

Peritraumatic Reactions and Posttraumatic Psychopathology

Peritratmatik Tepkiler ve Travma Sonrası Psikopatoloji

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ABSTRACT

Although not every trauma-exposed individual develops a mental health problem, a considerable proportion experience conditions such as posttraumatic stress disorder, depression, and anxiety disorders. This review aims to examine the relationship between peritraumatic reactions, defined as acute psychological and physiological responses that occur during or immediately after a traumatic event, and posttraumatic stress symptoms as well as related mental health problems. Within this scope, core peritraumatic responses including peritraumatic distress, peritraumatic dissociation, tonic immobility, mental defeat, and peritraumatic somatoform dissociation are discussed. Findings indicate that these reactions are critical determinants of long-term psychological outcomes and can influence the processing of traumatic experiences through their effects on memory encoding, threat appraisal, and emotion regulation mechanisms. In particular, high levels of peritraumatic distress and dissociation may contribute to the persistence of traumatic memories in a fragmented, decontextualized, and intrusive form. Tonic immobility and mental defeat, on the other hand, may intensify symptom severity by reinforcing secondary cognitive and emotional processes such as perceived loss of control, helplessness, shame, and self-blame. At the neurobiological level, alterations in networks involved in emotion regulation and contextual memory, particularly those associated with the amygdala, hippocampus, and prefrontal cortex, are emphasized as potential mechanisms increasing vulnerability to posttraumatic psychopathology. Early assessment of peritraumatic reactions and the development of response-sensitive intervention strategies are therefore crucial for the prevention of trauma-related psychological disorders.

Keywords: Peritraumatic reactions, post traumatic stress disorder, trauma

ÖZ

Travmaya maruz kalan her birey bir ruh sağlığı sorunu geliştirmese de, önemli bir kısmı travma sonrası stres bozukluğu, depresyon ve anksiyete bozuklukları gibi sorunlar yaşamaktadır. Bu derleme çalışması, travmatik olay sırasında ya da hemen sonrasında ortaya çıkan ve akut psikolojik ile fizyolojik tepkiler olarak tanımlanan peritratmatik tepkilerin, travma sonrası stres belirtileri ve ilişkili ruh sağlığı sorunları ile olan ilişkisini incelemeyi amaçlamaktadır. Bu gözden geçirme kapsamında peritratmatik sıkıntı, peritratmatik disosiyasyon, tonik hareketsizlik, zihinsel yenilgi ve peritratmatik somatoform disosiyasyon gibi temel peritratmatik tepkiler ele alınmıştır. Bulgular, bu tepkilerin uzun vadeli psikolojik sonuçlar açısından kritik belirleyiciler olduğunu; travmatik yaşantının işlenmesini bellek kodlama süreçleri, tehdit değerlendirmeleri ve duygusal düzenleme mekanizmaları üzerinden etkileyebildiğini göstermektedir. Özellikle yüksek düzeyde peritratmatik sıkıntı ve disosiyasyonun, travmatik anıların daha parçalı, bağlamdan kopuk ve intruzif biçimde sürmesine zemin hazırladığı; tonik hareketsizlik ve zihinsel yenilginin ise kontrol kaybı, çaresizlik, utanç ve kendini suçlama gibi ikincil bilişsel-duygusal süreçleri güçlendirerek belirtilerin şiddetini artırabildiği değerlendirilmektedir. Nörobiyolojik düzeyde, amigdala, hipokampus ve prefrontal korteks başta olmak üzere duygu düzenleme ve bağlamsal bellekle ilişkili ağlarda ortaya çıkabilen değişimlerin, travma sonrası psikopatoloji riskini artıran mekanizmalardan biri olabileceği vurgulanmaktadır. Peritratmatik tepkilerin erken dönemde değerlendirilmesi ve tepki türüne duyarlı müdahalelerin planlanması, travma sonrası psikolojik bozuklukların önlenmesine yönelik stratejilerin geliştirilmesi açısından önem taşımaktadır.

Anahtar sözcükler: Peritratmatik tepkiler, travma sonrası stres bozukluğu, travma

Introduction

According to the American Psychiatric Association (APA 2013), a traumatic event refers to exposure to actual or threatened death, serious injury, or sexual violence, whether experienced directly, witnessed, or learned to have occurred to a close other. The World Health Organization (WHO 2019) defines traumatic events as experiences that threaten an individual's life, safety, or physical integrity and that may overwhelm the person's coping capacity. Feriante and Sharma (2023) conceptualized psychological trauma as a stressor experienced either directly or indirectly that produces marked and intense subjective distress. Similarly, Wang et al. (2023) described trauma as a stressor that exceeds an individual's capacity for emotional and cognitive integration, resulting in a subjective psychological rupture.

