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Psychotic dream-related aggression: A critical review and proposal

Anthony G. Hempel[a], Alan R. Felthous[b,c], J. Reid Meloy [d,e,*]

[a]*North Texas State Hospital, Vernon, TX, USA*
[b]*Southern Illinois University School of Medicine, Springfield, IL, USA*
[c]*Southern Illinois University School of Law, Carbondale, IL, USA*
[d]*University of California, San Diego, CA, USA*
[e]*University of San Diego School of Law, San Diego, CA, USA*

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Abstract

The relationship among parasomnias, sleep-related violence (SRV), and psychosis has neither been reported nor studied. The authors introduce the phenomenon of psychotic dream-related aggression (PDRA) and, through a review of the research on manifest dreams, the continuity of thinking across the sleep–wake cycle, and SRV, argue for its inclusion alongside the parasomnias of DSM-IV. Five cases are presented that illustrate this phenomenon, usually a male diagnosed with paranoid schizophrenia whose violent act toward another was closely associated with the manifest content of his nocturnal dreams and his inability to test reality. Differential diagnostic criteria are proposed to separate PDRA from other parasomnias that may be related to violence. Treatment and forensic implications are discussed.

Keywords: Dreams; Nightmares; Sleep disorders; Violence; Homicide; Parasomnia; Psychosis

1. Introduction

Plato (1982, p. 573) once observed with measured ingredients of wisdom and fear that, "in all of us, even in good men, there is a lawless, wild-beast nature which peers out in sleep."

* Corresponding author. P.O. Box 90699, San Diego, CA 92169, USA. Tel.: +1-858-488-0358.
E-mail address: jrmeloy@san.rr.com (J.R. Meloy).

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The clinical sciences have not, until recently, paid much attention to this active process, this state of mind, which consumes one-third of the life of our species. The same dearth of investigation can be found regarding sleep's cinematic production, the dream. We still hesitate to answer the question posed by psychoanalysis: who is the dreamer who dreams the dream, and who is the dreamer who understands it? (Grotstein, 1979).

Modern advances in sleep medicine, however, have resulted in an increased awareness of an association among aggression, violence, and certain sleep states (Mahowald & Schenck, 2000). The DSM-IV-TR refers to such disorders that might involve aggression toward others as *parasomnias* and briefly alludes to violence toward self or others in the four diagnoses of nightmare disorder, sleep terror disorder, sleepwalking disorder, and parasomnia not otherwise specified (American Psychiatric Association, 2000). Rapid eye movement (REM) sleep behavior disorder (RBD) falls under the latter diagnosis and is described as "motor activity, often of a violent nature, that arises during REM sleep" (p. 592). These so-called disorders of arousal are most often, however, not associated with significant psychopathology (Moldofsky, Gilbert, Lue, & MacLean, 1995), and the DSM-IV-TR gives short shrift to any association between a sleep disorder and a major mental disorder, other than symptoms of insomnia or hypersomnia in relation to anxiety or depression. The relationship among parasomnias, sleep-related violence (SRV), and psychosis has neither been reported nor studied.[1]

In this review and proposal, we introduce a phenomenon called psychotic dream-related aggression (PDRA). We will present five cases of patients wherein a violent act toward others appeared to be closely associated with the manifest content and primary process construction of a nocturnal dream. All patients were diagnosed with a major mental disorder, typically paranoid schizophrenia, which also played a significant role in the violence. As a preface to this exploratory study, we will briefly review the importance of dreams in culture and history and the classification of SRV by Mahowald and Schenck (2000). We will then discuss the significance of PDRA as it is manifest in the five cases and propose criteria that distinguish it from other forms of SRV. We finish with a brief discussion of forensic and treatment implications.

2. Dreams in culture and history

The ancients attributed great importance to dreams. Archaeological findings have uncovered writings related to dreams dating back to 3000 BC. Gudea, a Sumerian king living in 2200 BC, built a temple for his god Ningirsu because a dream directed him to do so (Van de

[1] We did find one book reference in which the author devoted a chapter to the topic of dream, psychosis, and murder (Schipkowensky, 1938). In one of the case presentations, he reported a patient who experienced dreams about his father trying to destroy his future and himself by robbing him of his creativity. The dream implanted the forbidden wish that he should beat his father to death. This was a very early and thoughtful case study that attempted to relate dream activity to both a paranoid psychosis and the decision to murder. Unfortunately, this book has only been translated into German and Bulgarian.

Castle, 1994). Special temples were built by the ancient Chinese, Egyptians, Greeks, and Romans—sanctuaries to which people would retreat to understand the meaning of their dreams. Sophocles established the first shrine to honor the Greek physician Aesculapius during the 5th century BC and dedicated it to the healing power of the dream, the principal therapeutic vehicle for the relief or cure of physical maladies (Van de Castle, 1994). Both Hippocrates (469–399 BC) and Galen (ca. 130 AD) believed dreams had prophetic, psychological, and diagnostic utility. Galen was known to carry out successful surgical procedures based upon the guidance of his dreams.

Ancient and contemporary cultures have also sanctified the compulsion to act on one's dreams. The ancient Mesopotamians, populating the country we now know as Iraq, would tell their nightmares to a reed and then burn it, believing this act destroyed any of the dream's evil consequences (Van de Castle, 1994). Seventeenth-century Christian missionaries were taken aback by the North American Iroquois Indians' obligation to execute at the earliest moment the content of the preceding night's dream, sometimes resulting in injury or death to the dreamer and his associates (Wallace, 1958). The modern-day Kagwahiv of the Amazon (Kracke, 1992) and the Zuni tribe of the southwestern United States (Tedlock, 1992a, 1992b) must discuss their dreams by the fire to cancel out their possible future danger. The Roman emperors Augustus and Tiberius expelled several astrologers and dream interpreters from Rome. Libo Drussus, a descendent of Pompey and relative of the emperors by marriage, was compelled to commit suicide because he put too much credibility in his dream forecasts and astrological predictions (Grant, 1960).

