

The Memory and Identity Theory of *ICD-11* Complex Posttraumatic Stress Disorder

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The 11th version of the *International Classification of Diseases (ICD-11)* includes complex posttraumatic stress disorder (CPTSD) as a separate diagnostic entity alongside posttraumatic stress disorder (PTSD). *ICD-11* CPTSD is defined by six sets of symptoms, three that are shared with PTSD (reexperiencing in the here and now, avoidance, and sense of current threat) and three (affective dysregulation, negative self-concept, and disturbances in relationships) representing pervasive “disturbances in self-organization” (DSO). There is considerable evidence supporting the construct validity of *ICD-11* CPTSD, but no theoretical account of its development has thus far been presented. A theory is needed to explain several phenomena that are especially relevant to *ICD-11* CPTSD such as the role played by prolonged and repeated trauma exposure, the functional independence between PTSD and DSO symptoms, and diagnostic heterogeneity following trauma exposure. The memory and identity theory of *ICD-11* CPTSD states that single and multiple trauma exposure occur in a context of individual vulnerability which interact to give rise to intrusive, sensation-based traumatic memories and negative identities which, together, produce the PTSD and DSO symptoms that define *ICD-11* CPTSD. The model emphasizes that the two major and related causal processes of intrusive memories and negative identities exist on a continuum from prereflective experience to full self-awareness. Theoretically derived implications for the assessment and treatment of *ICD-11* CPTSD are discussed, as well as areas for future research and model testing.

Keywords: complex PTSD, CPTSD, trauma, memory, identity

The World Health Organization’s (WHO) 11th version of the *International Classification of Diseases (ICD-11; World Health Organization, 2022)* came into effect for all WHO member states on January 1, 2022. Among the many changes made to mental and behavioral disorders in *ICD-11* (Reed et al., 2019), one of the most notable was the introduction of complex posttraumatic stress disorder (CPTSD). A complex form of posttraumatic stress disorder (PTSD) was first proposed by Herman (1992) 3 decades ago, followed by efforts to formulate a diagnosis including “enduring personality change after catastrophic experience” in *ICD-10* (World Health Organization, 1992), and “disorders of extreme stress not otherwise specified” in the appendix of the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association [APA], 1994; see Ford, 1999; Resick et al., 2012)*. *ICD-11* CPTSD addresses many of the criticisms associated with earlier formulations of CPTSD by including PTSD symptoms as a core component of the symptom profile; specifying that diagnosis can follow any type of trauma; and

including functional impairment as a diagnostic requirement (Brewin, 2020). Moreover, *ICD-11* CPTSD has a clearly defined set symptoms and a straightforward diagnostic algorithm that can be effectively applied by clinicians in case-controlled (Keeley et al., 2016) and humanitarian (Vallières et al., 2018) settings.

A large body of empirical evidence supports the construct validity of *ICD-11* CPTSD (Brewin et al., 2017; Reed et al., 2022; Redican, Nolan, et al., 2021), but a theoretical account of its development has yet to be articulated. This article provides a description of *ICD-11* CPTSD and the accompanying empirical evidence for its construct validity; explains why existing theories of PTSD are insufficient to understand *ICD-11* CPTSD; outlines a new theory focused on disruptions in memory and identity; and discusses ways in which this theory can guide future research and clinical work.

What Is *ICD-11* CPTSD and What Evidence Supports It?

The *ICD-11* includes sibling diagnoses of PTSD and CPTSD that may develop following exposure to an event, or series of events, of an extremely threatening or horrific nature (World Health Organization, 2022). A flexible approach to defining the nature of a traumatic event—one that simply emphasizes perceptions of threat and horror—was a response to the lack of evidence that PTSD is more likely to follow traumatic events defined by *DSM-5* Criterion A than non-Criterion A stressors (e.g., Franklin et al., 2019; Larsen & Berenbaum, 2017). Consistent with these findings, a recent study reported that rates of *ICD-11* PTSD and CPTSD were almost identical whether or not a Criterion A event was required. Moreover, five experiences that would not be captured by Criterion A were related to risk of PTSD and CPTSD, independent of Criterion A

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events: bullying, stalking, emotional abuse, rejection, and neglect (Hyland, Karatzias, et al., 2021). Indeed, there is growing evidence that other non-Criterion A events can sometimes play a role in the development of posttraumatic stress reactions, including ongoing and repeated stressors related to one's identity (e.g., gender, race, or sexual orientation; Cardona et al., 2022; Solomon et al., 2021), and events that occur in the context of psychosis, drug-induced delusions, or autism spectrum disorder (Brewin et al., 2019).

ICD-11 PTSD is defined by three sets of symptoms including (a) reexperiencing in the here and now, (b) avoidance of traumatic reminders, and (c) a sense of current threat. *ICD-11* CPTSD is defined by six sets of symptoms including the three PTSD symptom clusters plus (a) affective dysregulation, (b) negative self-concept, and (c) disturbances in relationships. These latter symptoms are collectively labeled "disturbances in self-organization" (DSO). These symptoms were selected to represent *ICD-11* CPTSD because they were (a) the symptoms most reported by participants in the *DSM-IV* field trials of a complex form of PTSD (van der Kolk et al., 2005), (b) identified by expert clinicians as the most frequent and impairing symptoms encountered in clinical practice (Cloitre et al., 2011), and (c) had excellent psychometric properties (Shevlin, Hyland, Roberts, et al., 2018). A full description of *ICD-11* PTSD and CPTSD is presented in Table 1.

The *ICD-11* formulation of trauma-related psychopathology differs markedly from that which is presented in the *DSM-5* (APA, 2022). As described above, a clear demarcation is made in the *ICD-11* between problems that are directly tied to the traumatic event (i.e., the PTSD symptoms), and problems in self-organization that can emerge or intensify following the traumatic event (i.e., the DSO symptoms). Contrastingly, the *DSM-5* formulation of PTSD takes a "broad tent"

Table 1

Description of ICD-11 Posttraumatic Stress Disorder (PTSD) and Complex PTSD (CPTSD)

Trauma exposure: any extremely threatening or horrific event or series of events.	
PTSD	CPTSD
Reexperiencing in the here and now	Reexperiencing in the here and now
<ul style="list-style-type: none"> Flashbacks Nightmares 	<ul style="list-style-type: none"> Flashbacks Nightmares
Avoidance of traumatic reminders	Avoidance of traumatic reminders
<ul style="list-style-type: none"> Avoidance of internal reminders Avoidance of external reminders 	<ul style="list-style-type: none"> Avoidance of internal reminders Avoidance of external reminders
Sense of current threat	Sense of current threat
<ul style="list-style-type: none"> Hypervigilance Exaggerated startle response 	<ul style="list-style-type: none"> Hypervigilance Exaggerated startle response
	Affective dysregulation
	<ul style="list-style-type: none"> Increased emotional reactivity Decreased emotional reactivity
	Negative self-concept
	<ul style="list-style-type: none"> Belief that oneself is a failure Belief that oneself is worthless
	Disturbances in relationships
	<ul style="list-style-type: none"> Disconnection from others Difficulty feeling close to others

Symptoms must persist for several weeks.

Symptoms must cause significant impairment in functioning.

Note. *ICD-11* = *International Classification of Diseases*.

approach where problems closely tied to the traumatic event and problems in self-organization are bound together within the same diagnostic entity. This difference has an important theoretical implication. By distinguishing PTSD and DSO symptoms so clearly, the *ICD-11* model implies that there must be distinct causal processes that give rise to these problems. From the perspective of the *ICD-11*, it is possible to have severe PTSD symptoms without DSO symptoms. From the perspective of the *DSM-5*, however, the trauma-specific and self-organization problems relate to the same underlying latent construct and therefore must co-occur and must be derived from the same causal process or processes.

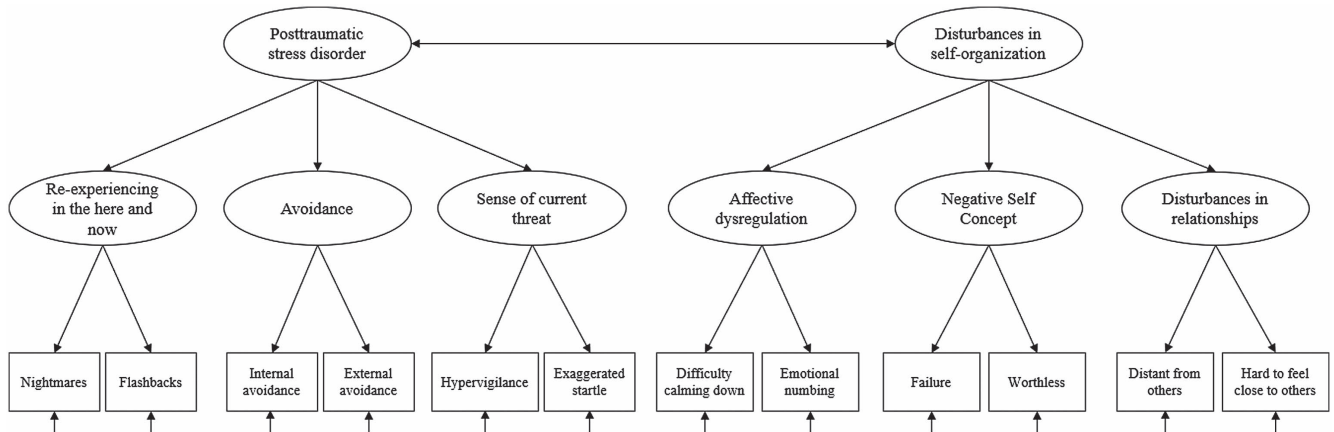
Comprehensive reviews of the evidence supporting the construct validity of *ICD-11* CPTSD are available elsewhere (e.g., Brewin et al., 2017; Redican, Nolan, et al., 2021), but we provide a summary of key results derived from factor-analytic, mixture modeling (i.e., latent class/profile analysis), and factor mixture modeling studies. Dozens of studies using confirmatory factor analysis have consistently demonstrated that the symptoms of PTSD and DSO covary in a manner consistent with the *ICD-11* description of CPTSD (e.g., Choi et al., 2021; Cloitre et al., 2018, 2021; Dhingra et al., 2021; Gilbar et al., 2018; Hyland et al., 2017; Kazlauskas et al., 2018, 2020; Møller et al., 2021; Vallières et al., 2018). These studies, utilizing culturally varied clinical and community-based samples, show that the dimensional latent structure of *ICD-11* CPTSD symptoms includes six correlated first-order factors (corresponding to the six symptom clusters of CPTSD) and two correlated second-order factors (corresponding to the dimensions of PTSD and DSO). An example of the latent structure of *ICD-11* CPTSD symptoms is presented in Figure 1.

