Peritraumatic Dissociation as a Predictor of Post-traumatic Stress Disorder: A Critical Review

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In psychiatric literature, dissociative reactions at the time of a traumatic event (i.e., peritraumatic dissociation) are considered to be risk factors for the development of post-traumatic stress disorder (PTSD). In this article, we critically review research concerned with the link between peritraumatic dissociation and PTSD. Our main point is that studies in this area heavily rely on retrospective reports of dissociative reactions during the trauma. We argue that this methodology has important limitations since people in general and PTSD patients in particular find it difficult to give accurate descriptions of past emotional states. Restrictive factors that play a role in this context have to do with forgetting, attribution, and malingering.

DISSOCIATION REFERS to phenomena like depersonalization, derealization, amnesia, and identity disturbances.[1] A considerable percentage of psychiatric patients as well as "healthy" people report dissociative experiences. In line with this, Bernstein and Putnam[2] conceptualized dissociation as a continuum, with "normal" dissociation at one end and pathological dissociation at the other end of the continuum. A recurrent theme in clinical literature is that dissociative symptomatology is a reaction to traumatic events.[3,4] Some trauma victims report acute dissociative experiences at the time of the traumatic event. This form of dissociation is termed "peritraumatic dissociation." Many authors[3,4] have argued that the immediate effects of peritraumatic dissociation are adaptive (e.g., it would reduce pain and humiliation), but that its long-term consequences would be pathogenic. Thus, these authors assume that peritraumatic dissociation increases the risk of psychopathology in general and of post-traumatic stress disorder (PTSD)[1] in particular. For example, Fullerton et al.[5] say that "dissociation at the time of a traumatic event increases the risk of acute and chronic stress disorder" (p. 267). In a similar vein, Marmar et al.[6] summarize the literature on peritraumatic dissociation and PTSD as follows: "dissociation at the time of a trauma is one of the most important risk factors for the subsequent development of chronic PTSD" (p. 233). A take-home message of such statements is that there exists a robust, causal link between peritraumatic dissociation and PTSD. Some authors have also speculated about the clinical significance of this link. For example, in their early studies on this issue, Foa and Riggs[7] assumed that peritraumatic dissociation is intimately related to emotional numbing and avoidance. They suggested that peritraumatic dissociation would hinder correct information processing that is required for effective behavioural treatment of PTSD.

In this article, we critically evaluate studies that are often cited as providing the empirical basis for the idea that peritraumatic dissociation is an important antecedent of persistent PTSD. The large majority of these studies relied on retrospective reports and this fact is the starting point of our critical analysis. A PsycInfo search from 1990 to 2002 using "peritraumatic dissociation" and "post traumatic stress disorder" as key words resulted in 23 empirical studies. Using Medline's database, the same search yielded 15 articles that to some extent overlap with studies selected by the PsycInfo search. We have not the ambition of evaluating all these studies in detail. Instead, we focus on the methodology of these studies and consider variables that might modulate the relationship between peritraumatic dissociation and PTSD. In doing so, we draw on often cited studies about memory for aversive events.[8,9]

RELATION BETWEEN PERITRAUMATIC DISSOCIATION AND PTSD

Most studies on peritraumatic dissociation and PTSD are retrospective and longitudinal in nature. More specifically, victims of combat exposure, disasters, motor vehicle accidents, or crimes are interviewed about current psychological symptoms and about dissociative experiences at the time the

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traumatic event took place, which always is days,[10-12] weeks,[5,13,14] or months[15] earlier. During follow-up session, researchers then evaluate whether or not victims develop PTSD symptoms. A standardized instrument for assessing peritraumatic dissociation is the Peritraumatic Dissociation Experiences Questionnaire (PDEQ).[16] The PDEQ asks respondents to what extent they experienced depersonalisation, derealization, and amnesia at the time of the traumatic event. This questionnaire has two versions: a self-report version and a rater version. In both versions, peritraumatic symptoms like "I felt as if I was floating above the scene" and "I found myself acting on a automatic pilot" are rated on a 5-point scale. Thus, both versions rely on victims' retrospective self-reports.

