2014) review.

**In reply, Rubin and Berntsen said this study did qualify for Brewin's (2014) inclusion criteria because it included "indices of fragmentation or disorganization of a voluntarily recalled traumatic memory," noting also that these findings did not appear in the original article by Jelinek et al. (2009).**

Brewin (7/19/21) noted in response the caveats made by Jelinek et al. (2010) about their ability to test fragmentation during the very brief time identified as 'worst moments'. The proper test of the theory was conducted by Jelinek et al. (2009), and their results were supportive of dual representation theory.

**Rubin and Berntsen replied (August 9, 2021):** A list of limitations is common in most papers to allow the authors to specify boundaries of their findings or to react to potential or actual reviewer critiques. These 'caveats' do not negate the results reported. Unless we accept another unstated criterion that papers with caveats can selectively be excluded in scientific disagreements, Jelinek et al. (2010) should have been included.

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