Mixture modeling studies have regularly identified distinct, homogeneous groups of trauma survivors with symptom profiles reflective of *ICD-11* PTSD (i.e., high probabilities of endorsing PTSD symptoms and low probabilities of endorsing DSO symptoms) and *ICD-11* CPTSD (i.e., high probabilities of endorsing PTSD and DSO symptoms). These qualitatively different groups have been evidenced in children and adolescents (Haselgruber et al., 2020; Kazlauskas et al., 2020; Sachser et al., 2017), young adults (Perkonig et al., 2016), former child soldiers (Murphy et al., 2016), treatment-seeking persons (Cloitre et al., 2013; Karatzias et al., 2017, 2018), military veterans (Folke et al., 2019, 2021), and refugees and asylum seekers (Barbieri et al., 2019; Hyland et al., 2018). Moreover, these studies have found that those in the CPTSD class report higher levels of functional impairment than those in the PTSD class (Haselgruber et al., 2020; Karatzias et al., 2017). An example profile plot is presented in Figure 2.

A notable observation from this literature is that those in the *ICD-11* CPTSD class can be most readily distinguished from those in the *ICD-11* PTSD class on the basis of the negative self-concept and disturbances in relationship symptoms, whereas the affective dysregulation symptoms, and especially problems related to increased emotional reactivity, are as likely to be endorsed by those in the PTSD class as those in the CPTSD class (e.g., Hyland et al., 2018; Murphy et al., 2016; Sachser et al., 2017).

Four studies have used factor mixture modeling to probe the latent structure of *ICD-11* CPTSD symptoms. Factor mixture modeling combines dimensional (factor analysis) and categorical (mixture modeling) analysis, overcoming limitations that exist when only one approach is used. For example, in a factor-analytic model, items load onto a continuously distributed latent variable that represents severity and is based on the assumptions that there is no subpopulation

Figure 1
Latent Symptom Structure of ICD-11 Complex Posttraumatic Stress Disorder

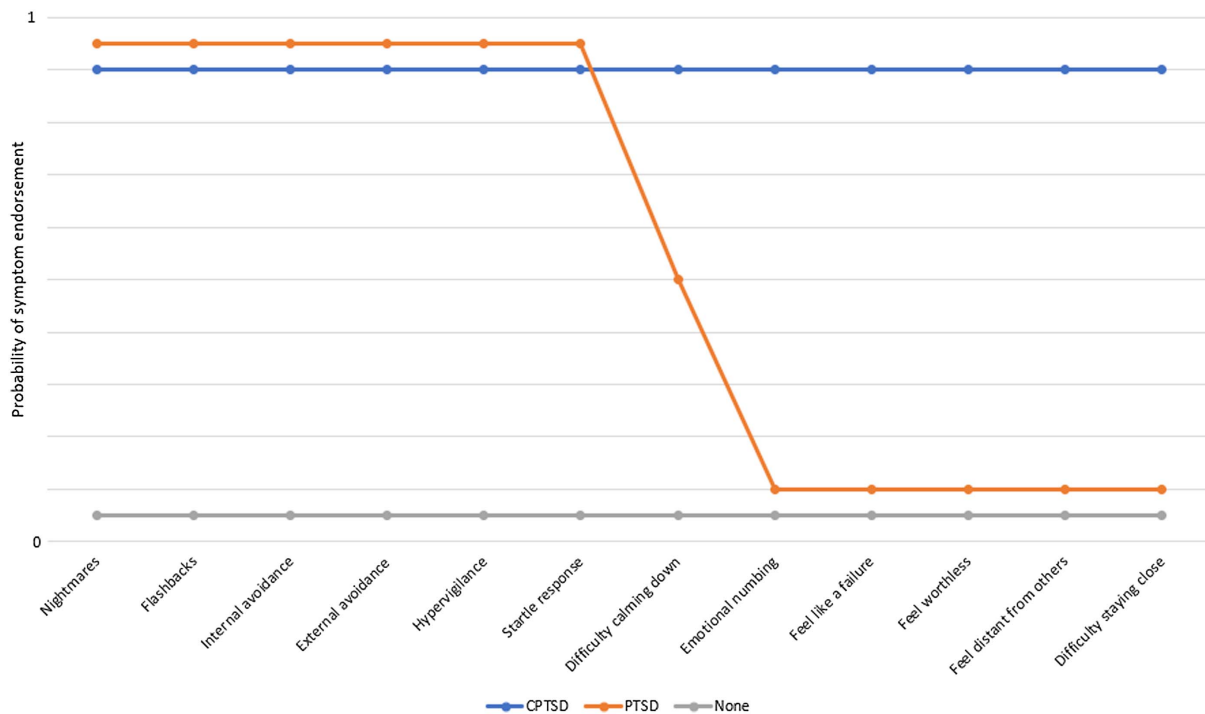


Note. ICD-11 = International Classification of Diseases.

heterogeneity in response patterns. This assumption is relaxed in factor mixture modeling and includes a categorical latent variable to capture potential (qualitative or quantitative) variation at the level of the dimensional latent variable (Clark et al., 2013). The first study reported four classes that represented only a quantitative distinction between PTSD and DSO symptoms (Wolf et al., 2015). These findings were consistent with the idea of a single, broad diagnostic

dimension (e.g., DSM-5 PTSD) rather than two distinct diagnostic categories (e.g., ICD-11 PTSD and CPTSD). However, this study was performed before the ICD-11 CPTSD symptoms were confirmed or tailored measurement instruments were available. As such, problems with the conceptualization and measurement of the symptoms intended to reflect ICD-11 CPTSD limit the interpretability of the findings.

Figure 2
Indicative Latent Class Profiles of ICD-11 Complex Posttraumatic Stress Disorder Symptoms



Note. ICD-11 = International Classification of Diseases; PTSD = posttraumatic stress disorder; CPTSD = complex PTSD. See the online article for the color version of this figure.

Later studies using measures consistent with the *ICD-11* symptom descriptions found support for the distinction between PTSD and CPTSD. Frost et al. (2019) used a subsample of trauma-exposed refugees from the National Epidemiological Survey on Alcohol and Related Conditions and found the best-fitting model included six first-order correlated factors (representing the six symptom clusters of *ICD-11* CPTSD) and five latent classes, including two distinct groups with symptom profiles representing *ICD-11* PTSD and CPTSD. Moreover, they found evidence of a dose–response relationship between levels of trauma exposure and the probability of membership of the *ICD-11* CPTSD class.

Redican, Cloitre, et al. (2021) used a nationally representative sample of the adult population of the United States who completed the International Trauma Questionnaire (Cloitre et al., 2018), a dedicated measure of *ICD-11* CPTSD symptoms, and found the best-fitting model included two second-order correlated factors (PTSD and DSO symptoms) and four latent classes, including two classes with symptom profiles reflecting *ICD-11* PTSD and CPTSD. Additionally, they found that membership of the *ICD-11* CPTSD class was associated with a history of sexual abuse and the highest levels of psychological distress. These findings were subsequently replicated in a sample of trauma-exposed youths aged 11–19 years from Northern Ireland (Redican et al., 2022), and membership of the CPTSD class was associated with older age, female sex, experiencing a higher number of traumatic life events, and exposure to sexual trauma.

An issue with *ICD-11* CPTSD is that it is similar to the construct of borderline personality disorder (BPD; see Ford & Courtois, 2014, 2021; Jowett et al., 2020). Both disorders are defined, in part, by problems with emotion regulation, self-concept, and interpersonal relationships. However, there are important phenomenological differences in how these problems are thought to manifest in *ICD-11* CPTSD and BPD (Cloitre et al., 2014). *ICD-11* CPTSD is defined by a persistent and pervasive negative view of self, whereas BPD involves an unstable and frequently shifting sense of self. Relational difficulties in *ICD-11* CPTSD are defined by persistent and pervasive difficulties in forming and maintaining close relationships, whereas relational difficulties in BPD are defined by volatile interactions and frantic efforts to avoid relationship dissolution. Additionally, problems with emotion regulation in *ICD-11* CPTSD relate to persistent difficulties in feeling calm and at ease following reminders of the trauma, whereas in BPD, emotion regulation problems manifest in violent outbursts and sudden mood changes.

Moreover, *ICD-11* CPTSD requires the presence of PTSD symptoms which are not a part of BPD, and BPD includes problems related to paranoia, impulsivity, and self-harming and suicidal behaviors that are not part of *ICD-11* CPTSD. Unsurprisingly then, multiple studies using a variety of statistical methods including mixture modeling (Cloitre et al., 2014; Frost, Hyland, et al., 2020), exploratory structural equation modeling (Hyland et al., 2019), confirmatory bifactor modeling (Frost, Murphy, et al., 2020), and network analysis (Knefel et al., 2016) have found evidence to support the discriminant validity of *ICD-11* CPTSD and BPD.

What a Theory of *ICD-11* CPTSD Needs to Explain

Existing theories of psychological responses to trauma (Horowitz, 1976; Janoff-Bulman, 1992) and PTSD (Brewin et al., 2010; Ehlers & Clark, 2000; Foa & Rothbaum, 1998) had no explicit reason to

capture and explain the functional independence between PTSD and DSO symptoms that characterizes the distinction between *ICD-11* PTSD and CPTSD. The studies reviewed above indicate that different causal pathways are likely involved in the generation of these symptoms. Thus, the first task for a theory of *ICD-11* CPTSD is to outline the mechanisms by which trauma exposure can give rise to PTSD and DSO symptoms. Further, the small number of core symptoms also offers new opportunities to model causal pathways in relation to the individual symptom making up the PTSD and DSO clusters.