Many studies noted that retrospectively reported peritraumatic dissociation statistically predicts PTSD symptoms.[15,17] A case in point is a longitudinal study by Shalev et al.[17] In that study, 51 patients with physical injury due to a traumatic event were assessed 1 week and 6 months after the trauma. The 1-week session included the PDEQ. Six months later, a psychiatric social worker evaluated whether patients met PTSD criteria. Those who did (n = 13) had had significantly higher PDEQ scores at 1-week follow-up than those who did not, means being 15.2 (SD 6.9) and 10.2 (SD 8.8), respectively. In the Shalev et al. study, the retrospective period involved only 1 week, but in many other studies on peritraumatic dissociation and PTSD, this period was considerably longer.[18-20] In these studies, trauma victims with and without PTSD thought about a traumatic event that occurred months or even years ago and then reported their peritraumatic reactions during the trauma. It is important to note that some longitudinal studies failed to find a connection between peritraumatic dissociation and PTSD. For example, Freedman et al.[10] had their trauma victims complete the PDEQ 1 week after the traumatic incident. After 4 months and 1 year, a clinician evaluated the presence of PTSD symptoms. Thus, at 1-year follow-up, there were three groups: victims with chronic PTSD, victims who had recovered from PTSD, and victims who had never been diagnosed with PTSD. The first and the second group did not differ with regard to their PDEQ-score, means being 24.7 (SD 6.9) and 25.1 (SD 7.6), respectively. Curiously enough, only victims who had recovered from PTSD reported significantly more peritraumatic experiences than victims who never developed PTSD, the latter group having a mean PDEQ score of 18.5 (SD 7.9). This pattern suggests that reports of peritraumatic experiences provided 1 week after a trauma are not powerful predictors of persistent PTSD symptoms. At most, such experiences are related to the development of PTSD symptoms at some point in time. Another study that failed to find a specific link between peritraumatic dissociation and PTSD examined victims of road traffic accidents. They were interviewed shortly after the accident about their peritraumatic experiences.[13] After several months, PTSD symptoms were assessed. However, unlike many other studies, this study also had victims complete a set of personality measures (e.g., neuroticism). Although peritraumatic experiences were correlated with subsequent PTSD symptoms, these experiences were not independent predictors of PTSD as were neuroticism and psychoticism. The implication of this finding is straightforward. So far, many studies on peritraumatic dissociation failed to include additional measures tapping personality traits and general psychopathology. This state of affairs makes it difficult to determine to what extent peritraumatic dissociation is a unique predictor of PTSD. For example, Feeny et al[21] followed a group of women who had been recent victims of sexual and nonsexual assault. The researchers obtained data on numbing, depression, dissociation, and PTSD symptoms. They found that emotional numbing and depression, but not dissociation served as significant predictors of chronic PTSD.

The studies cited above have in common that they relied on victims' retrospective reports of peritraumatic experiences. This raises the question as to how accurate such retrospective reports are. Literature on the psychology of self-reports[22] indicates that their accuracy should not be overestimated. Below, we consider several factors that might undermine the accuracy of retrospective reports.

FORGETTING

For one thing, people simply tend to forget prior experiences. This is true for both neutral and emotional experiences. For example, Schwarz et al.[23] interviewed eyewitnesses of a shooting incident about their emotional experiences. Interviews took

place 5 and 17 months after the incident. After 17 months, eyewitnesses did not report experiences described at 5 months follow-up and vice versa. These findings accord well with those of Christianson and Engelberg.[24] These authors interviewed participants twice about the circumstances under which they heard the news about the sunken ferry Estonia. The first interview took place shortly after the disaster while the second was administered 14 months later. After 14 months, participants reported the gist of the circumstances, but they omitted various details. Similarly, people have a tendency to forget within 2 weeks such emotional events as near car accidents.[25]

Retrospective studies on peritraumatic dissociation and PTSD often involve Vietnam veterans.[16,18,19] Since the Vietnam War took place during the 1960s and 1970s, veterans are asked to go back more than 30 years in time. Although 30 years is a long time interval, these studies are by no means exceptions in this area. A case in point is a study by O'Toole et al.[19] These authors interviewed Austalian Vietnam veterans about their peritraumatic experiences during the Vietnam War. In line with many other studies, self-reported peritraumatic dissociation was found to predict both current and lifetime PTSD symptoms. Wagenaar and Groeneweg[9] showed that trauma victims tend to forget important details after such a delay. In their study, survivors of a German prison camp were interviewed twice about their experiences in the camp. The first interview took place at the end of World War II, while the second was conducted after several decades. Although most survivors reported accurate information about the gist of the event, a number of them omitted specific, but important details.

