

# The Comorbidity of Psychotic Symptoms and Posttraumatic Stress Disorder: Evidence for a Specifier in *DSM-5*

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## Abstract

The comorbidity of posttraumatic stress disorder (PTSD) and psychotic symptoms is higher than what might be expected based on the prevalence of either disorder alone. Furthermore, the presence of psychotic symptoms is evident in PTSD patients who do not otherwise meet criteria for a psychotic spectrum disorder. The current paper discusses three existing hypotheses regarding the relation of PTSD and psychosis and presents a series of case studies that illustrates this phenomenon across a diverse group of patients and scenarios. Clinical implications in light of these case studies are offered, including the suggestion that the next edition of the *Diagnostic and Statistical Manual of Mental Disorders* includes a specifier of PTSD with psychotic features.

**Key Words:** PTSD, Psychoses, Comorbidity, Case Studies

## Introduction

The effects of posttraumatic stress disorder (PTSD) can be devastating to individuals with the disorder, to their families, and to society at large (1). Fortunately, a host of new insights about PTSD has been made possible due to recent research. As the nature of this disorder becomes more apparent, emerging evidence has suggested a compelling link between PTSD and symptoms of psychosis (2). That is, comorbidity rates between delusions/hallucinations and PTSD

are steeply elevated over what population base rates would suggest. As yet, the nature of this comorbidity is unclear. The current paper is an integrative report that, in addition to exploring the link between PTSD and psychotic symptoms, reviews four clinical cases in an effort to bridge the gap between existing theoretical reviews and clinical practice.

First, basic epidemiological data for both PTSD and psychotic spectrum disorders are discussed, with particular attention to potential convergence between the two disorders. Second, three distinct hypotheses are presented discussing proposed mechanisms by which PTSD and psychotic disorders are linked. Third, we discuss these hypotheses in light of four clinical case studies. While resolving these hypotheses is beyond the scope of the present paper, some insights into the nature of PTSD-psychotic symptoms comorbidity can be gleaned from these cases. Finally, clinical and research implications are explored, with particular attention to the coming fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders*.

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## Clinical Implications

These cases draw attention to the fact that psychotic symptoms exist in patients treated at community mental health clinics who meet criteria for PTSD, but not a psychotic spectrum disorder. Considering this, the symptoms exhibited would be better accounted for by a specifier of PTSD “with psychotic features” in *DSM-5*. Although *DSM-IV-TR* acknowledges the possibility of hallucinations as manifestations of re-experiencing symptoms and the proposed criteria for *DSM-5* includes “dissociative reactions (e.g., flashbacks)” as an intrusive symptom (35), neither set of criteria accounts for hallucinations and associated delusions that are *related to* but *do not replicate* the traumatic event, as is true for each of the cases presented in this paper. Moreover, a “psychotic features” specifier is not currently listed as a proposed change to the PTSD diagnosis in *DSM-5*. Further and more precise specifications of psychotic symptoms in PTSD would raise clinicians’ awareness and lead to more accurate classification of symptoms that occur in PTSD, presumably improving treatment outcomes. Such diagnostic clarity may prove particularly useful in community mental health, where patients may be more likely to be prescribed neuroleptics in the absence of psychotherapy for PTSD. Viewing PTSD and psychotic symptoms as related components of a multifaceted form of psychopathology can encourage treating these symptoms in conjunction, such as by treating psychotic symptoms via neuroleptics, while simultaneously treating traditional PTSD symptoms via psychotherapy. This could lead to speedier and more complete recovery for patients. Evidence exists suggesting that some individuals experiencing PTSD-related psychotic symptoms are not successfully treated by antipsychotics alone (36), highlighting the potential need for a combined psychotherapy and pharmacotherapeutic treatment approach.

## PTSD and Psychosis: Epidemiological Considerations

The diagnosis of PTSD, first introduced less than thirty years ago, concerns an abnormally severe and persistent reaction to a life-threatening event. PTSD is defined in terms of re-experiencing (such as through flashbacks or nightmares) a traumatic event; avoidance of memories or reminders of the event; a sense of emotional numbing about the event in general; and, increased arousal, including feeling “on edge” or hypervigilant (3). Interestingly, although a significant portion of individuals experience potentially traumatic events (e.g., as high as 90% in the low-income, urban sample used in the Detroit Area Survey of Trauma [4]), symptoms exceed clinical threshold for only a subset of individuals. This subset is estimated to be approximately one-third based on studies of recent large-scale natural disaster or terrorist events (5).