Although dreams have captured attention throughout history, there have been periods when dreams and associated phenomena were banished from study or discussion. Christians during the Dark Ages forbade dreams because of their obsessive concern with demons and devils—objects of pain and mischief—which they believed caused dreaming (Van de Castle, 1994). Russian interest in dreams and their interpretation has been highly ambivalent. Subjects under Czar Nicholas at the turn of the 20th century were tantalized by the writings of Freud (1900), but following the Communist Revolution, Lenin banned all discussion of the unconscious and dreams in 1926. He believed these topics were unscientific and removed all such texts from bookstores and libraries. Kruschev lifted this ban briefly and allowed a public exchange of ideas. However, the Cuban Missile Crisis in 1962 ended such libertine activities, which were not reinstated until perestroika, the rule of Gorbachev, and the subsequent collapse of the Soviet Union in 1991 (Tedlock, 1992a, 1992b).

Several artistic and scientific achievements were generated by the dreams of their creator. Mary Shelley's *Frankenstein*, Robert Louis Stevenson's *The Strange Case of Dr. Jekyll and Mr. Hyde*, Bram Stoker's *Dracula*, and William Burroughs' *Naked Lunch* were all born of their respective author's dream content. Anne Rice had a prophetic dream of the death of her daughter, which influenced the creation of her child vampire character, Claudia. Stephen King created the character Hubie Marston in his book, *Salem's Lot*, from a dream. Television producer Dan Curtis got the idea for the daytime Gothic television series, "Dark Shadows," from a dream. The chemical structure of the benzene ring, the sewing machine needle, the light bulb, and the first technique to isolate insulin were all based on the manifest content of the inventor's dream (De Koninck, 2000; Riccardo, 1997; Van de Castle, 1994).

Many famous acts are also attributed to dreams. Both Alexander the Great and General George Patton first visualized some battle plans in their dreams. Calpurnia, the wife of Julius Caesar, almost convinced her husband to forgo the Senate meeting during the Ides of March, 44 BC. She had dreamed the night before his assassination that he was murdered by several Roman senators. Emperor Augustus, the anxious successor of Julius Caesar, issued a proclamation that anyone who dreamed about the Roman Commonwealth must announce the dream in the marketplace (Van de Castle, 1994). Two centuries later, Constantine's ascension to the throne of Rome was assured by his victory at Milvan Bridge. The night before the battle, he dreamed that an angel descended from heaven and spoke to him, "In this sign thou shalt conquer." When he awoke, he immediately ordered that Christian symbols be painted on all the standards and shields of his army. His born-again experience in a dream never wavered, and Christianity became the official religion of the Roman Empire (Van Doren, 1991).

Two weeks before his death at the hands of John Wilkes Booth, President Abraham Lincoln had a prescient dream (now referred to as "precognitive dreaming"), which described in great detail his own assassination. A few days before Alabama Governor George Wallace was shot in the spine and paralyzed by Arthur Bremer, the governor's son had a dream of the event (Van de Castle, 1994). An English housewife had dreams prophesizing the attempted assassination of Ronald Reagan and completed assassination of Anwar Sadat in 1981. Both dreams were told to others before the events, and witnesses signed such affidavits (Van de Castle, 1994).

Sugar Ray Robinson dreamed he threw a left hook that killed his opponent the night before his first world welterweight title defense against Jimmy Doyle. The next day he refused to fight, but was eventually cajoled into doing so by a Protestant minister and a Roman Catholic priest. In June 1947, Doyle died in the ring as Robinson had dreamed he would, killing him with a blow from his weaker left arm (MPI Home Video, 1978). "I stood over him transfixed, seeing my dream come true, horribly true" (Robinson & Anderson, 1970, p. 141).

In December 2001, a video of Osama bin Laden and a Saudi Arabian radical cleric was released to the international news media by the FBI. The video captured bin Laden discussing the prophetic dreams of other Taliban and al Qaeda "brothers" concerning the attacks against the World Trade Center and Pentagon on September 11, 2001. There appeared an anxious concern that such precognitive dreaming, and its attendant discussion among the true believers who had no foreknowledge of the attacks, would ruin their plans.

Seven years earlier, legend has it that the prophet Muhammad came to Mulawi Mohammed Omar in a dream, ordering him to cleanse his tribe of a corrupt and criminal Pakistani warlord. Omar responded to the dream by organizing a force of 50 former mujahideen comrades, assassinated the warlord, and founded a fledgling religious movement known as the Taliban (Bodansky, 2001). Mullah Omar eventually married a daughter of Osama bin Laden. Although the factual basis of the formation of the Taliban differs from this legend, its existence as a contemporary myth underscores the widely held belief in the teleological, or the causal nature of dreams. Not only do they predict events, they may control them, and reality may derive from the world of dreams (Uzoka, 1988).

Tedlock (1992a, 1992b) noted that it was not until the development of the mechanistic dualism of Descartes in 17th century Europe that dreams were located within the realm of

fantasy and irrational experience. This recent historical development of Western philosophy—the duality and separateness of spirit and matter—is not shared either historically or contemporaneously by the majority of our species, and dreaming is not considered an isolated, irrational, perhaps even random neuronal firing of an otherwise physical brain that is only matter and perhaps only matters. This philosophical stance partially explains why dream research is largely derided and marginalized by mainstream psychology; and contemporary psychiatry, in its most recent biological incarnation, only focuses upon the observable and physiologically measurable aspects of sleep disorders.