These studies indicate that individuals' retrospective reports about negative events that they experienced in the past are far from accurate. Much the same is true when people report about past mental states or symptoms. A fine illustration is provided by Henry et al.[26] In their longitudinal study, participants were followed from birth till their 18th year. On several occasions, they were interviewed about mental complaints. Their retrospective accounts at age 18 did under-report past symptoms. The authors conclude that "[retrospective reports] may be less useful for testing hypotheses that demand precision in estimating event frequencies. . ." (p. 100). A study by Andrews et al.[27] found similar results. In that study, participants were interviewed about depressive symptoms they experienced 25 years ago. Half of the respondents who were hospitalized for major depression 25 years earlier retrospectively reported symptoms for that episode that did not fit the criteria for a depression. One could counter that these illustrations of retrospective reporting bias are not relevant to the research domain of peritraumatic dissociation because of the long time interval. Yet, the studies by Zoeller et al.[28] demonstrate that this line of reasoning is not very convincing. In these studies, assault victims were prospectively followed for 12 weeks. PTSD symptomathology was found to decrease over time as were the reports of preitraumatic dissociation, leading the authors to conclude that such reports are not stable over time. These findings are very similar to those of Marshall and Schell Rand.[29] In their study, data on peritraumatic dissociative experiences and on PTSD were collected within days of an assault, at 3-month follow-up, and at 12-month follow-up. These authors too conclude that "recall of peritraumatic dissociation is not stable over time" (p. 634). In sum, then, it is likely that many victims experience peritraumatic dissociation during an aversive event, but subsequently forget or underestimate these experiences.

ATTRIBUTION

People tend to forget or underestimate symptoms experienced long ago. However, there are exceptions to this rule. In some cases, people tend to exaggerate their past symptoms. A good example is provided by a study of Linton and Melin.[30] People suffering from back pain gave baseline pain ratings shortly before their scheduled treatment admission. After the treatment, participants were asked to rate how much pain they had experienced at baseline. Retrospective ratings were much higher than actual baseline ratings. Why do people sometimes give inflated estimations of past symptoms? According to Ross,[31] this phenomenon has to do with the reconstructive quality of memory. We do not have direct access to the parameters of past symptoms (e.g., intensity). In fact, we reconstruct them on basis of our implicit theories. For example, after a treatment, we assume that our pretreatment symptoms must have been worse. Thus, it may well be the case that patients who

undergo treatment for their PTSD symptoms, overestimate their reactions during and/or shortly after the traumatic event. A factor that might contribute to such biased estimates is the widely used heuristic that severe consequences (e.g., symptoms) must have intense causes (e.g., reaction during the traumatic event).[32] Marmar et al[16] agree that this heuristic might operate in studies on peritraumatic dissociation and PTSD. These authors note that "the relationship that we and others have observed between peritraumatic dissociation and subsequent stress symptoms may be, at least in part, due to a confounding of stress response and measurement—i.e., those who have chronic stress responses may remember more dissociation than those who do not have those responses" (p. 906).