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Psychotic symptoms, defined in terms of hallucinations and delusions, are characteristic of a host of disorders including schizophrenia, mood, substance, and cognitive disorders (3). For many of these disorders, the psychotic symptoms are present during adolescence, but do not reach clinical signifi-

cance until early adulthood (6). Interestingly, the prevalence rates of delusions and hallucinations are much higher than would be predicted based on the occurrence of psychotic disorders alone, and there is considerable research to suggest that delusions and hallucinations are surprisingly common in the general population. Of note, the rates of psychosis reported in the National Comorbidity Survey Replication (7) were approximately five percent. The majority of these cases were not attributable to cultural factors, substances, mental health or other clear organic causes. Prevailing theories suggest that individuals with psychotic symptoms have a genetic loading for psychotic-spectrum disorders, but do not necessarily manifest a full disorder due to a lack of other biological or psychosocial “illness-potentiators,” the presence of other protective factors, or both (8).

The prevalence of psychotic symptoms in individuals with PTSD has been examined in over thirty studies to date. From these data, there is accumulating evidence that individuals who have primary PTSD may experience psychotic symptoms without meeting criteria for schizophrenia, a mood disorder, or other psychotic spectrum disorder (see Braakman et al. [9] for a review). For example, Butler and colleagues (10) found that a sample of combat veterans with PTSD was more likely to endorse experiencing hallucinations, delusions, and bizarre behavior than were their non-PTSD combat veteran counterparts. Differences between psychotic and nonpsychotic PTSD may stem from a number of sources, including biology or culture. Sautter et al. (11) compared veterans diagnosed with PTSD and secondary psychotic features, veterans diagnosed with PTSD without psychotic features, and non-clinical controls and found that those with comorbid PTSD and psychotic symptoms

had higher mean levels of corticotrophin-releasing factor in their cerebrospinal fluid than both of the other groups. Frueh and colleagues (12) found that African-American veterans with PTSD were more likely to endorse hallucinations/delusions than their Caucasian counterparts. Despite considerable documentation of increased comorbidity between PTSD and psychotic symptoms, the underlying reason for this comorbidity remains unclear. In the next section, we review potential mechanisms that have been proposed in the literature to explain the co-occurrence between psychotic symptoms and PTSD (see Morrison et al. [13] for a thorough review of this topic).

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### Three Proposed Relations Between PTSD and Psychotic Symptoms

#### ***Psychosis as a Stress Vulnerability***

One hypothesis explaining the relation between PTSD and hallucinations/delusions involves a direct causal pathway in which psychosis precipitates PTSD. Individuals who experience schizophrenia, which is presumably associated with a range of social, functional, quality of life, and coping dysfunctions, may have particular difficulties when faced with traumatic events. Thus, because these individuals have diminished social, financial and psychological resources more generally, they may be more prone to develop PTSD following a crisis. While this hypothesis has not been formally examined in the population at large, there is good reason to think that it holds true to some degree for the psychiatric population. Patients with schizophrenia have considerably depleted social support, coping, and financial resources and a generally impoverished quality of life (14). Moreover, they have enhanced stress-sensitivity, suggesting that their phenomenological experience of potentially traumatic events may be more stressful than others' (15-17). Considering these factors, it is possible that vulnerabilities imposed by psychotic disorders predispose individuals to develop PTSD.

#### ***Trauma Begets Psychotic Experiences***

While the explanation above may have support for some individuals with comorbid psychosis and PTSD, it does not account for those individuals who experience hallucinations but do not meet criteria for a psychotic spectrum disorder,

or for those individuals who had no history of psychotic experiences before the onset of PTSD. Morrison and colleagues (13) proposed that the experience of trauma can lead to common symptoms associated with both PTSD and psychotic disorders. For example, victims of sexual abuse often have difficulty learning to trust others, and this reluctance to trust may evolve into paranoia and suspiciousness that present similarly as those seen in schizophrenia. Additionally, re-experiencing symptoms that take the form of a vivid auditory intrusive memory may be interpreted as an auditory hallucination if neither the patient nor the clinician draws a connection between the voice heard and the prior traumatic experience. Thus, it is possible that traumatic events lead to symptoms of PTSD, which eventually evolve into or become interpreted as psychotic symptoms.