3. Sleep-related violence

Although prominent in psychoanalytic theories of human psychology (Greenberg & Mitchell, 1983), dreams have received virtually no attention in the clinical assessment, management, and treatment of patients with major mental disorders. Mahowald and Schenck (2000) developed a comprehensive forensic system of classification of the parasomnias, however, during which violent acts could occur. Although similar to the parasomnias in DSM-IV, an explicit forensic approach facilitates application to those with major mental disorders and psycholegal questions of culpability during criminal acts of violence. Their classifications are summarized in Table 1.

3.1. Disorders of arousal (DOA)

These disorders are usually not associated with major mental disorders, although there is often amnesia for the event. They affect 10% of the population. They may be precipitated by alcohol, sleep deprivation, obstructive sleep apnea, certain medications, pregnancy, menstruation, and emotional stress. Vivid dream-like narratives and imagery may be occasionally reported, and most episodes occur early in the sleep cycle. All may be genetically transmitted (Mahowald & Schenck, 2000).

3.1.1. Confusional arousal

This is the mildest form of arousal disorder and inhabits the twilight between sleep and wakefulness. It is complex motor behavior without conscious awareness. This type of

Table 1
Classification system of the parasomnias that may be associated with violence toward self or others (Mahowald & Schenck, 2000)

I. Disorders of arousal
A. Confusional arousal (sleep drunkenness, somnolentia)
B. Sleep terrors (ST, pavor nocturnus)
C. Sleep walking (SW, somnambulism)
II. REM sleep behavior disorder (RBD)
III. Nocturnal seizures

"automatism" can result in injurious violence toward others and even homicide (Howard & D'Orban, 1987).

3.1.2. Sleep terrors

This is the most dramatic of arousal disorders, usually initiated by a piercing cry and extreme panic. It is most prevalent among 6-year-old children. Terror-stricken gross motor behavior follows, which is accompanied by sympathetic activation of the autonomic nervous system. Defenestration—throwing oneself through a window—has been noted in some cases, but the most prominent feature is inconsolability.

3.1.3. Sleepwalking

This is a complex behavior automatism that can range from walking during sleep to cooking food, driving a car, or playing a musical instrument. The mood may be calm or agitated, but most commonly, the person is difficult to arouse from sleep. Victims have been strangled, stabbed, and killed with an ax by an individual in a somnambulistic state (Howard & D'Orban, 1987).[2]

3.2. REM sleep behavior disorder (RBD)

Normal REM sleep is associated with active paralysis of all somatic muscles except for the diaphragm and eyes (Kryger, Roth, & Dement, 2000). REM sleep occurs cyclically throughout the night (every 80–100 minutes), accounts for 20–25% of total sleep, and is the period during which most dreaming occurs. In RBD, the muscle atonia is absent, allowing the individual to act out his dreams, sometimes in violently dramatic ways. RBD is usually idiopathic, but may be seen in the elderly who suffer from neurological disorders. Victims are usually those in close proximity to the sufferer, and accidental self-injury commonly involves fractures and lacerations. RBD may happen at any time during the sleep cycle, there is usually complete dream recall, and the images are often vivid nightmares of being attacked, with the dreamer fighting back in self-defense (Kryger et al., 2000). Both RBD and the disorders of arousal share complex motor behavior without consciousness. In the former, there is a closer correlation with dream imagery. Such behavior infers the independence of locomotor centers in the brain to direct complex behavior without higher cortical input, particularly conscious executive functioning.

[2] The most bizarre case of sleepwalking and violence involved a famous French detective named Robert Ledru. Hospitalized at le Havre for a nervous breakdown in 1888, he woke up one morning and his socks were damp. Later that day, Paris detectives solicited his help to solve a murder, which had occurred in nearby St. Andresse. A man's body was found on a beach with his clothing neatly folded next to him. Ledru discovered two clues: footprints in the sand from stocking feet and a bullet fired from a Luger pistol, which had killed the man. The obsessive detective found that his stocking feet matched the footprints in the sand and his Luger pistol had fired the bullet found at the scene. Detective Ledru surrendered to authorities for a murder that he did not remember, but was found not responsible by the court. The detective agreed to spend the rest of his life locked in a prison cell in Paris at night to prevent another occurrence of somnambulistic violence. He remained a free man during the day (Wilson, 1998).

3.3. Nocturnal seizures

These phenomena are separate, at least theoretically, from RBD and DOA. The confusion arises when parasomnias mimic, precipitate, or are triggered by epileptic activity during sleep. DOA is often confused with epilepsy. Effective treatment for an epileptic disorder may effectively remit a disorder of arousal. There is ample documentation that some recurrent dreams or nightmares are primary manifestations of nocturnal seizures (Shouse & Mahowald, 2000). There are also nocturnal seizures that have resulted in violent activity (Kryger et al., 2000). Seizures termed "unusual behavioral seizures" often originate in the frontal lobes and may present as running, loud vocalizations, and cursing. "Episodic nocturnal wanderings" have been described as indistinguishable from sleepwalking and sleep terrors. During sleep, the patient may articulate, vocalize, or display violent behavior (Kryger et al., 2000). Other violence may be the result of post-ictal confusion. Fortunately, polysomnography (PSG) is able to distinguish RBD from nocturnal seizures. There is not, however, a specific PSG pattern for any of the disorders of arousal at present (Mahowald & Schenck, 2000).

Although each of these parasomnias begins in a state of sleep and several are associated with dream imagery and violence, none of them address the close relationship we have observed among psychosis, dream imagery, and violence in select patients, a phenomenon we call "psychotic dream-related aggression."