Another novel aspect of *ICD-11* CPTSD is the role assigned to prolonged and repetitive trauma, often but not necessarily in early life (Cloitre et al., 2013; Hyland, Vallières, et al., 2021; World Health Organization, 2022). Most theories of PTSD are modeled on the paradigm case of a single overwhelming event and have not considered in detail how chronic or repeated trauma might impact symptoms. The second task of a theory of *ICD-11* CPTSD, therefore, is to incorporate multiple traumatic events and explain how these forms of exposure increase the risk of CPTSD. Additionally, the theory must also account for why PTSD rather than CPTSD may follow from such forms of trauma, as well as why CPTSD may follow from discrete traumatic events that occur later in life.

The greater specificity of symptoms in *ICD-11* has meant that reexperiencing differs from previous descriptions in requiring that it occurs in the present, as though the traumatic events were happening again in the here and now. This narrower focus needs to be accounted for, and consideration given to how chronic or repeated trauma influences the nature of reexperiencing. Thus, the introduction of *ICD-11* CPTSD poses several new questions for existing theories of PTSD. New findings that have arisen while studying the diagnosis also need to be incorporated in a theory. Finally, the theory needs to be sufficiently broad to explain features that are common to all PTSDs and their treatment.

Foundations for a Theory of CPTSD: Identity, Memory, and Emotion Regulation

Memory and identity are central to understanding all forms of trauma. At the cultural level, memories of publicly recognized horrendous events such as forced migration, occupation, enslavement, or genocide that have affected a specific membership group can sometimes be associated with the sense that something essential to the identity or integrity of the group has been obliterated or damaged, or even that its very continuation is threatened (Eyerman, 2019; Smelser, 2004). In contrast to this nonpathological perspective, PTSDs represent a common effect of trauma exposure at the level of individual psychopathology. These diagnoses have often been described as involving a disorder both of memory (Brewin, 2003; McNally, 2003) and of identity (Brewin, 2003; Brown et al., 2012; Horowitz, 1976; Janoff-Bulman, 1992). CPTSD in particular has been characterized by profound changes to the sense of self and relations with others (van der Hart et al., 2005). These processes, along with difficulties in emotion regulation, form the central aspects of *ICD-11* CPTSD.

Identity

Although the treatment of identity tends to be underdeveloped within clinical psychology (Brewin, 2022), the social psychological

literature contains numerous conceptualizations both of identity and of the self (Leary & Tangney, 2012). There is general agreement that these constructs refer to multidimensional, multifaceted dynamic structures that are systematically implicated in all aspects of social information processing (Markus & Wurf, 1987), and that these structures are goal-directed, proactive, and agentic (Oyserman et al., 2012). Each individual is thought to have multiple identities that provide the superordinate goals within the total self-system (Morf & Mischel, 2012). Of particular relevance for psychopathology, where actual or perceived rejection by others is commonly experienced, is the distinction between aspects of identity that are perceived as individual rather than derived from membership of a family or group (Swann et al., 2009). Also of high relevance is research on discrepancies between different identities, such as the actual, ought, and ideal self, which are associated with anxiety and depression (Higgins et al., 1985).

James (1890) made a crucial distinction between the I-self and the me-self, which can be understood in terms of the distinction between subject and object. The I-self is the subject of experience. It corresponds to the different phenomenological states in which the world is experienced moment-to-moment. The me-self is the object of experience; it is what is being described, labeled, and evaluated. The I-self and me-self, therefore, are intertwined aspects of identity.

Prebble et al. (2013) noted that the I-self exists on a continuum from prereflective self-experience to self-awareness. Prereflective self-experience is a lower form of consciousness based on an ongoing perceptual stream of events experienced from an egocentric perspective that is relatively independent of voluntary attention. It is a form of pure phenomenal experience that is temporally and spatially bound to the current situation and is often difficult to put into words (Tulving, 1985; Vandekerckhove & Panksepp, 2009). Recognition that this prereflective experience is “mine” is thought to depend on the automatic processing and integration of multisensory bodily signals that create awareness of the person’s own body and its current emotional state (Blanke, 2012; Damasio, 2003).

Self-awareness is a crucial part of healthy identity development and is a form of consciousness that develops later in childhood, involving meta-awareness of our conscious state and permitting observation, reflection, and evaluation of subjective experience (including the perceptual, bodily, and emotional components of prereflective self-experience). Self-awareness permits a sense of coherence among various parts of the self that are experienced in different moments, as well as continuity in a subjective identity existing through time. Self-awareness is necessary for autobiographical memory, enabling the person to differentiate a mental representation of a past event from current experience (Prebble et al., 2013). The products of self-awareness may be represented in the me-self (otherwise known as the self-concept).

Normative development of identity is expected to lead to an I-self that has high levels of self-awareness (i.e., moment-to-moment experience is actively reflected upon), self-agency (i.e., there is a sense of control over one’s experience), self-coherence (i.e., the flow of moment-to-moment experience is experienced as unified), and self-continuity (i.e., that experience of the self is contiguous across time; James, 1892). Consistent with this, social psychologists have found that the more people see themselves as having different personality characteristics in different social roles, the worse their emotional adjustment (Donahue et al., 1993).

Disruption of normal identity development, often but not exclusively the result of early life maltreatment, can lead to reduced self-awareness of one’s own experience, a diminished sense of agency over one’s own experience, the sense that one is broken, fragmented, or not “whole,” and a sense that one is not the same person across time (Harter, 1998). An incoherent or fragmented identity can result from the contradictory and hard-to-assimilate experiences that characterize early developmental trauma and adversity (Chiu et al., 2019; Cole & Putnam, 1992; Ogawa et al., 1997; van der Hart et al., 2005). Such experiences are likely to result in at least partially prereflective expressions of identity in the I-self that are represented poorly, or not at all, in the conceptual structures of the me-self.

Healthy development of the me-self typically involves the formation of realistic and generally positive evaluations of the self that vary little from one’s idealized self. This will normally lead to a positive sense of self-efficacy and self-worth. However, disruptions to normal development, again often but not exclusively related to childhood maltreatment, can lead to an internalized view of the self as malevolent, bad, worthless, vulnerable, and so forth. The internalization of pervasive negative self-evaluations means that there is usually a large discrepancy between one’s evaluation of the self and their idealized self. This ultimately leads to intense feelings of inadequacy (Harter, 1998).

It is widely held that complex experiences such as identity involve cognitive structures that contain information about perception, action, and internal mental states including affect and metacognition (Barsalou, 2009; Glenberg, 2010). These multimodal representations develop for any component of experience that attention selects repeatedly. Given an appropriate context, these multimodal representations are partially reenacted, creating simulations in which repeated situations can be reexperienced in rich and complex ways. Simulations do not need to be exact reenactments of previously experienced events but can be thought of as proactive syntheses of relevant past experiences that function to help the person to predict the future (Bar, 2009). Identity researchers have studied these simulations under the label of “possible selves” (Markus & Nurius, 1986; Oyserman & James, 2011).

Reexperiencing serves as a prediction about what kind of response is likely in the current situation or in the future. For example, feeling oneself to be small, vulnerable, and an object of scorn after being unexpectedly abused on the street draws on similar past experiences and corresponds to a prediction about what is most likely to happen next. The predictions encompass likely internal outcomes, involving feelings and bodily states, and external outcomes such as the behavior of others. They may include the adoption of feared identities in which individuals imagine becoming an immoral or dangerous person (Ferrier & Brewin, 2005).

Identities can vary in their number, their specificity, their intensity, and in their degree of integration with each other. Identities likely to be prominent in *ICD-11* PTSD, reflecting histories of prolonged or repeated maltreatment, include experiencing and perceiving one’s character or one’s body as inferior, worthless, or shameful (Andrews, 1995, 1997, 1998; Andrews & Hunter, 1997; Egeland et al., 1988) and experiencing and perceiving oneself as defeated, empty, or dead (Ebert & Dyck, 2004; Ehlers et al., 2000; Sloman et al., 2003). Other prominent aspects of identity focus on relations with and distance from others. Veterans with posttraumatic disorders, for example, frequently report disillusionment with human nature and being alienated from the civilian world (Brewin et al., 2011). Alienation

is strongly associated with posttraumatic symptoms in survivors of many different kinds of trauma (McIlveen et al., 2020), as is being betrayed by caregivers and those in authority (Delker & Freyd, 2017; Finkelhor & Browne, 1985; Smith & Freyd, 2014).

It is important to note that even in the absence of childhood adversity, single traumas such as life-changing accidents and rape can also be associated with dramatic changes in social status and available social roles, as well as with the loss of cherished beliefs about the self and plans for the future (Clark, 2014; Dunmore et al., 2001). Many of these traumas will also involve violations of the integrity of the body. Changes brought about by trauma exposure should be seen not just as involving the creation of vulnerable and negative identities but the inability to reexperience positive identities.

Activity associated with self-related processing, such as internally focused thought and autobiographical memory, occurs partly in the default mode network, a set of brain structures that share high levels of connectivity. It consists of cortical regions located across the brain's midline that include the posterior cingulate cortex, the precuneus, and the medial prefrontal cortex. PTSDs are associated with reduced functional connectivity in this network when it is at rest, as well as greater connectivity with the periaqueductal gray (PAG) in response to subliminal trauma cues (Akiki et al., 2018; Lanius et al., 2020). The PAG is a midbrain structure that plays an important role in behavioral responses to threat, and a finding of stronger excitatory effective connectivity from the PAG to the default mode network suggests that self-related processing may be influenced or interrupted by defensive prompts arising in the midbrain (Terpou et al., 2020). Other work is concerned with how exteroceptive and interoceptive information is combined with mental states to reflect the multimodal processing thought to underlie the experience of the self. A key brain structure is the insula, indicating the potential importance of integrated internal sensory signals (Qin et al., 2020).

Memory

Intrusive memories in PTSDs tend to be triggered by low-level sensory cues and have a very strong perceptual element, usually but not invariably involving detailed visual images (Brewin, 2011; Ehlers et al., 2004). Moreover, there is often difficulty in putting them into words (van der Kolk, 2007). Consistent with the evidence that intrusive memories of distressing experiences are common to many psychiatric disorders (Brewin et al., 2010), *ICD-11* clarified that in PTSD and CPTSD such memories additionally have to be reexperienced *in the present*. This reexperiencing (sometimes referred to as a "flashback") can vary on a continuum from a total loss of contact with the current environment to a more fleeting subjective sense of the events occurring again now (World Health Organization, 2022).