Alternatively, given that the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Text Revision (DSM-IV-TR [3])* acknowledges hallucinations as a type of re-experiencing symptom, it is possible that hallucinations represent just that—an atypical expression of re-experiencing symptoms. However, contrary to this explanation is the finding that positive psychotic symptom severity is unrelated to re-experiencing symptoms in combat veterans with PTSD-related psychosis, suggesting that hallucinations in individuals diagnosed with PTSD, but not a psychotic spectrum disorder, may not be fully accounted for by their PTSD diagnosis alone (18).

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### ***PTSD and Psychosis Are Distinct, But Reflect Common Vulnerabilities***

A third hypothesis is that psychosis and PTSD reflect a common biological or cultural substrate. As noted by Morrison and colleagues (13), there are many common features between the two disorders (e.g., flashbacks in PTSD and hallucinations in psychosis; hypervigilance/paranoia associated with both PTSD and psychosis). Regarding the possibility of a common biological substrate, it is important to note that approximately 10% of the population is estimated to have a biological vulnerability to psychotic disorders (19, 20). While only a subset of these individuals will ever develop clinically severe psychosis, most of these individuals are postulated to have many of the characteristic genetic underpinnings of the disorder (21) and show a range of subclinical neurocognitive, physiological, functional and stress-reactivity (22) anomalies. There are two reasons to

suggest that genetic anomalies in these “at-risk” individuals manifest in both psychotic disorders and PTSD symptoms. First, none of the markers identified to date are specific to any one disorder, and they commonly co-occur across a variety of disorder spectra. Second, these “at-risk” individuals also show a range of nonpsychotic comorbidities including mood disorders, anxiety disorders, attention-deficit/hyperactivity disorder, and other symptoms. These lines of evidence point to the possibility that PTSD and psychosis reflect the expression of a common biological mechanism. While this possibility has received limited research to date, Hamner and Gold (23) identified elevated dopamine beta-hydroxylase (DBH) activity in PTSD patients displaying psychotic symptoms compared to PTSD patients without psychotic symptoms and compared to nonclinical controls. The authors asserted that the identification of this biomarker might denote a predisposition of some individuals to express psychotic symptoms as a result of trauma (23).

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When discussing possible substrata underlying both PTSD and psychotic disorders, it is also important to discuss the potential role of culture, as culture is associated with a range of idiographic coping mechanisms. For example, it is well known that many cultures accept as normal the notion of communicating with deceased relatives (24). This culture-bound syndrome is referred to as a “spell” in the *DSM-IV-TR* (3). Leister (25) suggested that the definition of hallucination be revised in order to account for the fact that some cultures consider hallucinations an integral part of religious or social rituals. Hallucinations or re-experiencing symptoms could be more apt to develop posttrauma in cultures in which communicating with deceased relatives is expected. In this way, cultural factors could be considered as predictors of psychotic experiences in PTSD, such that social or cultural predispositions to communicate with spirits might be more likely to evolve into disturbing hallucinations that are no longer better accounted for by cultural norms alone. Additionally, individuals in some urban cultures of low socioeconomic status are more likely to experience a traumatic event, thus increasing the potential base rate of PTSD (4, 26).

Finally, research suggests that many individuals experiencing psychosis in adulthood face heightened rates of traumatic experiences throughout their lives, such as child-

hood maltreatment (27) and interpersonal violence (28). For example, one study found that as high as 98% of a sample with serious mental illness experienced at least one traumatic event in their lifetime (29). In this way, cultural and social factors could be considered as vulnerabilities for both schizophrenia and PTSD, or at least as an expression of their symptomatology.