4. Five cases of PDRA

4.1. Methodology

Five cases were drawn from a large pool of patients admitted to a maximum-security forensic hospital. Cases were used in this exploratory study if they included: (a) the commission of a violent act against another person, (b) current or past experience of severe nightmares or vivid nocturnal dreams, (c) the violence was judged to have been caused, in part or in whole, by the manifest content of their dreams, (d) credible data were available to complete a codebook of 24 factors. Credible data included psychiatric history (patient report, collateral reports, past hospital records), current psychiatric data (psychiatric interview, progress notes, psychological testing, neuropsychological testing, and EEG recordings), courtroom testimony, past criminal history, and statements made at the time of the offense or later admitted to by the patient.

4.2. Mr. A

Mr. A is a 34-year-old male diagnosed with schizophrenia, paranoid type, who stabbed his wife without provocation or obvious rational motivation. He was admitted to the hospital after a finding of not guilty by reason of insanity. Mr. A also suffered from nightmares associated with his psychosis and violent assault.

Somnambulism reportedly began in childhood. His wife, who survived the stabbing, observed that as long as she had known him, Mr. A had episodes of sleepwalking and sleeptalking. Mr. A reported that his father and two paternal uncles also had a history of sleepwalking. He also reported frequent ''scary nightmares'' most of his life, and after such intense dreams, had difficulty adhering to reality. Mr. A's first voluntary psychiatric treatment was lorazepam for his anxiety and insomnia, which subdued his agitated sleep but did not affect his somnambulism.

Two months before attacking his wife, Mr. A became increasingly agitated, emotionally labile, and deluded. He believed that Mafia gangsters were following him, and microphones had been planted in the floors and ceiling of his home to record his thoughts and actions. Additional psychiatric treatment and benzodiazepine at bedtime did not improve his overall condition. Financial and marital stressors intensified, and his persecutory delusions became more compelling. On one occasion after a terrifying dream, Mr. A ran from the house to fetch a weapon to protect his family. On other occasions, he would awake with the conviction that someone was breaking into his home, and he checked to make sure no one had forced entry. Nightmares were occurring once a week. His sleepwalking increased, and on two occasions, he broke a door down. He became delusionally jealous and demanded a close accounting of his wife's whereabouts and use of money.

Mrs. A provided the following account of the assault, since Mr. A's recollection was unclear. Around 4:00 a.m. on the morning of the attack, Mr. A asked his wife if he should be committed. He also asked her if she wanted to shower. She did not, but he turned it on anyway. He then left the house, entered his car, and started the engine. He re-entered the house, paced back and forth, and went into their bedroom with a ''glassy-eyed'' facial expression and his hands held behind his back. Yelling, ''they're making me do this!,'' he began stabbing Mrs. A. Realizing his actions, he stopped, leapt into his car, and drove at a high rate of speed directly into a tree, intending to commit suicide.

On mental status exam, Mr. A was appropriately dressed and cooperative. His orientation, concentration, attention, and memory were within normal limits. Whenever he talked of his wife, his eyes drifted away from the interviewer and he became tearful, experiencing genuine guilt and shame over injuring his wife. Auditory hallucinations, ''paranoid feelings,'' and nightmares, all pronounced on admission, completely remitted after treatment with 5 mg haloperidol.

4.2.1. Commentary

Mr. A's paranoid psychosis alone may provide sufficient explanation for his attack, and his major mental disorder was misdiagnosed prior to the attack. Nevertheless, his unclear recall of the incident, history of somnambulism, destruction of property while sleepwalking, and his history of nightmares warrant consideration. Nightmares had been followed by defensive acts, including the possession of a weapon. A reasonable inference, although not articulated by Mr. A, is that a dream, perhaps of his wife's infidelity, reified and intensified a delusion of infidelity, propelling him to attack Mrs. A soon upon awakening.

4.3. Mr. B

Mr. B is a 43-year-old Spanish-speaking man with prior convictions of assault and driving while intoxicated (DWI). He was found incompetent to stand trial for the offense of burglary with intent to commit a felony and later determined not guilty by reason of insanity. His diagnoses were psychosis not otherwise specified (NOS), alcohol dependence, and seizure disorder.

The night of the attempted assault on his neighbor, Mr. B experienced a nocturnal dream in which he heard quite clearly a voice telling him that his neighbor was having sex with his wife and children. When he awoke, he believed his neighbor was the devil. Mr. B grabbed a machete with a three-foot blade, went to his neighbor's home, broke through the front door, and attempted to kill the man. Although he provided a fairly consistent and detailed account of his behavior, he suggested that he may have been sleepwalking, or at least not fully awake. He attacked his neighbor by attempting to whack his head with the machete and did inflict serious injury. Afterward, Mr. B admitted he was trying to kill his neighbor and would have "split his head wide open if he did not raise his arm." His wife later reported that the victim sustained a large wound on his head and face and another laceration on his right shoulder.

Psychiatric history revealed a possible episode of somnambulism in 1990 during which he sustained a head injury and was unconscious for several hours. In 1995, Mr. B was observed wandering in traffic in a confused mental state. He had not been eating or sleeping and voiced a belief that someone wanted to kill him. He also reported that voices were telling him that his wife and family were plotting to kill him. He also heard a "tape recording" of people laughing at him.

In 1993, Mr. B had developed epilepsy. In previous hospitalizations, CT scan and EEG were read as normal, although a partial complex seizure was reportedly observed. During the present hospitalization, his EEG was abnormal with epileptiform activity in the left fronto-temporal area, and paroxysmal slow waves were transient during hyperventilation. A subsequent EEG 2 months later showed abnormal epileptiform spike and wave complexes bifrontally, although greater in the right hemisphere during drowsiness and sleep. At the time of his hospitalization, he reported a seizure about once every 15 days despite pharmacotherapy with anticonvulsants.