In summary, traumatic events are life-threatening or extremely stressful experiences that may lead to enduring psychological consequences. Although definitions vary across disciplines, a shared emphasis is that trauma can exert profound effects on psychological well-being. Traumatic experiences have been shown to produce significant and persistent alterations in both psychological and physiological systems (Kearney and Lanius 2022).

Exposure to traumatic events is highly prevalent worldwide. Data from the World Mental Health Surveys conducted by the World Health Organization across 26 countries indicate that approximately 70% of individuals report experiencing at least one traumatic event during their lifetime (Kessler et al. 2017). The most frequently reported events include the unexpected death of a loved one, motor vehicle accidents, and robbery or mugging (Benjet et al. 2016, Walters et al. 2025).

Although research examining the prevalence of trauma exposure in low- and middle-income countries remains limited, injury- and accident-related deaths are reported to be more common in these settings (Herbert et al. 2011). Indeed, road traffic injuries rank as the tenth leading cause of years of life lost in high-income countries, whereas they are reported as the eighth leading cause in low- and middle-income countries (GBD 2015). However, empirical findings directly comparing trauma exposure across countries with different economic levels remain scarce (Benjet et al. 2016).

The development of psychopathology following a traumatic event does not occur in all exposed individuals. Research indicates that approximately 9% to 30% of trauma-exposed individuals develop a psychiatric disorder after the event (Kilpatrick et al. 2013, Kessler et al. 2017, Alpay 2023). However, trauma exposure is considered a necessary but not sufficient condition for the emergence of psychopathology, as individual and environmental risk factors play a critical role in determining outcomes (Nemeroff 2016, Al Jowf et al. 2022).

Responses to trauma and their subsequent consequences are shaped by the interaction of factors operating in the pre-traumatic, peri-traumatic, and post-traumatic phases (Tang et al. 2017, Hyland et al. 2021, Memarzia et al. 2021). Pre-traumatic vulnerabilities may intensify peri-traumatic reactions, whereas peri-traumatic responses can directly influence the likelihood and severity of post-traumatic psychopathology (Massazza et al. 2021). Post-traumatic factors, in turn, play a significant role in long-term outcomes, functioning as both protective and risk elements (Galatzer-Levy et al. 2018, Georgescu and Nedelcea 2024).

The pre-traumatic phase encompasses factors that shape vulnerability and resilience prior to trauma exposure (Bomyea et al. 2012, Gradus et al. 2022). Key determinants during this period include previous traumatic experiences, adverse childhood events, personality traits, sources of social support, and genetic predispositions (Wild et al. 2016, Nievergelt et al. 2024). Findings from the meta-analysis conducted by Georgescu and Nedelcea (2024) indicate that pre-traumatic cognitive factors, personality characteristics, existing psychopathology, psychophysiological features, and environmental conditions constitute significant risk factors for trauma-related psychopathology.

The post-traumatic phase, in contrast, involves factors that influence recovery or the development of pathological outcomes following trauma. Social support and post-event life stressors are among the most prominent determinants (DiGangi et al. 2013). Adaptive coping strategies and processes of meaning-

making have been shown to facilitate recovery (Sayed et al. 2015), whereas access to psychological interventions and treatment plays a critical role in shaping symptom severity and chronicity (Acharya Pandey et al. 2023). Collectively, these factors represent key determinants of post-traumatic adjustment trajectories.

Peritraumatic stress reactions are defined as acute psychological and physiological responses that emerge during or immediately after a traumatic event and may reflect intense experiences of fear, helplessness, and loss of control at the time of the incident (Gorman et al. 2016). These reactions encompass psychological symptoms such as overwhelming fear, perceived threat of death, panic, and helplessness, as well as physiological manifestations including tachycardia, sweating, trembling, shortness of breath, nausea, and dizziness (Bryant and Harvey 2000, Bovin and Marx 2011). In addition, dissociative symptoms such as derealization, distortions in time perception, bodily numbness, emotional detachment, and reduced awareness are considered central components of peritraumatic responding (Lensvelt-Mulders et al. 2008, van der Hart et al. 2008, Bryant et al. 2011). The literature consistently emphasizes that greater severity of peritraumatic reactions is associated with a significantly increased risk of developing post-traumatic psychopathology (Bovin and Marx 2011, Thomas et al. 2012, Alpay and Aydın 2024).