## Case Studies

As part of this project, we identified four individuals who met criteria for PTSD and illustrated varying manifestations of psychotic symptoms. Each of these individuals was in treatment at an outpatient community mental health clinic in a city in the southeastern United States that was dramatically affected by Hurricane Katrina. All individuals were diagnosed with PTSD using clinical interviews, and none met criteria for a psychotic spectrum disorder. The investigation was carried out in accordance with the latest version of the Declaration of Helsinki. Following university and state institutional review board approval, the nature of the study procedures was fully explained to the participants and informed consent was obtained. Participants were assessed using the Mini-International Neuropsychiatric Interview (M.I.N.I. [30]), the PTSD Checklist-Civilian Version (PCL-C [31]), and the Beck Depression Inventory-II (BDI-II [32]). Possible PCL-C scores range from 17 to 85, and a cutoff of 50 has been suggested to differentiate clinical populations from subclinical populations (33). Possible BDI-II scores range from 0 to 63, and the following ranges are used to indicate severity: minimal (0 to 13); mild (14 to 19); moderate (20 to 28); and, severe (29 to 63) (34). Participants were compensated with bus tokens and/or cash. All identifying pieces of information, including names, were changed to preserve anonymity.

### Case #1

Mary is a single African-American female in her mid-40's. She has a ninth grade education and is currently unemployed. A review of her chart indicated that she has hypertension and hyperlipidemia. Based on the diagnostic interview, Mary was diagnosed with PTSD and major depressive disorder. She scored 50 on the PCL-C and 26 on the BDI-II. Although Mary endorsed using alcohol occasionally, she did not meet criteria for a substance use disorder. Her psychiatric medications included Lexapro and Valium. Mary endorsed a history of mental illness in her family, stating that, although she did not know the specific diagnosis, one of her sons has psychiatric problems.

Mary's PTSD was diagnosed following the fatal shooting of her adult son approximately five years ago. Although Mary did not witness the shooting, she heard the gunshots



a few blocks from her mother's home. She endorsed experiencing dissociative symptoms on the day of the shooting, indicating that it did not feel real to her and that she did not believe that her son was dead. While Mary does not experience nightmares or flashbacks of the shooting, she endorsed experiencing intrusive thoughts about the event, including the thought that her son is not really dead. She endorsed avoiding thoughts and conversations about the shooting; avoiding activities, people, and places that reminded her of the shooting (e.g., the neighborhood in which it occurred); and, having difficulty remembering important parts of that day. Mary endorsed experiencing several hyperarousal symptoms, including difficulty sleeping, irritability, difficulty concentrating, and being easily startled.

Mary also reported experiencing auditory and visual hallucinations related to her son's death. These symptoms reportedly began on the same day as the shooting. She stated that at least once per week, her son appears to her and talks to her regarding his death, saying things like, "I don't know why they shot me, Mama" and "Come home [to heaven] with me." She indicated that these visits were distressing to her. Mary reported that no one else in her family sees or speaks with her son. She denied experiencing any psychotic symptoms prior to her son's shooting.

### Case #2

James is a divorced African-American male in his mid-50's. He has an eighth grade education, is not currently employed, and lives in a homeless shelter. Based on a chart review, he was diagnosed with epilepsy and prescribed Dilantin and a muscle relaxer. Based on the diagnostic interview, he met criteria for PTSD, major depressive disorder, and alcohol dependence. However, he reported that he was not using alcohol at the time of the traumatic event. He scored 68 on the PCL-C and 14 on the BDI-II. James also reported occasional use of marijuana. James' psychiatric medications included Seroquel and Zoloft.

James' PTSD was diagnosed after Hurricane Katrina, during which he waited three days on his roof before being rescued. After his own rescue, he and a friend rescued other victims; however, there were many he was unable to help given limited resources. James endorsed having flashbacks about the storm and becoming fearful when he was reminded of the event by something in the environment. He also endorsed avoiding conversations about the storm and places that reminded him of Katrina (e.g., neighborhoods or old houses). He endorsed feeling estranged from others and indicated that his feelings were numbed. He endorsed a sense of foreshortened future in addition to hyperarousal symptoms of always being "on guard" and being easily startled by noises in the environment, all of which represented differences in

behavior since Katrina. He endorsed associated symptoms of sleep difficulties, outbursts of anger, and problems concentrating. His family history was reportedly positive for mental illness; however, he had no knowledge of specific diagnoses.