During his mental status exam, he expressed the belief that he was Jesus Christ, although he acknowledged that others accused him of being the devil. Machines would tell him to kill himself while he was sleeping. In subsequent interviews, he reaffirmed and amplified his paranoid delusions; for example, he explained that his dreams indicated to him that his neighbor was the devil and controlled the church.

Mr. B was treated with olanzepine 25 mg/day for his psychosis. His seizures were treated with phenytoin and carbamazepine; depressive symptoms were treated with sertraline 150 mg/day. His psychosis remitted and he was maintained on a lower dose of olanzepine 10 mg/day.

When interviewed 3 years later, Mr. B's mental disorder was substantially improved. He maintained that the "clear voice" had told him in his sleep that his neighbor was having an affair with his wife and molesting his child, which had motivated him to attempt the killing. After this clear, compelling, and disturbing dream, Mr. B experienced similar voices while

both asleep and awake. He expressed regret, moreover, for his acts toward his neighbor and was concerned that his neighbor would seek revenge. He was no longer delusional, did not experience further hallucinations, and recognized these were symptoms of a mental illness that needed medical treatment.

4.3.1. Commentary

Mr. B's history of seizure disorder and epilepsy must be considered among the differential phenomena that contributed to his violence. His account, moreover, suggests something else. While asleep, he heard his neighbor tell him that he was having sex with his wife and child. This was either a dream with a pronounced audible component or an auditory hallucination that first intruded during sleep. These experiences, while both asleep and awake, contributed to his persecutory and jealous delusions and the subsequent attack on his neighbor. The sleep phenomena identified both the nature of the threat—sex with his wife and children—and the source—his neighbor. Based upon his good recollection of the events, both sleepwalking and an epileptic state are unlikely as diagnostic points of reference. RBD may have played an initial role in his violence. However, upon awakening, it appears that psychotic-related dream aggression is necessary for a fuller explanation.

4.4. Mr. C

Mr. C is a 38-year-old divorced male diagnosed with schizophrenia, paranoid type, chronic, who was found incompetent to stand trial for the alleged capital offense of two murders. When Mr. C was asked why he killed two people, he expressed his belief that others were killing him, a conviction derived in no small part from his disturbing nocturnal dreams. After initially denying insight, Mr. C acknowledged that at the end of his dreaming, he often felt as though he was being choked and suffocated. He reported that it was emotionally very painful to be repeatedly killed and then brought back to life. "I killed because I had to stop them from killing me and my family." He continues to hear voices and see visions of killing and being killed by others.

Mr. C was also obviously psychotic, regardless of the contribution of his dreams. He laughed inappropriately, mumbled to himself, and hallucinated during interviews. He experienced ideas of reference, thought insertion, and auditory hallucinations from outside his head. These voices informed Mr. C that he was Satan, and he strictly adhered to this delusional identity. He also believed that he lived on the moon for over 100 years and had been to other planets, had died and been reincarnated 100 times in childhood, and when 12 years old, he had entered the body of Jesus in Israel. Mr. C was treated with olanzepine, 20 mg/day, with little benefit.

4.4.1. Commentary

Mr. C was floridly psychotic, and his thought disorder impaired his ability to accurately recount his subjective experiences. His paranoid delusions alone could have led to his double murder; but even so, he emphasizes that his "nocturnal dreams" were the source of his belief that others were killing him and his family, justifying the homicides. We question whether he

was attributing a false reality to otherwise nonpathological dreams of aggression, or whether the dreams themselves were actually intrusions of his psychosis during lighter stages of sleep. Some aspects of his nocturnal experiences appeared to be hypnogogic or hypnopompic phenomena.

4.5. Mr. D

Mr. D is a 28-year-old single male diagnosed with schizophrenia, paranoid type, who was found not guilty by reason of insanity for killing a young woman with a firearm. His account of hearing voices while asleep, ordering him to kill the victim, was expressed only after the official psychiatric evaluations were completed, and therefore was not recorded in any of the initial medical reports.

Mr. D suffered from persecutory delusions in which his victim, a female coworker at the post office, was a central figure in his paranoid pseudo-community (Cameron, 1959) of enemies at his work site. He believed this young woman followed him, spied on his activities, and knew virtually everything he did. He claimed she wiretapped his telephone conversations and recorded his activities at home. He complained to the police and filed a report concerning her intrusions. He also filed a report with the postal inspector, but was not allowed to speak with him since he was not believed. He also reported them to the young woman's supervisor, but nothing was done.

Six weeks before the killing, Mr. D obtained a 0.45-caliber semiautomatic pistol for self-defense. One week before the event, he began to contemplate seriously on shooting her, and finally the voices persuaded him to do it. Armed with the handgun, he confronted her in a back room of the post office: "This will teach you not to talk about me and my family." He shot her in the head five times. He handed the pistol to a coworker who entered the room and headed for home. He was arrested on route.

Only after numerous evaluations and the not guilty by reason of insanity (NGI) adjudication did Mr. D say that he heard the voices while asleep, commanding him to kill the victim. He also heard voices while awake. Such "oneiric" phenomenon persisted after the killing, but subsided with his other psychotic symptoms while awake through treatment with olanzepine, 10 mg, at bedtime.

4.5.1. Commentary

Mr. D's paranoid psychosis could have driven him to kill without experiencing nocturnal voices while asleep. On the other hand, it is quite plausible that without these voices, while asleep and awake, the intensity of his convictions would not have arisen to the threshold compelling him to act. Whether these were voices in his dreams, or intrusions of his psychosis while asleep, these experiences, together with his belief in their veridical reality, were factors in his motivation to kill.