Recent research indicates that peritraumatic reactions are associated not only with post-traumatic stress disorder PTSD but also with other forms of psychopathology, including depression and anxiety disorders (Elklit and Christiansen 2009, Michopoulos et al. 2019, Megalakaki et al. 2021, Memarzia et al. 2021). In a study conducted by Massazza et al. (2021), individuals who reported more intense peritraumatic stress during the traumatic event exhibited more severe and persistent stress symptoms over the follow-up period. These findings suggest that peritraumatic stress responses may play a significant role in the chronicity of psychological disorders. Similarly, Gorman et al. (2016) demonstrated that acute stress reactions contribute to greater severity and broader symptom profiles in subsequent psychopathology.

The strong impact of peritraumatic reactions is thought to stem from their intensity, which may be sufficient to trigger enduring alterations in cognitive, emotional, and neurobiological systems (Shalev et al. 2017). From a neurobiological perspective, heightened emotional arousal during the traumatic event may influence memory encoding and consolidation processes, leading to trauma memories that are more persistent, involuntary, and distressing in nature (Pitman et al. 2012).

Intrusive memories refer to unwanted and uncontrollable recollections or images of the traumatic event that enter awareness without intention and are often accompanied by intense emotional and physiological responses. In this context, excessive stress responses during trauma are proposed to alter the functioning of brain regions involved in memory and emotion regulation, including the amygdala, hippocampus, and prefrontal cortex. Such alterations may increase vulnerability to post-traumatic psychopathology (Liberzon and Abelson 2016, Ben-Zion et al. 2024, Hinojosa et al. 2024).

The aim of this review is to examine the impact of peritraumatic reactions emerging during or immediately after a traumatic event on the development of psychopathology, particularly post-traumatic stress disorder PTSD as well as depression and anxiety disorders. In addition, the review seeks to elucidate the psychological, cognitive, and neurobiological mechanisms through which peritraumatic responses influence post-traumatic psychopathology. Within this framework, the study aims to clarify the role of peritraumatic processes in shaping trajectories of recovery and chronicity and to evaluate their associations with risk and protective factors from a comprehensive perspective. In this respect, the review conceptualizes peritraumatic reactions not merely as acute stress responses but as early determinants that shape post-traumatic adjustment. It further aims to provide a theoretical foundation for the development of early intervention approaches and preventive mental health strategies for trauma-exposed individuals.

Peritraumatic Distress

Peritraumatic distress refers to the intense emotional and physiological stress responses experienced

during or immediately after a traumatic event. It is typically characterized by powerful emotional reactions such as fear, helplessness, or horror and represents a significant determinant of the psychological impact of trauma (Bunnell et al. 2018). In the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders DSM-IV (APA 1994), Criterion A2 of post-traumatic stress disorder PTSD formally addressed the relationship between such emotional and physiological reactions and the development of PTSD, recommending their consideration in clinical assessment. However, subsequent research demonstrated that peritraumatic reactions extend beyond the DSM-IV A2 definition of “fear, helplessness, or horror” and encompass a broader range of physiological, cognitive, and behavioral responses (Marmar et al. 1997, Brunet et al. 2001). In light of these findings, Criterion A2 was removed from the diagnostic system with the publication of DSM-5 (APA 2013).

From a physiological perspective, symptoms such as tachycardia, sweating, trembling, and increased respiratory rate reflect autonomic nervous system activation and heightened arousal during acute stress (Bunnell et al. 2018, Vance et al. 2018). Cognitive appraisals at the time of the event, particularly perceived loss of control and feelings of helplessness, may amplify distress severity and contribute to more enduring encoding of threat (Nishi and Matsuoka 2013). In terms of memory processes, peritraumatic distress may lead to emotionally intense, selective, and threat-focused encoding of the traumatic event. Vance et al. (2018) demonstrated that elevated levels of peritraumatic distress are associated with more intrusive and recurrent re-experiencing of trauma memories. This finding suggests that re-experiencing symptoms are linked not only to memory content but also to the intensity of the emotional tone at the time of encoding.