The naive heuristic described above is part of what social psychologists refer to as attributional processes. A close look at the precise order in which key variables were measured in studies on peritraumatic dissociation suggests that attributional processes bear relevance to this research domain. In all but one study,[13] trauma victims were first asked about their actual complaints and symptoms and then were invited to retrospectively rate their peritraumatic experiences. Attribution theory would predict that people who experience many symptoms will attribute such symptoms to prominent causes. This might lead to the retrospective overendorsement of peritraumatic experiences.[14,15] Attribution theory would also predict that the link between peritraumatic dissociation and PTSD will become less impressive when assessment of PTSD symptoms is preceded by assessment of peritraumatic experiences. Indeed, this prediction is borne out by the facts: Holeva and Tarrier[13] first measured peritraumatic experiences and then assessed PTSD symptoms, but failed to obtain a relationship between these two variables. Field reports provide additional evidence for attribution playing a role in retrospective judgments of PTSD patients. Veterans of operation "Desert Storm" completed a questionnaire about traumatic events 1 month and 2 years after this military event.[33] After 2 years, 70% of the respondents reported more exposure to traumatic events than they had reported after 1 month. This retrospective inflation was especially evident for veterans with PTSD symptoms. Roemer et al.[8] obtained similar results. These authors interviewed peacekeeping force members in Somalia twice about traumatic events during their stay in Somalia. Traumatic reports increased over time, especially for veterans with PTSD symptoms. Similarly, Harvey and Bryant[34] interviewed victims of a motor vehicle accident about their symptoms 1 month and 2 years post-trauma. After 2 year, high levels of post-traumatic stress were associated with recall of symptoms that were not reported during the first assessment. These studies show that retrospective reports of people with PTSD symptoms might be inconsistent. Of course, that does not necessarily mean that their reports are inaccurate.[35] A definite answer about the accuracy of PTSD patients' retrospective reports can only be obtained when these reports can be verified against physical records (e.g., audio or video material). However, the problem with peritraumatic dissociation is that it refers to subjective experiences for which there is no golden standard.

MALINGERING AND OVER-REPORTING

Forgetting and attributional processes might function as spurious factors in the link between peritraumatic dissociation and PTSD. That is, victims who do not develop PTSD might have forgotten their dissociative reactions to the trauma, while those victims who do develop PTSD symptoms might overestimate their dissociative reactions. There is a third factor that we should consider in this context, namely, malingering. In psychiatric classifications,[1] malingering is defined as the intentional production of symptoms motivated by external incentives.[36] Some authors[37] assume that malingering is a rare phenomenon, but studies show that under some circumstances (e.g., involvement in compensation seeking procedures), malingering of psychiatric symptoms might be a nontrivial phenomenon. An illustrative study is that of Rosen[38] on the Aleutian Enterprise disaster. In 1990, this ship sunk having 31 people on board. Two of the 22 survivors continued working. Nineteen (95%) of the remaining 20 consulted a psychiatric or psychologist. These experts made a diagnosis of PTSD diagnosis in 86% of the cases. This percentage is extremely high compared to the usual prevalence of 3% to 58%.[1] Interviews with the survivors made it clear that in many cases (30%), lawyers had approached survivors immediately after the incident and had provided them with information about PTSD and about financial compensation. Rosen's study concurs with that of

Binder and Rohling[39] who conducted a study on mental symptoms after mild brain trauma. More specifically, these authors examined to what extent patients' involvement in financial compensation procedures might contribute to the frequency and intensity of reported symptoms. Patients involved in compensation-seeking reported considerably more symptoms as a result of trauma than control patients, irrespective of the severity of the trauma. A similar overendorsement of symptoms has been suggested for Vietnam veterans involved in compensation-seeking.[40] We emphasize this point because many studies on peritraumatic dissociation relied on samples of Vietnam veterans.[16,18,19] It cannot be ruled out, then, that these samples included patients who intentionally over-reported peritraumatic reactions and PTSD symptoms. Interestingly, there are good screening instruments for over-reporting of symptoms.[41,42] To the best of our knowledge, no study on peritraumatic dissociation made use of such an instrument. Apart from malingering (i.e., exaggerating symptoms to gain some form of financial compensation) these is the broader issue of symptom over-reporting. Thus, there might exist a small group of patients who produce pathological scores on a wide variety of measures, including indices of peritraumatic dissociation and PTSD. Again, we know of no study on peritraumatic dissociation that tried to control for such over-reporting tendencies by using, for example, the validity scales of the Minnesota Multiphasic Personality Inventory (MMPI).[43]