4.6. Ms. E

Ms. E is a 27-year-old female with schizophrenia, paranoid type, antisocial personality traits, and a history of cocaine and marijuana abuse. She was accused of stabbing her mother

several times and was found not guilty by reason of insanity. She had acted on delusional beliefs—stemming from her nocturnal dreams—that her children were being sexually abused by her mother and father.

Ms. E's psychiatric illness began when she was 16 years old. She was hospitalized on four different occasions, and her most frequent recurring complaint was "real bad dreams." Her paranoid thoughts appeared to be a product of her nocturnal dreams.

Two weeks prior to the assault, Ms. E had repetitive dreams that her 7-year-old daughter and 6-year-old son were being sexually abused by her parents and a Caucasian adolescent. Ms. E was African-American. Both in these dreams and while awake, she smelled vaginal and fecal odors emanating from her daughter's breath and also saw that her son's mouth was molded into the shape of a circle, flanked by stretch marks—evidence that he had been performing fellatio. In one dream, her father coached her daughter to perform cunnilingus on her mother. Such dreams, together with these olfactory hallucinations, visual hallucinations, and illusions, sustained her delusional belief in the sexual abuse.

On the day of the assault, Ms. E accused her mother of the sexual abuse and followed her throughout the house. She eventually stabbed her mother in the back, leaving her impaled with a kitchen knife. Her mother survived. Ms. E had attempted to stab her mother with a knife 10 years earlier.

Ms. E was subsequently treated with sertraline 75 mg for depression and olanzepine 10 mg for her psychotic symptoms.

4.6.1. Commentary

Ms. E, like all the previous cases, suffered from a paranoid psychosis. Like the majority of cases, she was diagnosed with schizophrenia. Her persecutory delusions of sexual seduction of her children sharply contrasted with her clear, coherent, and organized thought processes. Nocturnal dreams seemed to parallel her conscious delusions and were mutually reinforcing. Not only did she accept the veridical reality of her dreams, but her psychotic symptoms when awake also contributed to the certainty and aggressive impulses that surrounded her delusions. Ms. E still occasionally dreamed of the sexual abuse by her parents, but she was now able to separate her persecutory nightmares from external reality.

5. Discussion

The dominance of the male gender in our small cluster of studies of PDRA is expected, given the predominance of males among all violent perpetrators (Wilson & Herrnstein, 1985). Male dominance is also reported in other studies of SRV, ranging from 80% to 100% (Bonkalo, 1974; Mahowald, Bundlie, Hurwitz, & Schenck, 1990; Mahowald & Schenck, 1989; Schenck, Bundlie, Ettinger, & Mahowald, 1986).

The mean age of 34 in the PDRA sample is higher than the usual age range for male violence in the general population, 15–24 years (Siegel, 1998). Major mental illness may partially account for the older range of our subjects (ages 27–43). Other studies of SRV typically do not include psychotic patients, but the mean ages are instructive. Mahowald and

Schenck (1989) found that individuals suffering from RBD were typically older than 50 years. Bonkalo (1974) found an age range of 27–48, almost identical to ours, in 20 cases of murder associated with sleep drunkenness (confusional arousal). In contrast, subjects diagnosed with somnambulism (Kavey, Whyte, Resor, & Gidro-Frank, 1990), nightmares (Kales et al., 1980), and night terrors (Soldatos & Kales, 1982) had their first onset in childhood. These data suggest a trimodal Gaussian distribution for the onset of SRV, with the midpoint locating the PDRA subjects and those suffering from confusional arousal.

5.1. Nocturnal dreaming, fantasy, and reality testing

The continuity between waking and dreaming is evident in all five subjects and was first demonstrated by Calkins (1893) in his description of the manifest content of 375 dreams. His work was initially replicated (Andrews, 1900; Weed & Hallam, 1896) and repeatedly demonstrated in normals in various empirical studies (Auld, Goldenberg, & Weiss, 1968; Hall, 1948; Kramer & Roth, 1973). Clinical and theoretical approaches to the continuity of dreaming and waking thought were pursued by Freud (1900/1955) in his articulation of primary and secondary process; Rapaport (1951), in his identification of five thought experiences ranging from dreams to hypnagogic hallucinations, reveries, daydreams, and ordered waking thoughts; and Schafer (1954), in his conceptualization of a dream–percept continuum composed of the dream, the daydream, purposeful visualizing, and visual perceiving. Other authors made additional contributions to this formal thought and consciousness continuum (Fiss, Klein, & Bokert, 1966; Froeschels, 1949; Kirtlery & Sabo, 1981; Varendonck, 1921).

Most germane to our understanding of PDRA was Rapaport's (1951) criteria for differentiating the points along his continuum: first, they differed in the kind and extent of reflective awareness possible; second, they differed in the extent of voluntary effort possible in them; third, they differed in formal thought organization. The closer the state was to dreaming, the more pictorial and implicative thought became. The closer to waking, the more verbal and explicit it was. Emphasis also shifted from syntactic to psychological importance as one moved toward the dream state. The role of the subject also became more diffuse as one progressed from waking to dreaming.

Our five subjects commonly awoke from their dreams in a very agitated and hostile state. Fiss, Ellmann, and Klein (1969) found that anger is more likely to appear in waking fantasies if arousal interrupts a beginning or concluding period of REM. Nightmare sufferers also report that their dreams have a greater impact on mood the following day when compared to controls (Kales et al., 1980). Aristotle even believed that dream images served as a starting point for waking thoughts and may stimulate waking behavior (Van de Castle, 1994).

Frosch (1983) noted that pathological ideas that exist preconsciously can be transformed into a dream. Starker (1974) found that persons with distractible, bizarre, anxious, or frightening daydreams had the most bizarre, emotional, and negatively toned dreams. Starker and Hasenfeld (1976, p. 399) wrote, "both waking and sleeping fantasy states, in turn, appear intimately linked with mood through an ongoing cycle of cognitive, affective interactions which ultimately create and express the parameters of the human fantasy experience."