Peritraumatic distress is considered a strong risk factor for the development of PTSD (Thomas et al. 2012). Nevertheless, research also indicates associations with depression, anxiety disorders, and somatization symptoms (Jang et al. 2021, Megalakaki et al. 2021). These findings suggest that peritraumatic distress may represent a transdiagnostic risk mechanism contributing to a broader spectrum of psychopathology rather than a process specific to PTSD alone. Current evidence indicates that peritraumatic distress constitutes a multidimensional response involving physiological arousal, perceived loss of control, and threat-focused memory encoding. Accordingly, it should be considered an important early clinical indicator in the assessment of post-traumatic psychopathology risk.

Peritraumatic Dissociation

Peritraumatic dissociation refers to experiences of detachment, unreality, or emotional numbing that occur during or shortly after a traumatic event and involve disruptions in perception, consciousness, memory, and sense of self (Lensvelt-Mulders et al. 2008). It is thought to emerge when an individual's capacity to cope with a traumatic experience is exceeded, thereby serving as a protective mechanism that shields the individual from overwhelming emotional distress during the event (Marmar et al. 1997). Common manifestations include depersonalization, derealization, distortions in time perception, and bodily numbness (Ozer et al. 2003, Briere et al. 2005).

At the mechanistic level, peritraumatic dissociation is conceptualized as a temporary decoupling of cognitive and emotional processes under conditions of intense threat, accompanied by limited awareness and constrained processing of environmental input. Although this process may reduce immediate emotional burden, it may also interfere with the coherent and integrative encoding of traumatic information (Armour et al. 2014). From a memory perspective, dissociative responses during trauma have been proposed to result in fragmented storage of the traumatic event, lacking episodic context and emotional processing (Zoellner et al. 2002, van der Kolk 2006). This fragmentation may contribute to subsequent sensory-based and intrusive re-experiencing of trauma memories and delay the cognitive integration and meaning-making of the event (Ehlers and Clark 2000).

A substantial body of literature supports the association between peritraumatic dissociation and post-traumatic stress disorder PTSD (Boelen et al. 2012, Harb et al. 2023). A recent study further indicated that peritraumatic dissociation may serve as a stronger predictor of PTSD and depression compared to other peritraumatic reactions (Alpay and Aydın 2024). However, some research suggests that dissociation may function as a short-term protective mechanism in certain contexts, while becoming associated with

elevated clinical risk over the long term (Lynn 2005, Boyer et al. 2022). These findings indicate that peritraumatic dissociation should not be conceptualized merely as an escape response but rather as a central process that shapes the organization of traumatic memory and post-traumatic cognitive appraisals. In summary, peritraumatic dissociation demonstrates strong and consistent associations with PTSD symptoms and significant associations with symptoms of depression and anxiety.

From a somatic perspective, although there is evidence linking peritraumatic dissociation to somatization and increased bodily symptom burden, studies directly examining its relationship with diagnosable somatic disorders remain limited. Overall, the findings of this review suggest that peritraumatic dissociation is strongly associated with the development and severity of PTSD and significantly related to depressive symptoms. In contrast, empirical research directly investigating its associations with anxiety disorders and somatic disorders remains relatively scarce.

Tonic Immobility

Tonic immobility is defined as a reflexive and involuntary motor response that occurs during a traumatic event and is characterized by temporary restriction of bodily movement, reduced muscle tone, suppression of vocalization and voluntary motor responses, and diminished responsiveness to environmental stimuli (Scaer 2007, De Kleine et al. 2018). This reaction has been reported to occur more frequently in traumatic situations involving extreme life threat, such as sexual assault, severe violence, torture, or armed threat (Marx et al. 2008, Abrams et al. 2012, Hagenaars et al. 2014). From an evolutionary perspective, tonic immobility is conceptualized as an automatic defensive mechanism that enhances survival probability in predator-prey interactions (Maser and Gallup 1977, Fernández and Kruger 2016). In humans, scientific investigation of this response has gained attention relatively recently. Psychometric studies have demonstrated that paralysis-like reactions reported during rape are consistent with the phenomenon of tonic immobility (Fusé et al. 2007, Humphreys et al. 2010). Importantly, tonic immobility is not limited to sexual assault but has been observed across diverse traumatic contexts (Lima et al. 2010, Abrams et al. 2012).