James endorsed daily auditory hallucinations of unfamiliar voices calling out to him to be saved and reported that he believed these to be the voices of people he was not able to help after the disaster. He reported that he had not used alcohol for at least one month before the storm. During the three days of waiting to be rescued, he could hear other people calling for help from their rooftops. One week after the event, James began to have auditory hallucinations of people calling out for help and trying to get his attention. He reported that this was the first occurrence of auditory hallucinations in his lifetime and that he began using alcohol again because the hallucinations were distressing to him. James also reported being uncomfortable in crowds for fear that a victim he was unable to save might recognize him and be angry with him.

### Case #3

Sandra is a married African-American female in her early 50's. She has a fourth grade education and is currently unemployed. Her medical conditions included hypertension. Based on the diagnostic interview, Sandra was diagnosed with major depressive disorder and PTSD. She scored 55 on the PCL-C and 46 on the BDI-II. She denied any history of substance use. Sandra's psychiatric medications included Lexapro and BuSpar. She reported that her brother was diagnosed with "learning problems," but had no more specific information on her family's psychiatric history.

Although Sandra had experienced multiple traumatic events, including ongoing childhood sexual abuse, her PTSD was diagnosed after the murders of her brother and her niece, which occurred within a few days of each other. Sandra did not witness either shooting, but saw the blood-stained mattress on which her brother was shot after the body was removed. She endorsed re-experiencing symptoms in the form of flashbacks of the murder scene. She reported that she avoided thoughts or conversations about her brother's death; avoided activities, people, and places that reminded her of her brother's death; and, felt numb since the murder. Sandra also reported having difficulty sleeping, feeling irritable, and feeling nervous or "on guard."

In addition to the PTSD symptoms described above, Sandra reported experiencing auditory and visual hallucinations following her brother's death. She indicated that the symptoms began on the same day as the shooting, within the last year. Although some of the hallucinations Sandra endorsed are hypnopompic and, therefore, already accounted for by Criterion B of PTSD (3), she reported other halluci-

nations while fully awake. She indicated that her brother appeared to her several times per week and that she had conversations with him about his murder, stating, “He always visits.” Sandra also endorsed dissociative experiences related to her brother’s death. She described an occasion during which she was driving with her grandchildren in the car. As she was driving, she dissociated and felt that she was in the sky with her brother looking down at the children in the car as it moved down the highway. She reported that her brother tried to get her to sign a paper indicating that she would go to heaven with him. Sandra told her brother that she could not come with him and, shortly thereafter, resumed full consciousness behind the wheel. Although Sandra reported being occasionally visited by deceased relatives before her brother’s death, the “visits” were spiritual in nature and, therefore, accounted for by cultural factors (25). She also reported occasionally being visited by her deceased niece. Currently, she finds the visits by her brother and niece to be distressing and reportedly does not want to see them.

### Case #4

Jill is a married Caucasian female in her early 50’s. She has a twelfth grade education and is not currently employed. A review of her medical chart revealed that she was diagnosed with diabetes. Based on the diagnostic interview, she met criteria for PTSD, major depressive disorder, and panic disorder with agoraphobia. She scored 53 on the PCL-C and 40 on the BDI-II. Her psychotropic medications included Cymbalta, Ativan, and Trazodone. She reported a family history of mental illness, including schizophrenia and depression in first-degree relatives.

Although Jill reported prior trauma exposure, including domestic violence, her PTSD was diagnosed after experiencing Hurricane Katrina in 2005. During the hurricane, she was present in her home when it was flooded and lost electricity. She was also concerned for the safety of herself and her family. After the hurricane, she and her family stayed in the home and were concerned about running out of food and water. During the interview, Jill endorsed symptoms including frequent nightmares of the event and avoidance of talking about the event and activities or places that reminded her of the storm. She also reported estrangement from others, emotional numbing, and a sense of foreshortened future. Finally, she reported difficulty sleeping, increased irritability, difficulty concentrating, and being easily startled and constantly “on guard.”

In addition to these symptoms, Jill also reported olfactory hallucinations which she described as “the smell of death.” She could not identify exactly what the smell was, but stated that it was similar to the odor she remembered at the time of the storm. She reported experiencing this hallucination

several times a month and that she had been experiencing it fairly consistently since the hurricane. She reported that no one around her could smell the odor. She indicated that this was distressing for her and that it had awoken her from sleep at times, although she usually experienced it during the day while awake. The trauma occurred approximately four years ago, and she reportedly had not experienced psychotic symptoms prior to that time.