The existence of this continuum can be explained in terms of differing proportions of prereflective experience and self-awareness. Where prereflective experience dominates, there are high levels of absorption in the memory and little awareness of the current environment. The loss of self-awareness produces feelings of depersonalization and reduces the capacity to evaluate and control mental events. Grounding techniques, such as describing the objects people see in front of them, help to reestablish the link between deliberate agency and experience. In contrast, a more circumscribed and

fleeting sense of nowness indicates the presence of greater levels of self-awareness relative to prereflective experience.

Thus, reexperiencing in the present involves a diminution in the temporal context that is part of ordinary episodic or autobiographical memory (Tulving, 2002), along with an upregulation of perceptual imagery. Consistent with this, neurobiologists have long proposed a distinction between hippocampally based memory systems that encode events in their context and nonhippocampally based systems that encode only the salient perceptual and emotional features of events (Jacobs & Nadel, 1985; Layton & Krikorian, 2002). Evidence has been available for many years that stress generally impairs hippocampal-dependent memory tasks in both humans and rodents (Kim & Diamond, 2002; McEwen, 2000), reflecting modifications in synaptic plasticity, morphological changes, suppression of adult neurogenesis, and endangerment of hippocampal neurons.

Some rodent models of PTSDs have tried to experimentally capture the combination of hypermnnesia for salient traumatic cues and amnesia for peritraumatic contextual cues that characterizes them (Desmedt et al., 2015). In one experiment, contextual memory formation during fear conditioning was suppressed through optogenetic inhibition of the hippocampus. As predicted, compared to controls, these animals demonstrated a lower fear response to the context and an abnormal fear response to a salient traumatic cue, indicating a causal effect on PTSD-like memory formation (Al Abed et al., 2020). In contrast, promoting the contextual memory of the trauma, either by optogenetic activation of the hippocampus during exposure or by pharmacologically enhancing hippocampus-dependent cognitive processing after exposure, normalized the fear memory (Desmedt, 2021).

There is abundant similar evidence from human studies that stress has the general effect of increasing encoding of the most salient cues at the expense of contextual information (Quaedflieg & Schwabe, 2018; Simon-Kutscher et al., 2019). This appears to be at least in part an effect of negative stimuli themselves, occurring whether or not the individual is stressed. Negative items incur less hippocampal binding and, as a result, less coherent memories (Bisby & Burgess, 2017; Bisby et al., 2018). The resulting effect of having strengthened sensory representations with correspondingly reduced contextual information makes these representations more vulnerable to being automatically retrieved by reminders sharing similar perceptual features (Bisby & Burgess, 2017). The idea that PTSDs involve a particular deficit in processing information about safe and dangerous contexts has been extensively discussed (Brewin, 2001; Liberzon & Sripada, 2008; Rauch et al., 2006) as well as supported empirically (Garfinkel et al., 2014; Rougemont-Bücking et al., 2011). Similarly, according to the influential cognitive model of PTSD (Ehlers & Clark, 2000), the memory of the traumatic event is poorly elaborated, not given a complete context in time and place, and inadequately integrated with other autobiographical knowledge and memories.

Explaining the combination of vivid, detailed traumatic imagery coupled with deficient episodic memory is the specific focus of the revised dual representation theory of PTSD (Brewin et al., 2010). This postulates that a traumatic event tends to downregulate activity in the ventral visual stream, resulting in contextual, viewpoint-independent memories of the traumatic event in episodic memory being weakened. These weak episodic memories coexist with strongly encoded viewpoint-dependent images recorded in a separate long-term, large-capacity perceptual memory system (sensation-based memories).

Emphasizing the distinction with episodic memory, recent work suggests that the features of such images are not bound together but are represented independently (Utochkin & Brady, 2020). The representations in this system, processed by the dorsal visual stream, amygdala, and insula, are closer to the original sensory input and include minimal contextual information (Brewin, 2014). They form the basis of reexperiencing the traumatic event in the present. According to this account, therefore, a dissociation between episodic and perceptual memory is at the heart of the memory dysfunction in PTSD.

There is considerable evidence that reported alterations in the sense of self, in one's relation to reality, or in the passage of time, occurring during or after the traumatic event, are also associated with impairments in episodic memory for the event (Brewin, 2014). These dissociative reactions are commonly reported in PTSDs (Massazza et al., 2021; van der Hart et al., 2005). Experimental evidence from a variety of sources indicates that there is a causal impact of these reactions on episodic memory (Bergouignan et al., 2014; Brewin et al., 2013; Brewin & Mersaditabari, 2013), and that they lead to alterations in hippocampal activity (Bergouignan et al., 2014).

Importantly from the perspective of CPTSD, chronic stress is thought to be able to produce long-lasting changes in hippocampal morphology (Kim et al., 2015). This is backed up by studies examining the correlates of childhood maltreatment in which reduced hippocampal volume in adulthood is one of the most reliable effects (Teicher & Samson, 2016). These observations suggest a mechanism to explain why repeated early life or adult stress is associated with increased reexperiencing in the present after exposure to trauma and with a correspondingly greater risk of *ICD-11* PTSD and CPTSD.

Emotion Regulation

There are many aspects of emotion regulation, but those of most relevance to *ICD-11* CPTSD have to do with response modulation, which is a person's ability to control an already activated emotional state. A distinction has been made between relatively automatic forms of control such as fear inhibition or extinction that require little if any conscious decision-making and more deliberate forms of control such as attempts to reappraise the meaning of a situation. It has been proposed that neural structures critical for automatic control include the ventral anterior cingulate cortex and ventromedial prefrontal cortex, whereas those most associated with deliberate control include the dorsolateral and ventrolateral prefrontal cortex. Both are able to inhibit the amygdala, a key brain structure that is involved in detecting potential or actual threat and initiating a defensive response (Etkin et al., 2015).

Stressful situations engage the sympathetic nervous system, which is involved in the release of epinephrine and norepinephrine in preparation for flight or fight. Excessive or prolonged activation of this system can lead to high levels of norepinephrine that negatively impact the executive functions of the prefrontal cortex and reduce the ability to regulate emotion. Under normal conditions, the hypothalamic–pituitary–adrenal axis functions to limit activation of the sympathetic nervous system, in part by the release of cortisol. Prolonged cortisol release, however, has neurotoxic effects on the hippocampus, further disrupting the hypothalamic–pituitary–adrenal response as well as impairing learning and memory (Averill et al., 2018).

From the perspective of CPTSD, there is considerable evidence that early life stress is associated with reductions in the volume of areas of prefrontal cortex involved in emotion regulation (Teicher & Samson, 2016). Moreover, after early life stress, there is greater amygdala reactivity to emotional stimuli in adulthood, as well as disruption in amygdala–prefrontal connectivity and impairment in the ability of the prefrontal cortex to modulate stress responding (VanTieghem & Tottenham, 2018). In girls, childhood abuse is associated with delayed maturation of emotion circuits and with hyperarousal (Keding et al., 2021).

In *ICD-11* CPTSD, emotion dysregulation does not just involve an inability to modulate excessive emotion. It can also manifest in excessive shutdown with the result that the person is unable to experience normal emotions. This is normally attributed to a dissociative response in which the prefrontal cortex overregulates and decreases activation of the amygdala (Lanius et al., 2010). The result is emotional detachment and hypoemotionality, as well as depersonalization and derealization. Recent research suggests that in many cases of PTSD, there is a predominantly bottom-up pattern of activity from the PAG to the amygdala and from the amygdala to the prefrontal cortex. There is a distinct subgroup (the dissociative subtype in *DSM-5*), however, who show top-down connectivity from the prefrontal cortex to the amygdala and PAG. These different patterns are likely to reflect the mobilization of active (fight/flight) versus passive (freezing/tonic immobility) responding to different kinds of threatening situation (Nicholson et al., 2017). Cumulative trauma and the presence of CPTSD increase the likelihood of dissociative responses affecting both the mind (e.g., depersonalization) and the body (e.g., analgesia; Chiu et al., 2015; Hyland et al., 2020; Møller et al., 2021).

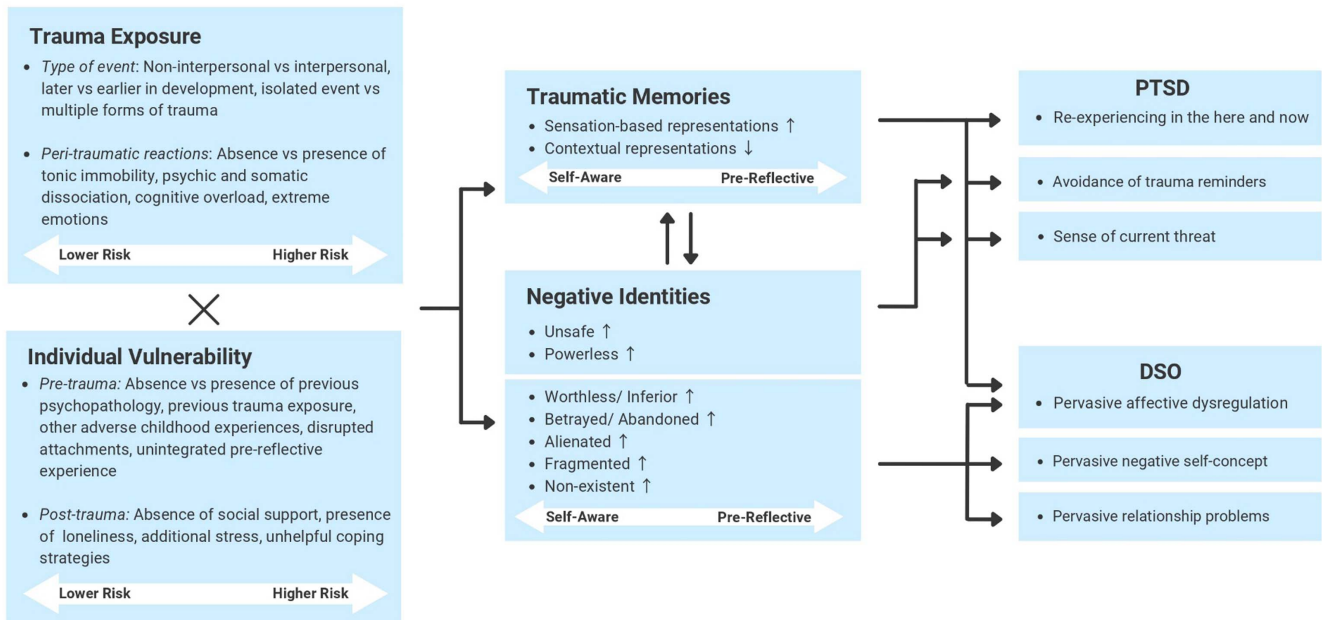
A Theoretical Account of *ICD-11* CPTSD

The “memory and identity” theory of *ICD-11* CPTSD—henceforth referred to as the M&I theory—is presented in Figure 3. The theory describes the indirect and moderated causal relationships that link trauma exposure to specific PTSD and DSO symptom clusters. It also provides a framework to integrate disparate research finding on the risk factors for *ICD-11* CPTSD and to generate testable hypotheses that can facilitate future research and clinical advances.