The role of reality testing—the ability to distinguish between interoceptive and exteroceptive stimuli—is crucial, moreover, to our understanding of PDRA. Without the subject's ability to determine the location of the self-experience along this dream–waking continuum, the capacity to test reality is lost, and psychosis is present. In all of our subjects, psychosis grossly impaired the ability to distinguish within from without, dreams from fantasies, and fantasies from consensual reality.

5.2. Psychopathology, dreams, and violence

Is there an empirical relationship among psychopathology, dreams, and violent behavior as we found in our five subjects? Raphling (1970) reported a greater frequency of themes of death and violent hostility in the dreams of patients who had attempted suicide when compared to patients who had not. Suicidal behavior secondary to manifest dream content has also been reported by others (Fennig, Salganik, & Chayat, 1992).

Schizophrenia and dreaming has also been explored. Hartmann (1984) reported in two studies that a sizeable number of nightmare sufferers could be diagnosed with schizophrenia, schizotypal personality disorder, or borderline personality disorder. He also found an unusual frequency of schizophrenic biological relatives in his nightmare group. Minnesota Multiphasic Personality Inventory (MMPI) results, which were blindly analyzed, were consistent with paranoid schizophrenia among the subjects.

Reality testing impairments have been strongly implicated in the dream life of schizophrenics. Kramer (1970) reported that frightening dreams with rapidly changing sequences were unique to schizophrenia. Brenneis (1971) found a continuity in the thinking of schizophrenic patients when awake and asleep, characterized by a fluidity and insubstantiality of boundaries. Langs (1966) found that manifest dreams often mirrored waking symptoms. Hysterics reported lengthy, detailed, and unambiguous dreams; schizophrenics' dreams reflected a proneness to conflict with others and a view of people and the environment as overwhelming and traumatizing; psychotically depressed patients had brief and barren dreams. Meloy (1984) found a significant relationship between measures of formal thought disorder when awake and measures of primary process when dreaming in a sample of parents of schizophrenics.

The dream research of schizophrenics, however, has not produced consistent results, probably due to the measurement and confusion of form and content and the impact of individual differences (Boss, 1958; Brenneis, 1971; Cappon, 1959; Dement, 1955; Kant, 1942; Noble, 1951; Richardson & Moore, 1963; Winget, Kramer, & Whitman, 1972). Although there does not appear to be any such thing as a psychotic dream (which may be redundant) or particular dreams that characterize psychoses, we are in agreement with Frosch (1983) that the inability to distinguish between a dream and reality is a more important frame of reference. Mack (1969, p. 39) cogently wrote, "the capacity to distinguish dreams from reality facilitates the maintenance of sanity."

All of our subjects lost their ability to test reality prior to their attacks, and often the visual imagery in their dreams liberally fueled their waking fantasies and other psychotic symptoms. Their inability to distinguish internal and external stimuli often precipitated their murderous

behavior. Frosch (1983) describes such cases from his own work and emphasizes the vivid quality of the dream that continued into wakefulness. Our subjects similarly describe their experiences, such as Ms. B's dream: "It was so clear and very bright." Vividness, implying a strength and clarity of perception, may be a prerequisite for the violation of the constraints of reality in these cases. Dream content, mood, and tone have also heralded such disorders as cancer, immune dysfunction, heart attacks, migraine headaches, and seizures (Epstein, 1964; Van de Castle, 1994). Hostility is more frequent in the manifest dreams of hypertensives (Saul et al., 1954).

We found one historically famous case of PDRA that illustrates these characteristics. Following the assassination of President William McKinley in 1902, a Bavarian immigrant named John Schrank had a vivid nocturnal dream. He saw the assassinated McKinley sitting up in a coffin and pointing toward a man in monk's attire whom Schrank recognized as Theodore Roosevelt. Schrank heard McKinley say, "This is my murderer; avenge my death." He eventually pursued Roosevelt, covering 2000 miles and eight states. On Monday, October 14, 1912, Schrank shot the President from 6 feet away with a 0.38-caliber revolver while preparing to leave for a speech at the Milwaukee Auditorium. The bullet lodged in his chest after penetrating a heavy overcoat, suspenders, shirt, metal spectacle case, and a folded 50-page speech. Roosevelt, against physician's advice, insisted on giving an 80-minute speech and then walked into the hospital with no help. Schrank was eventually found not guilty by reason of insanity and spent the rest of his life at Central State Hospital in Wisconsin. He was diagnosed with dementia praecox paranoid, what we now term paranoid schizophrenia (Gore, 1970; Miller, 1992; Morris, 2001).

Mack (1969) identified five characteristics that may indicate a subject's inability to reality test a nocturnal dream: vividness, associations with waking anxiety, persistence into waking hours of the affective and perceptual aspects of the dream, loss of the ability to know whether the dream did occur, is occurring, or was a fantasy or part of a dream, and a conviction that the dream is prophetic (this latter criteria may, however, be culture specific for the patient). In our subjects, decompensation resembled a slow but accelerating downward spiral. Thought deteriorated into delusion. Senses were permeated by hallucinations. Dreams transposed into nightmares. Early stages showed mild symptoms, such as fearful thoughts, faint voices, and occasional insomnia. When the decompensation was complete, persecutory delusions of imminent death were rampant, angry voices screamed during wakefulness, and terrible torments haunted each night's dreaming.