AN EMPIRICAL INTERMEZZO

Peritraumatic dissociation refers to subjective experiences and symptoms that are supposed to be specific for traumatic events. We are not aware of a study that tested this assumption. With this in mind, we conducted a study in which 89 undergraduates voluntarily participated. After they had given informed consent, they reported either the most aversive event they experienced last year (n = 44) or the most pleasant event they experienced last year (n = 45). Next, respondents rated to what extent they had displayed eight peritraumatic reactions during the pertinent event. The items were derived from Marmar et al.[16] and were rated on 100-mm Visual Analog Scales (anchors: 0 = nearly; 100 = extremely). Finally, subjects completed the Dutch version of the Creative Experience Questionnaire (CEQ),[44] which is a measure of fantasy proneness. Fantasy proneness refers to a tendency to become engaged in fantasizing and daydreaming. Moreover, persons high on fantasy proneness tend to give exaggerated interpretations of ambiguous perceptions or sensations.[45,46] It is worthy to note that there is a considerable overlap between fantasy proneness and dissociative experiences.[47] Our results show that both undergraduates who recalled the most aversive events and those who recalled the most pleasant event reported peritraumatic reactions during these events. The first group reported higher levels of peritraumatic dissociation than the second group, means being 35.95 (SD 21.75) and 26.90 (SD 20.32), respectively. However, the size of this difference was modest and reached only borderline significance [$t(87) = -2.03$, $P = .05$]. As well, across both groups, reports of peritraumatic dissociation were significantly correlated with fantasy proneness levels ($r = .33$, $P < .05$). Our study indicates that peritraumatic experiences are not unique to aversive events, but do also occur in relation to major events that are positive in nature. Germane to this issue is also a study on novice skydivers in which hyperarousal was found to be the primary determinant of peritraumatic reactions to the skydive.[48] The fact that we found fantasy proneness and reports of peritraumatic dissociation to covary is relevant because people high on fantasy proneness tend to distort their retrospective experiences.[49] Studies on peritraumatic dissociation and PTSD would gain in quality if they would correct for the reporting bias related to this personality trait. Because of the considerable overlap between dissociation and nonpathological traits such as fantasy proneness, some authors[50] have advocated the use of a so-called taxon measure of dissociation. This measure includes forms of dissociation that are pathological in nature (e.g., hearing voices inside one's head). At the present time, it is not clear how this taxon measure relates to preitraumatic dissociation. Obviously, this issue warrants systematic study.

CONCLUSION

In trauma literature, it is often taken for granted that peritraumatic dissociation is a risk factor for the development of PTSD. Thus, Morgan et al.[51] argue that "peritraumatic symptoms of dissociation represent a significant risk factor for the subsequent development of PTSD" (p. 1239). Even the

recent critical review by Eisen and Lynn[52] concluded that "peritraumatic dissociation is a significant risk factor for the development of posttraumatic symptoms" (p. 54). As said earlier, a number of studies did find a robust connection between peritraumatic dissociation and PTSD, but a few others did not. Those studies that demonstrated a link between peritraumatic dissociation and PTSD often interpreted this link in causal terms. We do not want to argue that there is no such thing as peritraumatic dissociation. Our point is that these studies relied on retrospective accounts of peritraumatic dissociation, making causal interpretations difficult if not impossible. Symptom-free victims might have forgotten their dissociative reactions, while victims with PTSD have might retrospectively overestimated their dissociative reactions. Both phenomena could spuriously increase the correlation between peritraumatic dissociation and PTSD. Malingering in compensation-seeking PTSD victims or over-reporting across a broad range of psychopathology measures might have a similar effects. Fantasy proneness is another factor that might spuriously amplify the link between peritraumatic dissociation and PTSD. Finally, it appears that dissociative reactions are not unique for aversive events. With these considerations in mind, we are able to specify how an ideal study on peritraumatic dissociation and PTSD might look like. An ideal study would interview trauma victims shortly after the traumatic event, so as to circumvent the problem of rapid forgetting. Also, questions about peritraumatic dissociation would precede questions about psychiatric complaints and symptoms, so as to avoid attributional phenomena. Moreover, screening tools for overreporting and malingering would be included and compensation-seeking victims would be excluded from participation. Finally, fantasy proneness would be taken into account. A study that would fulfil these requirements would allow for a more rigorous test of the relationship between peritraumatic dissociation and PTSD. Until such study has been done, claims like "dissociation at the time of a traumatic event increases the risk of acute and chronic stress disorder"[5] are premature.

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