The theory holds that trauma exposure occurs in a context of existing individual vulnerabilities which interact to influence the development of traumatic memories and negative identities that ultimately give rise to the PTSD and DSO symptoms. Thus, trauma exposure and individual vulnerabilities are distal causes of *ICD-11* CPTSD symptoms, whereas dominant sensation-based traumatic memories and powerful negative identities are proximal causes of these symptoms. More specifically, dominant sensation-based traumatic memories are a necessary requirement for the development of reexperiencing in the here and now symptoms and play a prominent role in the development of avoidance, sense of current threat, and affective dysregulation symptoms. Negative identities play a key role in the formation of all symptom clusters apart from reexperiencing symptoms, which are understood to be primarily a function of traumatic memories. The specific nature of the negative identity determines which PTSD or DSO symptoms will arise. Traumatic memories and negative identities are, therefore, essential for the development of *ICD-11* PTSD and CPTSD, but the distinction between the two disorders is explained in terms of the types of

Figure 3

The Memory and Identity Theory of ICD-11 Complex Posttraumatic Stress Disorder



Note. ICD-11 = *International Classification of Diseases*; PTSD = posttraumatic stress disorder; DSO = disturbances in self-organization. See the online article for the color version of this figure.

negative identities that are present. PTSD involves identities centered on experiencing the self as powerless and unsafe, while CPTSD additionally involves identities related to experiencing the self as worthless/inferior, betrayed/abandoned, alienated, fragmented, and/or nonexistent.

Trauma Exposure and Individual Vulnerability

The M&I theory echoes the assumption of *ICD-11* that traumatic events need not only involve single overwhelming incidents to give rise to PTSDs. Rather, a series of less individually overwhelming events may become traumatic by virtue of the cumulative effect on levels of fear or horror. The theory holds that the abnormal processing of memories characteristic of PTSD and CPTSD simply requires very high levels of fear or horror, irrespective of whether these have been reached suddenly or gradually.

The theory also recognizes that trauma can vary in severity. Higher risk forms of trauma are typically those that are interpersonal in nature (e.g., physical or sexual assault), that occur early in development, and/or are chronic or repeated (e.g., emotional abuse, torture, or intimate partner violence). This classification is based on a body of evidence that traumatic events of this nature are associated with a higher likelihood of meeting diagnostic requirements for *ICD-11* CPTSD compared to *ICD-11* PTSD (Cloitre et al., 2013; Hyland, Karatzias, et al., 2021; Karatzias et al., 2017; Murphy et al., 2016). Lower risk forms of trauma are those that are noninterpersonal in nature (e.g., natural disasters or accidents), that occur later in development, and are isolated, one-off events (e.g., a terrorist attack, death of a loved one). This classification is based on evidence that

events of this nature are usually associated with an increased likelihood of *ICD-11* PTSD compared to *ICD-11* CPTSD (Cloitre et al., 2013; Elklit et al., 2014).

The distinction between high- and low-risk forms of trauma can also be understood in terms of the likelihood of dominant sensation-based memories and negative identities subsequently arising. Traumatic events that are chronic and interpersonal in nature, especially when occurring early in development, are strongly associated with reduced hippocampal volume (Teicher et al., 2012). This compromises the formation of contextual representations of traumatic events and normal connections between contextual and sensation-based representations. Moreover, these types of traumatic experiences are most likely to lead to pervasive problems in self-concept (Badour & Feldner, 2018; Gilbert, 2015). In the case of early life stress, this can partly be explained by the impact on the maturation of the default mode network and on the integration of its component structures (Wang et al., 2019; Zeev-Wolf et al., 2019).

As noted earlier, in the *ICD-11*, the type of traumatic exposure is not a requirement for a differential diagnosis of PTSD and CPTSD, rather the type of traumatic exposure is viewed as a risk factor for PTSD and CPTSD. Multiple studies have shown that nontrivial proportions of people (~35%) exposed to high-risk forms of trauma can develop PTSD rather than CPTSD, and likewise, nontrivial proportions of people (~25%) exposed to low-risk forms of trauma can develop CPTSD rather than PTSD (Cloitre et al., 2013; Elklit et al., 2014; Hyland et al., 2018; Redican, Nolan, et al., 2021). The M&I theory explains these occurrences in terms of individual differences in vulnerability to the effects of any given traumatic event.

Various moderators of posttraumatic responses to trauma have been identified, and these are often differentiated in terms of pre-trauma risk factors (e.g., family history of mental health problems, prior trauma exposure), peritrauma risk factors (e.g., tonic immobility, dissociation, panic), and posttrauma risk factors (e.g., low social support, loneliness, avoidant coping styles; Brewin et al., 2000; DiGangi et al., 2013; Ozer et al., 2003; Tortella-Feliu et al., 2019). The M&I theory conceptualizes individual vulnerability as a continuum of risk. Those at the lower risk end of the continuum possess considerable resources that can protect against the worst effects of trauma. Such individuals may not develop any psychopathological response to trauma, or they may develop PTSD rather than CPTSD following exposure to high-risk forms of trauma. For example, resilient persons (e.g., ones who grew up in a caring and safe family home; who possess significant cognitive and financial resources; and who have access to multiple supports including family, friends, and excellent health care) who are exposed to ongoing violence within an intimate relationship may come to develop traumatic memories and an unsafe or powerless identity but may not develop an identity as worthless, inferior, betrayed, or fragmented. These individual resources may also be sufficient to maintain access to a positive identity that was present prior to the traumatic experiences.

In contrast, those at the higher risk end of the continuum of individual vulnerability possess fewer resources to mitigate the deleterious effects of trauma. These individuals may develop the full spectrum of *ICD-11* CPTSD symptoms even in response to relatively low-risk forms of trauma. For example, vulnerable individuals (e.g., ones who have a history of multiple childhood adversities, who experience chronic stress in their day-to-day life, who have few or no social supports, and who have a history of prior mental health problems) who are exposed to a brief threat of physical violence may develop distressing traumatic memories of the event and come to experience themselves, not only as unsafe or powerless but also as inadequate, alienated, or fragmented. Thus, interactions between the traumatic event(s) and individual vulnerability influence the risk of developing distressing traumatic memories and negative identities.

Traumatic Memory and CPTSD Symptoms

The theory holds that the symptoms of reexperiencing in the here and now are caused by memories that contain strong sensation-based representations and weak contextual representations of the traumatic event(s). These sensation-based memories are stored in a long-term perceptual memory system that can be easily triggered by exposure to internal or external reminders of the traumatic event(s). These memories exist independently of contextual and temporally specific autobiographical memories and contain no information about where and when the traumatic event(s) occurred. As such, when these memories are cued in the absence of corresponding contextual memories, the person has the felt sense that they are reliving the traumatic event(s) again in the present moment.

Since these traumatic memories are devoid of contextual information, they also give rise to the feeling that one is in present danger. Thus, the reexperiencing *in the here and now* and sense of *current* threat symptoms are intimately linked. Precisely because these distressing reactions are involuntarily triggered by reminders of the traumatic event(s), avoidance of people, places, situations, thoughts, or feelings related to the trauma is more likely. Avoidance

of internal and external reminders of the traumatic event(s) can be viewed as a mechanism to circumvent a reliving experience and the associated unpleasant feelings of fear and horror.

When the sensation-based memories of the traumatic event(s) are activated and the same feelings of fear and horror that were present at time of the actual trauma are reexperienced, and there is a profound sense of immediate danger, an individual's capacity to exert executive control and downregulate these intense emotional reactions is compromised. Since flashbacks make it harder for the individual to fully acknowledge that the danger has in fact passed, the sympathetic nervous system remains activated and hinders the regaining of emotional equilibrium. Thus, traumatic memories are integral to the increased reactivity aspect of affective dysregulation symptoms.

The decreased reactivity aspect may also be related to the quality of flashbacks. Flashbacks that incorporate an "observer perspective" (i.e., are "seen" from a detached observer's viewpoint) reflect encoding of the traumatic event during a dissociative state in which feelings of numbness and detachment were likely to have been evoked (Bergouignan et al., 2022; Brewin et al., 2010). When sensation-based memories of the trauma(s) are evoked, there is a recapitulation of the same neural processes that produced the dissociative response during the traumatic event (Danker & Anderson, 2010). Thus, symptoms of emotional numbness and flatness can be viewed as an automatic response that results in detaching oneself from the extremely distressing psychological and physiological reactions brought on by involuntarily cued memories of the traumatic event(s).

When, as in most cases of *ICD-11* CPTSD, there is a history of multiple traumatic events, an episode of intrusive memories or flashbacks may involve scenes from several different events. Associative links based on events encoded within specific negative identities, and involving overarching themes such as rejection or humiliation, can cause one memory to prompt the intrusion of another memory from a quite different time period. This is shown by the arrow going from negative identities to traumatic memories in Figure 3. Occasionally, images occur that represent elaborations or "worse-case scenarios" rather than approximate representations of a specific event (Merckelbach et al., 1998; Reynolds & Brewin, 1998). These illustrate that intrusive trauma memories, like multimodal self-representations, sometimes involve future prediction. The predictions may themselves be based on associative links with memories of other, related traumatic events.