At the neurophysiological level, tonic immobility is associated with interactions between the autonomic nervous system and limbic structures. During threat perception, increased activation of the amygdala, hypothalamus, and periaqueductal gray PAG may lead to parasympathetic dominance and subsequent motor inhibition (Kozłowska et al. 2015, Volchan et al. 2017). This process may result in involuntary freezing accompanied by partial narrowing of consciousness and reduced environmental awareness (Hagenaars et al. 2014). Tonic immobility is not merely a motor phenomenon; it also shapes how the traumatic event is cognitively and emotionally encoded. Intense experiences of powerlessness, loss of control, and helplessness during the event may lead to meaning-making processes centered on themes of threat and submission, thereby reinforcing more vivid, somatically encoded, and intrusive trauma memories (Hagenaars et al. 2014, Kozłowska et al. 2015).

Empirical findings indicate that individuals who experience tonic immobility during trauma tend to exhibit more severe PTSD and depressive symptoms (Möller et al. 2017). This association has been proposed to relate to subsequent self-blame, shame, and persistent perceptions of loss of control following the inability to move or respond during the event (Rubin and Bell 2024). In summary, tonic immobility appears to represent a complex peritraumatic response emerging at the intersection of neurophysiological defense mechanisms and cognitive appraisals. The existing literature suggests that tonic immobility is associated with the severity and course of PTSD symptoms and, in some studies, with depressive symptoms as well. However, research directly examining its associations with anxiety disorders and somatic disorders remains limited, making firm conclusions in these domains premature.

Mental Defeat

Mental defeat is defined as a cognitive-emotional process in which an individual, in response to a traumatic or highly stressful event, experiences feelings of helplessness, surrender, and psychological

defeat, accompanied by a loss of agency, control, and autonomy (Dunmore et al. 1999, Ehlers and Clark 2000). This experience is closely linked to the perception that one's sense of self-integrity is under threat and may lead individuals to position themselves not as active agents but as passive objects of the traumatic event (Kleim et al. 2007, Jobson et al. 2014). At the mechanistic level, mental defeat is associated with perceived overwhelming power imbalance during trauma and the breakdown of defensive or coping efforts, resulting in a persistent schema of loss of control and submission (Ehlers et al. 2000). It is particularly likely to emerge in intentional and interpersonal forms of trauma such as assault, torture, or sexual abuse, where threats are directly targeted at personal autonomy (Dunmore et al. 1999, Kleim et al. 2007).

Although tonic immobility and mental defeat both involve experiences of helplessness and loss of control during trauma, they operate through distinct mechanisms in their contribution to psychopathology. Tonic immobility is primarily characterized by an autonomic nervous system-mediated reflexive freezing response and is closely linked to somatic and sensory re-experiencing processes. In contrast, mental defeat operates through cognitive surrender, diminished self-efficacy and autonomy, and the consolidation of enduring threat schemas. While these responses may co-occur within the same traumatic context, they may be associated with different post-traumatic symptom profiles and intervention needs. From a cognitive and memory perspective, mental defeat may contribute to the encoding of trauma around themes of irreversible harm, enduring threat, and loss of self. This process may facilitate the strengthening of negative self-appraisals, hopelessness, and maladaptive generalizations about the trauma in the post-traumatic period (Ehlers and Clark 2000, Dunmore et al. 2001). Consequently, not only the content of the event but also fundamental assumptions about the self and the world may be restructured. Empirical studies indicate that mental defeat is strongly associated with long-term PTSD, depressive, and anxiety symptoms (Lima et al. 2010, Massazza et al. 2021, Coimbra et al. 2023). This relationship has been proposed to be mediated by enduring perceptions of vulnerability and uncontrollability following trauma.

Some research further suggests that the experience of mental defeat may vary depending on the traumatic context, the intentionality of the event, and culturally shaped meaning-making processes. Current evidence supports the conceptualization of mental defeat not merely as an emotional reaction but as a central cognitive process that shapes trauma meaning-making, self-perception, and long-term psychological adjustment. The studies reviewed here indicate that mental defeat demonstrates strong and consistent associations with PTSD symptoms and significant associations with depressive and anxiety symptoms. In contrast, research directly examining its relationship with somatic disorders remains limited.

Peritraumatic Somatoform Dissociation

Peritraumatic somatoform dissociation is defined as a dissociative process characterized by disruptions in bodily sensations and perceptions that occur during or immediately after a traumatic event, involving experiences of detachment, alienation, or alterations in sensory integration at the bodily level (Nijenhuis et al. 2001). Somatoform dissociation represents the bodily manifestations of dissociative responses and is characterized by experiences such as perceiving one's body as foreign, numb, or unreal, as well as diminished or altered bodily sensations (Ogden et al. 2006, Nijenhuis et al. 2010, Ogden and Fisher 2015).