## Summary and Implications

Each of the cases described above represents a unique manifestation of psychotic symptoms that emerged post-trauma. Although these case studies do not offer conclusive evidence as to the nature of the relation between PTSD and psychosis, several important points can be gleaned from this report. First, the cases represent moderate diversity in gender, race, and type of traumatic experience, suggesting that PTSD and psychotic experiences co-occur in a range of patient demographics and scenarios. Additionally, some of the individuals described above endorsed experiencing dissociative symptoms during and after the traumatic event, while others did not. Thus, while dissociation during a traumatic event is associated with a worse prognosis in PTSD generally, and predictive of who will develop PTSD after experiencing a traumatic event (34), it appears unrelated to the development of psychotic symptoms in that psychotic symptoms may develop with or without the presence of peritraumatic dissociative symptoms. Additionally, although the cases presented in this paper also met criteria for major depressive disorder, the onset of their psychotic symptoms occurred immediately following the traumatic event, indicating that the symptoms may be more related to PTSD than depression. Furthermore, the psychotic experiences were not always mood congruent (e.g., the case of Jill), and in some cases (e.g., James) the clinical interview and BDI-II scores indicated mild depression, suggesting that these experiences are not fully accounted for by depression. Finally, two of these individuals (i.e., Jill and Sandra) reported experiencing depressive symptoms without psychotic symptoms prior to their identified traumatic experience.

Although empirical support is limited, these cases provide support for the theory that trauma exposure precipitated psychotic experiences in these individuals. However, this does not preclude the possibility that PTSD and psychotic disorders reflect common vulnerabilities. Most of the individuals presented had family histories of mental illness (e.g., Mary, James), and one had first-degree relatives diagnosed with schizophrenia (i.e., Jill). Thus, is it possible, and perhaps likely, that biological vulnerabilities that are found in families with schizophrenia are also found in individuals displaying PTSD and psychotic symptoms.

Perhaps most importantly, these cases draw attention to the fact that psychotic symptoms exist in patients treated at community mental health clinics who meet criteria for PTSD but not a psychotic spectrum disorder. Considering this, the symptoms exhibited would be better accounted for by a specifier of PTSD “with psychotic features” in *DSM-5*. Although *DSM-IV-TR* acknowledges the possibility of hallucinations as manifestations of re-experiencing symptoms and the proposed criteria for *DSM-5* includes “dissociative reactions (e.g., flashbacks)” as an intrusive symptom (35), neither set of criteria accounts for hallucinations and associated delusions that are *related to* but *do not replicate* the traumatic event, as is true for each of the cases presented in this paper. Moreover, a “psychotic features” specifier is not currently listed as a proposed change to the PTSD diagnosis in *DSM-5*. Further and more precise specifications of psychotic symptoms in PTSD would raise clinicians’ awareness and lead to more accurate classification of symptoms that occur in PTSD, presumably improving treatment outcomes. Such diagnostic clarity may prove particularly useful in community mental health, where patients may be more likely to be prescribed neuroleptics in the absence of psychotherapy for PTSD. Viewing PTSD and psychotic symptoms as related components of a multifaceted form of psychopathology can encourage treating these symptoms in conjunction, such as by treating psychotic symptoms via neuroleptics, while simultaneously treating traditional PTSD symptoms via psychotherapy. This could lead to speedier and more complete recovery for patients. Evidence exists suggesting that some individuals experiencing PTSD-related psychotic symptoms are not successfully treated by antipsychotics alone (36), highlighting the potential need for a combined psychotherapy and pharmacotherapeutic treatment approach.

Improved clarity in the diagnostic specificity of psychotic features in *DSM-5* might also spark future research. Studies are needed to determine whether adjunctive antipsychotic treatment along with empirically supported psychotherapy for PTSD improves treatment outcome above either treatment alone. Additionally, research examining a potential common vulnerability between PTSD and psychotic disorders might help early intervention efforts for those at risk for developing psychotic symptoms related to their PTSD.

Overall, the increased specificity and diagnostic clarity provided by a “with psychotic features” specifier in *DSM-5* would heighten awareness of this unique comorbidity and subsequently inform research and treatment of the condition, leading to gains in clinical practice and communication across the disciplines of mental health.

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