Importantly, however, intrusive memories and flashbacks in *ICD-11* CPTSD retain a high level of particularity and perceptual detail. Whereas the repetition of similar events leads to schematic autobiographical memories that synthesize the common elements into a representation of "what usually happened" (Alba & Hasher, 1983), it is not this kind of traumatic memory that underlies the reexperiencing symptoms in CPTSD. Rather, intrusive symptoms remain based on individual, nonschematized perceptual memories. Schematic autobiographical memories are available for deliberate retrieval.

A final issue requiring explanation is why intrusive memories and flashbacks are sometimes prominent and sometimes not. The M&I theory follows the new theory of disuse (Bjork & Bjork, 1992) in distinguishing between the storage strength of a memory, reflecting how strongly it has been encoded (very strongly in the case of most traumatic events), and its retrieval strength, which is the ease with which it can be accessed. Retrieval strength is a function of how much a memory has come to mind in the recent past, as well as of the

existence of retrieval cues. The prominence of intrusive memories and flashbacks at any one time is related to their current retrieval strength, not to their storage strength.

As mentioned above, researchers have noted the importance of external reminders in prompting posttraumatic intrusions. The M&I theory also includes internal reminders, thematically related material activated as part of a negative identity. Retrieval strength is further affected by the motivated prevention of such intrusions by deliberate attempts to minimize exposure to reminders and by conscious memory suppression (Catarino et al., 2015). The activation in *ICD-11* CPTSD of negative identities with the associated emotional states and cognitive load of unwanted thoughts and images may additionally make memory suppression more difficult.

Identity and CPTSD Symptoms

The M&I theory holds that the process whereby multiple identities come to be activated and deactivated involves, as for any representation, retrieval competition (Bjork & Bjork, 1992; Brewin, 2006). That is, the primary determinant of which identity is experienced at any one moment is the match between the events that have shaped that identity and current circumstances. In addition, some identities have greater retrieval strength in that the regularity with which they are experienced makes them more accessible (Bjork & Bjork, 1992).

Exposure to one or more traumatic life events can *contradict* existing positive identities, as well as *create* or *strengthen* negative identities with their corresponding expectations for the future. The process whereby traumatic events *contradict* and deactivate existing positive identities has been extensively discussed in terms of traumatic events confounding deeply held expectations (Horowitz, 1976), and overturning prior assumptions that the self is worthy, others are benevolent, and the world is meaningful (Janoff-Bulman, 1992). These earlier theories focused on the prototypical case of responses to a single traumatic event in which the individual temporarily ceased to believe in their own good character, the trustworthiness of others, or in being safe in the world. Identities that are primarily related to powerlessness and being unsafe, together with the occurrence of intrusive traumatic memories, are central to the development of the full spectrum of *ICD-11* PTSD symptoms. They are experienced particularly powerfully when traumatic events violate expectations by occurring in locations that were previously considered safe (Cascardi et al., 1996).

It has been noted, however, that according to this principle of the violation of expectations, trauma should have the greatest impact on individuals with the strongest prior positive identities (and, therefore, whose expectations would be overturned to the greatest extent). In fact, individuals with many traumatic events in their earlier history are the ones who are most likely to develop PTSDs (Brewin et al., 2000). This leads to the conclusion that in many cases of CPTSD, traumatic events will frequently have *strengthened* and *reactivated* prior negative identities created because of childhood adversity. *ICD-11* CPTSD also differs from *ICD-11* PTSD in that the existence of positive childhood experiences appears to be protective for the former but not the latter (Karatzias et al., 2020), supporting the idea that CPTSD often involves self-representations derived from previous experience.

If *ICD-11* CPTSD is to develop, identity will not only involve the experience of powerlessness and being unsafe but also the experience of worthless/inferiority, betrayal/abandonment, alienation,

fragmentation, and/or a sense of nonexistence. While these identities are associated with all DSO symptoms, specific identities are assumed to be more strongly associated with specific DSO symptom clusters. An identity centered on worthlessness/inferiority is assumed to be particularly strongly linked to pervasive negative self-concept symptoms and may be exacerbated by self-blame for having distressing intrusive memories (Dunmore et al., 2001). This is shown by the arrow going from traumatic memories to negative identities in Figure 3. An identity centered on betrayal, abandonment, or alienation from others is assumed to be particularly strongly linked to disturbed relationship symptoms; while an identity centered on the experience of being fragmented or nonexistent is assumed to be especially relevant to affective dysregulation symptoms and particularly the deactivation component of this symptom set.

Traumatic events may not only *contradict* or *confirm* prior identities but may also *create* new identities. Consider an individual who enlists in the military and experiences life-changing injury or disfigurement during combat. Such a profound and life-altering experience may not only threaten to deactivate the individual's existing positive identity but lead to the development of a new, negative identity.

Adults exposed to repeated and long-lasting trauma, such as prolonged torture or state-sponsored denial of human rights, experience not only physical pain and suffering but also dehumanization, humiliation, degradation, and moral injury through being forced to betray or denounce others (Silove, 1999). Frequent exposure to cruelty can bring about a crisis of trust, faith, and meaning that can intensify feelings of alienation and emotional isolation (Turner & Gorst-Unsworth, 1990). These consequences often represent intentional attempts on the part of state or other agents to undermine and destroy positive identity. Similar motivations underlie the repeated humiliation, attacks on identity as a spouse or parent, and body shaming that are frequently part of intimate partner violence (Martínez-González et al., 2021; Strauchler et al., 2004). These conditions provide another pathway to *ICD-11* CPTSD, even in the absence of prior negative identities.

Broader Considerations

The previous section details the M&I theory of *ICD-11* CPTSD, the major causal processes involved in symptom generation, and the different causal pathways from trauma exposure to PTSD and DSO symptoms. The theory can also be used to understand and explain several phenomena that have rarely featured in previous theories. Important issues include the occurrence of prominent somatic problems among trauma-exposed persons, the phenomenon of delayed onset of posttraumatic stress reactions, specific patterns of diagnostic comorbidity associated with PTSDs, and how emotions such as fear, horror, shame, and guilt relate to *ICD-11* PTSD and CPTSD. Each of these issues is discussed in turn below.

Bodily Symptoms

Previous formulations of CPTSD emphasized the prominence of somatization and changes in the perception of the body, whether these are dissociative alterations to the sense of bodily identity (such as out-of-body experiences) or increased sensations of pain or numbness (Herman, 1992). The increased prevalence of somatic symptoms has been confirmed in PTSDs generally (Afari et al., 2014) as well as in *ICD-11* CPTSD specifically (Møller et al., 2021).

Awareness of one's body, as conveyed by both exteroceptive and interoceptive stimuli, is a key component of the multimodal self-representations that underlie identity (Tsakiris, 2017). The effect of exteroceptive stimuli has been illustrated by research showing that in virtual reality, individuals can be induced to feel an illusory ownership of a body very different to their own, for example, of a child or a person of another race. In this embodied state, exposure to sights and sounds leads to spontaneous perceptual, emotional, and attitudinal changes that correspond to the nature of the virtual body and what it is experiencing (Banakou et al., 2016; Tajadura-Jiménez et al., 2017). Social encounters are a particularly rich source of exteroceptive stimuli and of interoceptive stimuli such as heartbeats, breaths, and gastric contractions. From infancy onward, interoceptive responses to repeated experiences such as being attended to, mirrored, comforted, ignored, rejected, or threatened, as well as witnessing such events, can become incorporated in the sense of self.

From the perspective of M&I theory, therefore, there are at least two routes to greater awareness of bodily sensations. One is the reexperiencing in the presence of sensations associated with the traumatic moments themselves, as are reported, for example, in pain flashbacks. This kind of flashback is common in populations exposed to extreme interpersonal trauma (Macdonald et al., 2018). However, a study of sexually abused children has revealed that abuse-related pain experiences may be numerous and difficult to localize and may present after the abuse itself (Tsur et al., 2022). This suggests that mechanisms are needed that do not just encode traumatic moments. Within M&I theory, such interoceptive responses could become incorporated into multimodal self-representations embedded within one's identity that are linked to the experience of abuse. The second route, therefore, is via the activation of associated negative identities that incorporate distinct bodily sensations.

Delayed Onsets

In a substantial minority of cases posttraumatic disorders begin months or years after the index traumatic events. Although not unique to *ICD-11* CPTSD, the existence of this form of presentation has become much better established in recent years (Andrews et al., 2007; Bonde et al., 2022; Galatzer-Levy et al., 2018). Delayed onsets challenge prototypical notions of an overwhelming event that is encoded in such a way as to produce an immediate onset of PTSD or CPTSD. Consistent with this, a study of military veterans showed that the traumatic events associated with delayed onsets were accompanied by significantly weaker peritraumatic reactions than events associated with immediate onsets (Andrews et al., 2009).

According to the M&I theory, there are three main reasons why delayed onsets may occur. First, events may not have been traumatic at the time but become so later. Contemporary conditioning theory recognizes that the emotional significance of potentially frightening events in memory may change with newly acquired information, a process known as unconditioned stimulus reevaluation (Davey, 1989). It has been proposed, for example, that some experiences of childhood abuse may not be perceived as traumatic at the time but are reacted to with fear and horror later when increasing knowledge results in an appreciation of their true significance (McNally & Geraerts, 2009). According to M&I theory, this sudden increase in fear or horror results in a reencoding of the events, now producing strong sensation-based memories that dominate contextual representations. These perceptual memories have high retrieval strength

and in turn drive reexperiencing, avoidance, sense of current threat, and affect dysregulation symptoms. They may additionally lead to the reactivation of relevant negative identities produced by other adverse experiences.

A second mechanism to explain delayed onsets assumes that the absence of relevant cues has previously resulted in traumatic memories having low retrieval strength and has been sufficient to keep thoughts and reminders about the traumatic event out of consciousness. Powerful reminders, such as memorializing or anniversaries of wars, terrorist attacks, or disasters, may increase retrieval strength such that highly emotional memories start to intrude (Morgan et al., 1999). Survivors of childhood abuse sometimes comment that posttraumatic disorders were triggered by their own child reaching the age at which they themselves were abused.