Peritraumatic somatoform dissociation is interpreted as a defensive response to intense physical and emotional arousal during trauma. This process may result in partial disengagement from bodily experience and reduced conscious awareness of sensory input (Nijenhuis et al. 2010). However, when frequent or persistent, this response may contribute to the bodily encoding of traumatic experiences and the amplification of the somatic dimension of trauma memory. From a cognitive and memory perspective, peritraumatic somatoform dissociation may facilitate the storage of traumatic experiences not only at the level of cognitive representation but also through sensory and bodily associations. Consequently, trauma memories may later re-emerge as intrusive, somatically re-experienced, and difficult-to-regulate sensory phenomena (Nijenhuis et al. 2010, Longo et al. 2021).

Empirical studies indicate that peritraumatic somatoform dissociative symptoms are strongly associated with PTSD, dissociative disorders, depression, and anxiety symptoms (El-Hage et al. 2002, Hagenaars et al. 2007). These symptoms have been reported to be more prevalent in high-threat traumatic contexts such as physical and sexual violence, traffic accidents, and war (Bovin and Marx 2011). Moreover, peritraumatic somatoform dissociation has been linked not only to PTSD but also to somatic conditions including chronic pain, irritable bowel syndrome, and fibromyalgia (Nijenhuis et al. 2003, Semiz et al. 2014, Panisch et al. 2023). In other words, experiences of bodily numbness, detachment, and disconnection during trauma may lead to the encoding of trauma not only as cognitive representations but also as embodied memory traces, thereby contributing to the development of widespread pain and functional somatic complaints in later stages. Neurobiological findings suggest that these processes may be associated with enduring alterations in brain regions involved in interoception and body awareness, such as the insula and anterior cingulate cortex (Hopper et al. 2007, Kearney and Lanius 2022).

Further neurobiological evidence indicates that somatoform dissociation may be linked to functional changes in brain regions associated with bodily awareness and body-emotion integration, including the insula, anterior cingulate cortex, and somatosensory cortex (Hopper et al. 2007). Intense dissociative arousal during trauma has also been proposed to interact with autonomic nervous system and hypothalamic-pituitary-adrenal HPA axis activation, potentially contributing to enduring disruptions in body awareness and emotion regulation processes (Hagenaars et al. 2007, Lensvelt-Mulders et al. 2008, Pitman et al. 2012, Beutler et al. 2022,).

Overall, current evidence suggests that peritraumatic somatoform dissociation represents a multilayered process mediating the encoding of traumatic experience at cognitive, sensory, and bodily levels. Findings indicate that it is associated with PTSD and dissociative symptoms, as well as with depressive and anxiety symptoms. Although notable associations have been observed with chronic pain and functional somatic complaints, longitudinal research is needed to clarify its role in the development of diagnosable somatic disorders.

Peritraumatic Reactions and Psychopathology

Studies examining the relationship between peritraumatic reactions and trauma-related disorders indicate that psychological and physiological responses experienced during traumatic events may substantially influence long-term mental health outcomes. Across diverse trauma types, peritraumatic reactions such as peritraumatic dissociation, peritraumatic distress, tonic immobility, and mental defeat have been found to predict the development of psychopathologies, particularly PTSD, depression, and anxiety disorders. Below, selected studies investigating the effects of peritraumatic reactions among individuals exposed to specific traumatic events are reviewed.

Research conducted among earthquake survivors has demonstrated that the severity of peritraumatic reactions constitutes a critical determinant of psychological outcomes. Massazza et al. (2021) and Alpay and Aydın (2024) reported that tonic immobility, peritraumatic distress, peritraumatic dissociation, and mental defeat were associated with the development of PTSD and depression among earthquake-exposed adults. Notably, Alpay and Aydın (2024) emphasized that these four factors emerged as strong predictors of both PTSD and depressive symptoms.

The psychological effects of peritraumatic reactions have also been documented in individuals exposed to physical trauma. In a study involving participants with spinal cord injury, Otis et al. (2012) found that peritraumatic distress and peritraumatic dissociation were associated with subsequent PTSD development. Similarly, Favrole et al. (2013) reported that among stroke patients, the intensity of these two peritraumatic reactions influenced PTSD symptom severity.

Findings from studies involving motor vehicle accident survivors have been more mixed. Joormann et al. (2022) reported that peritraumatic distress and dissociation were not directly associated with PTSD or depression in individuals who had experienced motor vehicle accidents. In contrast, Rocha-Rego et al. (2009) identified tonic immobility as a critical predictor of PTSD development within this population.