The third mechanism involves a breakdown in memory suppression. Suppression is effortful and may be undermined by a cognitive load (Watkins & Moulds, 2007). Delayed onsets in military veterans have been found to be triggered by the occurrence of unrelated negative life events (Andrews et al., 2009). These events may have triggered onsets as a result of increased cognitive load, or they may have led to negative emotional states which have also been shown to interfere with suppression (Stramaccia et al., 2021). A breakdown in suppression that occurs as a result of aging (Healey et al., 2014; Murray et al., 2015) may also explain observations of late-life onsets of PTSDs (Hiskey et al., 2008).

Comorbidity

Several studies have explored comorbidity associated with *ICD-11* PTSD and CPTSD (Fox et al., 2020; Hyland, Vallières, et al., 2021; Karatzias, Hyland, et al., 2019; Murphy et al., 2021; Shevlin, Hyland, Vallières, et al., 2018). These studies indicate that *ICD-11* PTSD and CPTSD are both associated with high levels of diagnostic comorbidity, but that the two vary in terms of which disorders they are most likely to co-occur with. *ICD-11* PTSD most frequently co-occurs with anxiety-based conditions such as panic disorder, whereas *ICD-11* CPTSD most frequently co-occurs with mood disorders such as major depression.

This pattern of comorbidity is readily explicable from the perspective of the M&I theory. An identity centered on being unsafe or powerless is integral to the development of *ICD-11* PTSD, and perceptions of uncontrollable threat or danger are common to all anxiety disorders (Clark & Beck, 2010). A key feature of many forms of anxiety, most notably panic disorder, is hypersensitivity to normal bodily reactions leading to extreme and catastrophic misinterpretations of those reactions. Thus, experiencing the self as unsafe or powerless, especially when this involves a strong pre-reflective element, will naturally predispose those with *ICD-11* PTSD to numerous other anxiety-based disorders.

When identities centered on worthlessness, betrayal, or alienation are also dominant, as in the case of *ICD-11* CPTSD, the expectation is that mood-related disorders such as major depression will frequently co-occur. Mood disorders are typically accompanied by a perceived sense of self as diminished, defeated, and disconnected from others (Beck & Bredemeier, 2016). Unlike CPTSD, they are not characterized by reexperiencing traumatic events in the present, rather there is rumination accompanied by intrusive memories that are experienced as belonging to the past (Brewin et al., 2010).

The presence of startle and hypervigilance also distinguish the two disorders.

A sense of self that is experienced as fragmented, nonexistent, and unstable over time is thought to be a common feature of dissociative disorders, BPD, and some forms of psychosis (Dorahy et al., 2021; Fuchs, 2007; van der Hart et al., 2006). Thus, we propose that comorbidities between *ICD-11* CPTSD and these disorders will relate strongly to a poorly developed identity or to multiple contradictory identities, together with high levels of poorly integrated prereflective experience.

The Role of Emotions in CPTSD

According to *ICD-11*, the defining feature of a traumatic event is that it is extremely threatening or horrific, and the reexperiencing symptoms are typically accompanied by fear or horror. This reflects the limited evidence to date suggesting that fear is the specific peritraumatic emotion most commonly associated with reexperiencing in PTSDs (Hellawell & Brewin, 2004; Massazza et al., 2021; Reynolds & Brewin, 1998). Fear is also the key emotion associated in the M&I theory with the downregulation of the visual ventral stream and the upregulation of the dorsal stream, leading to the intrusion of strong perceptual imagery with little associated context. Other emotions may well be experienced peritraumatically, but based on current evidence, only fear or horror is thought to be required for the development of the characteristic reexperiencing symptoms.

The focus on fear is consistent with a distinction drawn between “primary” emotions that are automatically elicited and experienced peritraumatically and “secondary” emotions produced by subsequent cognitive appraisal that are not necessarily experienced at the time (Brewin et al., 1996). Although shame is often considered as a secondary emotion, an alternative perspective holds that shame is part of an evolutionarily adaptive mechanism that can be elicited automatically in response to attack and humiliation (Gilbert, 2000). For example, a soldier who freezes in battle, or a victim who is unable to prevent a sexual assault, may experience shame peritraumatically. Such responses can play an important role in the development of a new negative identity or in the reactivation of an existing negative identity.

At present, however, it is unclear whether some traumatic events capable of eliciting PTSD can be characterized by shame alone, or whether there is simultaneously a degree of fear or horror that might be responsible for the biological alterations in memory processes proposed by the M&I theory. For this reason, emotions such as shame, guilt, and anger are predominantly seen as contributing to the pervasive negative self-concept aspect of CPTSD. These emotional responses may not emerge until long after the traumatic event has passed and when the person has reached a point in their development where they can reflect on the event and provide a meaning to it.

Implications for the Assessment and Treatment of *ICD-11* CPTSD

Assessment

Since the M&I theory stipulates that the proximal causes of PTSD and DSO symptoms are the related processes of memory and identity disruption, it follows that successful treatment requires an initial

assessment of both processes. Intrusive memories may involve a single event, a repeated series of similar events, or quite separate events, sometimes from different life stages. This content needs to be recorded at the outset to ascertain the most prominent examples of trauma exposure and identify common themes. The risk of dissociation related to the retrieval of each memory should be assessed and the order in which they will be addressed jointly agreed.

Another function of assessment is to determine the extent to which there is a strong positive identity with whom the therapist can establish a trusting relationship and that will be resilient to trauma exposure. This cannot be ascertained with confidence without enquiring about the presence of other, more vulnerable identities. Recognition and normalization of the fact that patients’ identities may be disturbing, confusing, or contradictory, and that they involve complex emotional and bodily experiences rather than just sets of beliefs, can play a valuable role in strengthening the therapeutic relationship. The presence of negative identities can be ascertained in several ways. One is to ask whether trauma reminders elicit changes in the kind of person patients feel themselves to be, how these changes are experienced, how consistent and powerful these changes are, and what consequences they have.

Another clue to vulnerable identities is the presence of voices, a phenomenon that is common in PTSDs (McCarthy-Jones & Longden, 2015). Voices are often critical, demeaning, or threatening and bring about alterations to experience which patients can readily describe (Brewin & Patel, 2010). As with intrusive memories, these alterations can be classified along a continuum from states that are recognized and included as part of a more extended, reflective self-concept, to states that are primarily prereflective in that they remain poorly integrated with the patient’s overall sense of self. A minority of patients will report an almost entirely chaotic, disorganized, or nonexistent self. In such cases, great care needs to be taken not to commence therapy without a full exploration of the self-structure and without an extended discussion to agree what are appropriate, and safe, therapeutic goals.

Treatment

Phasing of Treatment

When it comes to treatment, the model offers insights into the debate as to whether *ICD-11* CPTSD treatment should follow a phased-based approach or not (Dyer & Corrigan, 2021). The recommended treatment approach associated with the earliest formulations of CPTSD proposed that a stabilization phase should occur early in treatment, so that patients establish a therapeutic alliance, a sense of safety in the treatment environment, and be stable in ways essential to benefit from therapy including good management of suicidal impulses and aggressive behaviors (Cloitre et al., 2011; Herman, 1992). Advocates of non-phased-based approaches suggest that stabilization prior to trauma processing is not necessary and can slow therapeutic gains (De Jongh et al., 2019). More recent formulations have recommended flexibility in the sequencing of treatment interventions guided by the individual’s needs and preferences (Cloitre, 2015; Cloitre, Karatzias, et al., 2020).

The M&I theory suggests that traumatic memory can be addressed early in treatment if its retrieval does not trigger the activation of a negative identity, or identities, that would interfere with holding the trauma memory fully in awareness. Such an

identity would be likely to have a strong prereflective element, to be poorly integrated within the overall self-concept, and to be accompanied by marked dissociative symptoms. If this does happen, or the therapist suspects this is likely to happen, then a phased-based approach would be more appropriate. In this case, therapeutic efforts should first focus on moderating the negative identity and increasing the retrieval strength of an alternative positive identity. The activation of a positive identity should allow the patient to process the traumatic memory more effectively and with less distress.

A third phase of treatment recommended in treating CPTSD involves reintegration or reconnecting with others to build resilience and reduce the risk of relapse (Ford et al., 2005). Herman (1992) recommended that individuals be helped to care for themselves by relinquishing the parts of the self that were developed in the context of trauma and to care for their relationships to increase their sense of power and control. The importance of strengthening a positive identity and increasing self-esteem has been noted (Purnell et al., 2021). Within the M&I theory, this phase can readily be seen in terms of increasing the retrieval strength of positive identities relative to negative identities and by the provision of additional strategies to regulate negative emotions and improve relational difficulties.

Identity

Consistent with the principle of retrieval competition, identities cannot be permanently removed or abolished, but there can be changes in the way they are experienced and evaluated that leads to them being more or less dominant. The principle of retrieval competition specifies that therapeutic success comes by helping patients to ensure that positive identities remain highly accessible even when negative identities have been activated (Brewin, 2006). Another goal is to integrate the I-self (the experience of self) and the me-self (the conceptual model of the self). Working with patients to develop a model that makes intrusion of aspects of their negative identities more predictable and linked to relevant experiences, and thus providing a context that gives these events meaning, may be very useful. Creating such a model provides associative links, usually for the first time, between prereflective experiences that are frightening or confusing and positive identities that have high levels of self-awareness.

After recognizing, labeling, and providing an explanation of the function of the main negative identities, attention can turn to identifying when they are likely to become activated and what signs, if any, warn that this is about to happen. This is followed by trying to understand the conditions that result in them being activated less strongly. For example, a negative identity dominated by a sense of vulnerability may be deactivated by reassurance from specific people or by specific self-soothing routines, while identities dominated by a sense of inadequacy may be deactivated by a period spent alone or carrying out some specific activity that leads to a sense of pleasure and mastery. Aspects of identity (I-self) that are experienced as voices can be engaged with in dialogue, inappropriate or outdated assumptions challenged using Socratic questioning, and new goals negotiated that accept their function while simultaneously attempting to minimize the disruption they are able to cause (Brewin, 2019).

In line with the principles of compassion-focused therapy (Gilbert, 2014), even harsh and critical aspects of negative identity can be treated with curiosity and concern rather than being seen as unwelcome attributes. The aim is to reduce conflict between different

identities and to strengthen the accessibility of positive identities by reducing discrepancies between prereflective experience and self-awareness. Restoring the dominance of self-awareness provides metacognitive resources that can be combined with new coping strategies to improve emotion regulation and minimize dissociation. The extent to which positive identities can be quickly restored to high levels of accessibility or must be nurtured over a relatively long period is likely to depend on the patient's attachment history.

Although not part of standard treatments for PTSDs, such interventions are increasingly employed for other psychopathologies characterized by high levels of trauma, dissociation, and unintegrated prereflective experience. The experience of clinicians working with these other conditions has played an important role in the development of M&I theory. For example, the treatment of dissociative identity disorder has for many years emphasized the need to bring about an increased degree of communication and coordination among different identities, helping them to be aware of one another as legitimate parts of the self that represent adaptive attempts to master problems that the patient has faced (International Society for the Study of Trauma & Dissociation, 2011; van der Hart et al., 2006). Therapy for individuals diagnosed with psychosis who experience auditory hallucinations can similarly use dialogical methods that attempt to correct fear or passivity when hearing voices and create a more constructive relationship with them. The aim is to understand the role of the voices and relate to them as useful rather than problematic parts of the self that are the products of the individual's life history (Longden et al., 2021). The creation of a comprehensive mental model of the self is part of mentalization treatment for BPD, which recognizes that an inability to mentalize leads to major problems in affect regulation (Bateman & Fonagy, 2010).

Memory

Although moderating the influence of negative identities is likely to reduce the intrusion of traumatic memories, the M&I theory proposes that a more successful long-term solution involves promoting contextual representations and establishing connections between contextual and sensation-based representations of the traumatic event(s) (Brewin et al., 2010; Desmedt, 2021). This requires bringing the distressing traumatic memory to mind and attending to it for sufficient time to create new representations that are associated with the current context.

Bringing the memory to mind is only of value if the patient remains in a state of self-awareness and is not overwhelmed by prereflective self-experience (Ford et al., 2005). Self-awareness permits the formation of new associations between the traumatic material and other aspects of the past and present. The goal is to build a new, vivid, and highly retrievable representation of the traumatic event(s) that can compete for retrieval with the original sensation-based memory. To compete effectively, this representation should contain key sensory information such as sights, sounds, smells, and bodily sensations that normally act as triggers for flashbacks. These must be linked to an alternative context that clearly signals the traumatic event belongs in the past.

The establishment of new contexts is an integral part of effective treatments for PTSD such as eye movement desensitization and reprocessing. In eye movement desensitization and reprocessing, images of the worst moment of the trauma and accompanying

negative thoughts are held in mind while the person has their attention directed from side to side by bilateral visual cues, sounds, or hand taps. One effect of these procedures is to create new representations that contain both original traumatic material and novel, highly memorable contextual information that is incompatible with the past. Similarly, in trauma-focused cognitive therapy, patients encode new memories involving traumatic material being described and recalled in a safe context.

This new representation need not be entirely veridical; it only needs to contain sufficient features to be an effective competitor. This is demonstrated by the success of imagery rescripting in treating PTSD (Boterhoven de Haan et al., 2020; Morina et al., 2017). Imagery rescripting requires the patient to rehearse a vivid but imaginary alternative ending for the traumatic event, one involving positive elements such as escape from danger, protection by powerful others or by one's own actions, personal mastery, and the ability to take care of one's own emotional needs. The process of imagining these scenarios typically leads to positive emotions replacing negative emotions within the session, and the creation of a preferred scenario that, although known to be false, readily comes to mind in preference to the original memory.

To build the retrieval strength of the new representation, patients practice bringing it to mind, especially in the presence of cues that would normally trigger the activation of the old traumatic memory. Deliberate and repeated retrieval of the new trauma memory within the therapeutic setting increases the probability that it will be automatically retrieved when the person encounters unexpected reminders of their traumatic experience(s) in the outside world. Moreover, positive identities can be tied to the new memory representation such that they mutually reinforce one another. Linking the memory and identity representations together, and rehearsing the retrieval of both, should increase the probability that they will be routinely retrieved when exposed to unexpected trauma cues.

Emotion Regulation

Attention to prominent identities that are associated with powerful emotional states, and contextualization of traumatic memories, should in most cases lead to spontaneous improvements in emotion regulation. In some situations, however, it may be desirable to work directly on teaching strategies to increase awareness and effective regulation and expression of emotions, as is practiced in the intervention Skills Training in Affective and Interpersonal Regulation (Cloitre, Cohen, et al., 2020). This typically consists of eight weekly sessions, beginning with psychoeducation, then helping with emotion regulation, and later focusing on the identification of interpersonal goals, behaviors that undermine attainment of those goals, and unhelpful ways of perceiving the self and others.

Compassion-focused therapy is also frequently effective in reducing negative emotions and preparing the individual to address traumatic memories (Ashfield et al., 2021; Gilbert, 2014). Patients may be taught breathing techniques to control levels of arousal and given psychoeducation about the importance of controlling perceived threats within a motivational system focused on soothing, social connectedness, and safety. Exercises encourage the patient to vividly imagine interacting with a compassionate person or being, activating this system, and experiencing a reduction in self-criticism and negatively directed emotions. These elements can be incorporated into imagery rescripting where patients can be encouraged to

imagine the presence of a compassionate other with them during their traumatic event providing comfort and support and to change how they relate to themselves during the event.

Conclusions

The inclusion of CPTSD in *ICD-11* (World Health Organization, 2022) marks an important development in the field of traumatic stress studies. Although clinicians had long recognized that complex presentations of PTSD existed (Herman, 1992), it had proven difficult to formulate a diagnosis that could both withstand scientific scrutiny and be of clinical use (Brewin, 2020). The extant empirical evidence provides strong and consistent support for the construct validity of *ICD-11* CPTSD (Brewin et al., 2017; Redican, Nolan, et al., 2021). New and interesting theoretical questions have arisen, such as how PTSD and DSO symptoms arise from various kinds of trauma; why repeated and multiple forms of trauma increase the risk of CPTSD; and why there is heterogeneity in diagnostic status among people with shared trauma histories.

The M&I theory of CPTSD builds on existing theories of trauma response (Brewin et al., 2010; Ehlers & Clark, 2000; Foa & Rothbaum, 1998; Horowitz, 1976; Janoff-Bulman, 1992), and incorporates multiple insights from social psychology (Harter, 1998; Markus & Wurf, 1987; Morf & Mischel, 2012; Oyserman et al., 2012), and from cognitive psychology and cognitive neuroscience (Barsalou, 2009; Bjork & Bjork, 1992; Glenberg, 2010; Prebble et al., 2013), to answer these questions. The account of intrusive memories follows the revised dual representation theory of PTSD (Brewin et al., 2010), with the additional proposal that the continuum of reexperiencing in the present rests on the balance between sensation-based representations that are prereflective and contextualized representations that are part of self-awareness. The avoidance, sense of current threat, and DSO symptoms are ascribed to a variety of negative identities. As with intrusive memories, there is a balance between prereflective experience and self-awareness that corresponds to these representations being well or poorly integrated within the self-concept.

The M&I theory generates several testable hypotheses capable of advancing current understanding of how *ICD-11* PTSD and CPTSD develop. First, the model predicts that trauma exposure and individual vulnerability interact to determine the risk of traumatic memories and negative identities. More specifically, the model predicts that the impact of trauma on the development of traumatic memories and negative identities will be strongest at the highest levels of individual vulnerability, while low levels of vulnerability (i.e., a preponderance of protective factors such as high levels of social support, recognition as a victim) should mitigate the negative effects of trauma on memory and identity disruption. Failure to identify any interaction effect between trauma and individual vulnerability as they relate to traumatic memories, negative identities, or CPTSD symptoms would constitute positive evidence against one of the key elements of the model. Furthermore, a finding that individuals with low levels of individual vulnerability who are exposed to low-risk forms of trauma (e.g., isolated, noninterpersonal traumas in later life) have high levels of CPTSD relative to PTSD would be inconsistent with predictions and would therefore constitute a falsification of the M&I theory.

The model predicts that sensation-based memories of the traumatic event are essential to the development of reexperiencing

symptoms and are also involved in other PTSD and DSO symptom clusters. Evidence that such memories are uncorrelated with reexperiencing symptoms would be a strong falsification of the model. The role of different identities in PTSD and DSO symptoms is also an important part of the M&I theory. The model proposes that an identity focused on being unsafe or powerless causes avoidance and sense of current threat symptoms, while identities focused on inadequacy, betrayal, alienation, and emptiness, as well as fragmented identities, cause the DSO symptoms. Once again, failure to identify any positive correlation between these identities and the PTSD and DSO symptoms of *ICD-11* CPTSD would undermine the veracity of the theory. The assessment of these and all other theoretically derived hypotheses rests on the ability to measure the core theoretical constructs in a reliable and valid manner. Developing methods capable of assessing individual vulnerability, traumatic memories, and negative identities with consistency and precision is an immediate challenge.

There has been considerable interest in how *ICD-11* CPTSD should be treated (e.g., Karatzias & Cloitre, 2019; Karatzias, Murphy, et al., 2019; van Vliet et al., 2021). The M&I theory of *ICD-11* CPTSD is not aligned to any specific therapeutic approach or mode of delivery. It is consistent, however, with therapies developed for other conditions associated with high levels of trauma and dissociation. Treatments for BPD, voice-hearing, and dissociative identity disorder all recognize that, as in CPTSD, the self tends to be experienced as fragmented and unstable, and that past adversity has often not been fully understood and integrated within a comprehensive understanding of the self. The task of aligning conflicting and sometimes prereflective I-selves with an adequate me-self is, we suggest, common to all these conditions, with CPTSD additionally requiring attention to the specific intrusive memories that are experienced in the present.

In the next few years, it is likely that much will be learnt about the nature of *ICD-11* CPTSD, its causes, consequences, and treatment. Systematic comparisons of CPTSD with BPD have already been informative (Cloitre et al., 2014; Frost, Hyland, et al., 2020; Frost, Murphy, et al., 2020; Hyland et al., 2019), and comparisons with other conditions in which trauma and dissociation are prominent are likely to add greatly to this. It is our hope that the M&I theory of CPTSD provides researchers and clinicians with a coherent theoretical framework that can guide basic and applied research to better understand the nature of this disorder and to hasten the development of efficient and efficacious treatments.

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