Research conducted among war and torture survivors indicates a strong association between mental defeat and the development of PTSD. In a study of former political prisoners, Ehlers et al. (2000) identified mental defeat as a significant predictor of PTSD. Similarly, in a study of civil war survivors, Wilker et al. (2017) found that mental defeat was directly associated with PTSD symptoms.

Among individuals exposed to sexual abuse, the role of peritraumatic dissociation has received particular attention. Werner and Griffin (2012) reported that peritraumatic dissociation was a significant factor in the development of PTSD among women who had experienced sexual assault. Research focusing on survivors of childhood sexual abuse has further elaborated the long-term impact of peritraumatic reactions. Najjar et al. (2022), in a study examining retrospective accounts of individuals with histories of chronic childhood sexual abuse, emphasized that one of the most striking aspects of their experience was the inability to respond during the abuse. This finding suggests that tonic immobility may represent a common peritraumatic response in the context of childhood abuse. Hetzel and McCanne (2005), examining the relationship between childhood physical and sexual abuse and peritraumatic dissociation, demonstrated that exposure to such abuse increased the risk of developing PTSD. Moreover, they reported that individuals who experienced peritraumatic dissociation during childhood were at greater risk of revictimization in adulthood. Research investigating peritraumatic reactions during the COVID-19 pandemic further highlights the impact of large-scale stressors on mental health. A longitudinal study conducted in France by Megalakaki et al. (2021) reported that peritraumatic distress during the pandemic was associated with symptoms of PTSD, depression, and anxiety disorders both during and after the crisis period. These findings suggest that the uncertainty and social isolation associated with the pandemic may amplify the long-term psychological consequences of peritraumatic stress.

Studies involving healthcare professionals have also documented substantial psychological burden related to the COVID-19 outbreak. For example, Azoulay et al. (2020), in a cross-sectional study of intensive care unit healthcare workers, found high prevalence rates of anxiety, depression, and peritraumatic dissociation symptoms. The critical condition of patients and elevated mortality rates appeared to intensify traumatic stress responses among healthcare providers, thereby increasing the risk for longer-term psychological disorders. Collectively, research conducted in the context of the COVID-19 pandemic demonstrates that peritraumatic stress and dissociation exert significant effects on mental health not only in response to discrete traumatic events but also during large-scale global crises.

Peritraumatic Reactions and Post-Traumatic Psychopathology: Studies Conducted in Türkiye

Research conducted in Türkiye consistently demonstrates that peritraumatic reactions are associated with post-traumatic psychopathology across diverse trauma contexts. In an early study involving a military sample, soldiers exposed to combat experiences exhibited significantly higher levels of peritraumatic and related dissociative reactions, particularly among those diagnosed with PTSD. Notably, even trauma-exposed individuals who did not develop PTSD showed elevated levels of dissociation compared to healthy controls (Özdemir et al. 2015). In a community sample assessed during the COVID-19 pandemic, peritraumatic distress levels were found to be strongly associated with both state and trait anxiety (Ermağan Çağlar et al. 2021). In another study examining adults diagnosed with acute stress disorder following an earthquake, Uğur et al. (2021) reported that peritraumatic dissociation was strongly related to the cognitive dimension of anxiety sensitivity and constituted a significant risk indicator for PTSD.

Hyland et al. (2025), in a study of adult survivors of the February 6 2023 Türkiye-Syria earthquakes, demonstrated that peritraumatic stress and peritraumatic dissociation differentially predicted specific patterns of post-traumatic psychopathology and were selectively associated with distinct indicators of trauma exposure, including injury, displacement, and need for emergency assistance. Within the same disaster context, a study conducted among adolescents found that peritraumatic stress strongly predicted PTSD symptoms and that cognitive distortions partially mediated this relationship (Çolak and Sireli 2025).

The broader literature examining the relationship between peritraumatic reactions and post-traumatic psychopathology indicates an increasing integration of diverse methodological approaches. In particular, longitudinal designs assessing the long-term psychological consequences of peritraumatic reactions have clarified their predictive role over time (Massazza et al. 2021, Megalakaki et al. 2021). Additionally, studies incorporating neurobiological and psychophysiological markers provide a more comprehensive framework for understanding how peritraumatic processes shape trauma-related symptoms through memory mechanisms and emotion regulation pathways (Pitman et al. 2012, Liberzon and Abelson 2016). Taken together, these findings support a multilevel perspective on the role of peritraumatic reactions in the development and maintenance of post-traumatic psychopathology.

Discussion

The present review examined peritraumatic reactions and their impact on a range of mental health outcomes, particularly PTSD, as well as depression and anxiety disorders. The findings of the reviewed studies suggest that both the intensity and qualitative characteristics of reactions experienced during the peritraumatic period are closely associated with post-traumatic psychological adjustment. In particular, peritraumatic distress appears to function as a strong predictor of both the onset and severity of trauma-related disorders, including PTSD, depression, and anxiety disorders (Thomas et al. 2012, Vance et al. 2018).

In addition, evidence indicates that responses such as tonic immobility and mental defeat may exacerbate the severity of PTSD and depressive symptoms following traumatic events (Ehlers and Clark 2000, Möller et al. 2017). From a neurobiological perspective, intense stress responses during trauma have been proposed to alter activity in brain regions implicated in emotion regulation and memory, including the amygdala, hippocampus, and prefrontal cortex. Such alterations may interfere with the coherent processing of traumatic experiences, leading to fragmented memory storage (Pitman et al. 2012, Ben-Zion et al. 2024). This mechanism suggests that peritraumatic dissociation may represent a central process increasing vulnerability to post-traumatic psychopathology. Furthermore, adverse childhood experiences and pre-existing individual vulnerabilities are reported to interact with peritraumatic reactions, thereby constituting additional risk factors for PTSD and other forms of psychopathology (Nemeroff 2016). These findings underscore the importance of considering not only trauma-related responses at the time of the event but also pre-traumatic individual characteristics and prior experiences in understanding post-traumatic adjustment trajectories.

From a clinical perspective, peritraumatic reactions appear to contribute to different mental health outcomes through distinct mechanisms and therefore should be conceptualized not only as risk indicators but also as specific intervention targets. For example, peritraumatic distress is closely associated with intense fear, panic, and perceived loss of control, highlighting the importance of early interventions focused on emotion regulation, restoration of safety, and psychological first aid (WHO 2011, Kerbage et al. 2022).

In individuals experiencing peritraumatic dissociation and fragmented memory organization, trauma-focused cognitive behavioral therapy and eye movement desensitization and reprocessing EMDR have been shown to be effective in restoring the sensory-cognitive integration of traumatic memories (Shapiro 2017, Gonzalez-Vazquez et al. 2018, Fortin et al. 2021). Given that tonic immobility reinforces feelings of helplessness and surrender during the event, clinical work should address themes of guilt, shame, and self-blame while reframing this response as an involuntary, physiologically driven defensive mechanism.

Mental defeat, characterized by helplessness, enduring threat perception, and diminished self-efficacy, calls for interventions targeting cognitive reappraisal, strengthening of adaptive coping strategies, and restoration of perceived autonomy (Nagata et al. 2018). In addition, strengthening social support networks and implementing mindfulness-based interventions may enhance emotion regulation and reduce ruminative processes. Within pharmacological approaches, selective serotonin reuptake inhibitors are recommended as first-line treatment for PTSD, while adrenergic system-based interventions are considered among experimental approaches aimed at modifying traumatic memory processing (American Psychological Association 2017, Raut et al. 2022, Afshar et al. 2024). Taken together, these findings suggest

that early assessment of peritraumatic reactions and the implementation of response-sensitive interventions may play a critical role in reducing the risk of post-traumatic psychopathology.

From a somatoform perspective, peritraumatic somatoform dissociation is associated with suppression of bodily sensations, numbness, and experiences of detachment from the body. Accordingly, clinical approaches should address not only cognitive processes but also body-emotion integration. Interventions such as sensory awareness practices, breathing and posture regulation, body-based awareness exercises, and sensorimotor psychotherapy may contribute to autonomic nervous system regulation and reduce somatic re-experiencing and bodily detachment (Ogden and Fisher 2015, Kearney and Lanius 2022). These findings indicate that somatoform peritraumatic processes should be conceptualized not merely as correlates of trauma-related psychopathology but as distinct and clinically meaningful intervention targets.

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Authors Contributions: The author(s) have declared that they have made a significant scientific contribution to the study and have assisted in the preparation or revision of the manuscript

Peer-review: Externally peer-reviewed.

Ethical Approval: This review study does not require ethical clearance.

Conflict of Interest: No conflict of interest was declared.

Financial Disclosure: No financial support was declared for this study.