The nature of the violence among our subjects was similar to crimes committed by other paranoid individuals. The offenders usually knew their victims and interacted with them daily. In all but one case, only one person was attacked. Although weapons of opportunity were used at the scene of the crime, all but one attack carried some amount of preparation. The desire to attack often incubated in delusions and nocturnal dreams for weeks. Three subjects used a cutting instrument, and all their victims survived. Two subjects used a firearm and all of their victims died. All victims were shot or stabbed repeatedly, a testament to the intensity of anger or fear, or both, felt by the subjects. All but one attack occurred in a home. It appears that the PDRA subjects showed an unusual blending of both affective and predatory modes of violence: there was intense autonomic arousal prior to the attack, anger

or fear was felt, and the violence was a reaction to an imminently perceived threat; on the other hand, the violence was often planned and carried out for a purpose, albeit a delusional one (Meloy, 1988, 1997).

5.3. Treatment

The intimate association between psychosis and dreams, and by inference, the continuity of such experiences, was empirically evident in treatment. Remission was not immediate for either phenomena, but when medications were effective, improvement in psychosis paralleled a diminution of nightmares, often ushering in feelings of guilt and remorse for the violence. When medications did not touch the psychosis, nightmares continued.

All but one subject showed significant improvement from antipsychotic medications alone or in combination with other psychotropics. Response time varied from 1 week to 16 months, the latter due to a poor initial response, necessitating the use of atypical antipsychotics and augmentation agents. These were usually mood stabilizers, antidepressants, anxiolytics, and antiepileptics. The most common class of drugs mentioned in the literature for treatment of the parasomnias is the benzodiazepines. They have been found helpful in the management of somnambulism (Kavey et al., 1990), RBD (Schenck et al., 1986), and nightmares associated with posttraumatic stress disorder (Van der Kolk, Blitz, Burr, Sherry, & Hartmann, 1984). Desipramine was helpful in a case of RBD (Schenck et al., 1986), and hostility and anxiety in the dreams of depressed patients decreased significantly with antidepressants (Kramer, Whitman, Baldridge, & Ornstein, 1968).

Significant sleep disorders, however, can be caused by psychotropic medications. Luchins, Sherwood, Gillin, Mendelson, and Wyatt (1978) reported the case of a 40-year-old schizophrenic female who stabbed her daughter while in a somnambulistic state. After extensive testing at the NIMH Research Ward at St. Elizabeths Hospital, it was determined that her thioridazine, taken at bedtime, caused her sleepwalking. This finding withstood the rigors of a double-blind placebo trial and EEG monitoring. Psychotropics have also been shown to cause nightmares if given in one large dose at bedtime. These iatrogenic nightmares disappeared when the medication was given in divided doses, relinquishing a powerful bolus effect (Flemenbaum, 1976). Other cases of drug-induced somnambulism have been reported (Huapaya, 1979; Luchins et al., 1978). Antidepressants have caused RBD (Guilleminault, Leger, Philip, & Ohayon, 1998). Benzodiazepines have also been found in one study to disinhibit dreams, rendering them more unpleasant, verbal, physically aggressive, and sexual (Gaillard & Phelippeau, 1976). One of us (AGH) has anecdotally noted a number of patients who have complained of nightmares once they began a regimen of SSRI antidepressants.

5.4. Differential diagnosis

PDRA appears to be distinct from other forms of SRV in the literature, although to our knowledge, this is the first identification of such a phenomenon. Several writers, in contrast to the case series represented here, have expressed the opinion that SRV is not correlated with other mental disorders (Howard & D'Orban, 1987; Mahowald et al., 1990).

In an earlier case report, one of us described a phenomenon in which dream content identified the patient's victims and primed him to act violently against the victims (Felthous, 1993). In common with the five cases presented here, his violent acts against others were judged to have been caused by a pathological belief in the content of his nocturnal dreams. However, one important difference was distinguishing: aside from the delusional belief in the truth of his dreams and a past history of alcohol and substance abuse, this patient did not suffer from a major mental illness such as schizophrenia. Except for his encapsulated delusional belief in his dreams, he did not suffer from any psychotic disorder. Results of psychological testing supported the impression of schizotypal, histrionic, and borderline personality traits, but not major mental disorder. The final clinical diagnoses were antisocial personality disorder and mixed personality disorder with schizotypal, borderline, and paranoid features. The cascade of nocturnal dreams with violent content, persecutory delusions arising from the dreams and subsequent acts of violence driven by delusional threats were viewed as borderline psychotic phenomena. In this case, the mental disturbance was treated effectively with thiothixene.

Dream belief–violent act sequences can occur even without otherwise obvious major mental illness and should be considered in nonhospital forensic populations. In contrast, the cases presented here illustrate that the dream belief–violent act sequence also appears in patients with gross and obvious psychotic illness. If clinicians simply attribute the violence to psychosis without considering nocturnal dreams, they could miss this important phenomenon quite relevant to future violence potential.

We think the absence of attention paid to PDRA is due to the infrequency of clinical questions directed to the patients concerning their dreams. Psychotic patients are also very reluctant or too disturbed to discuss dreams, especially those woven into their psychosis. As patients' thoughts clear and psychosis decreases due to treatment, resistance to share nocturnal experiences lessens, but this is also the time when psychiatric inquiry diminishes in most acute inpatient settings.

There are a number of differences between PDRA and other parasomnias that may include violent behavior. First, in PDRA, the violence is directly related to manifest dream content, and the absence of reality testing—typically due to a major mental disorder—compels belief in the veridical reality of the dream. In other parasomnias, the violence is intimately associated with the sleep state. Second, in PDRA cases, a major mental disorder is diagnosed. In other parasomnias, a disorder of consciousness or arousal is present.

Third, PDRA violence may unfold over an extended period and involve a certain degree of planning or purposefulness that is motivated by persecutory delusions. In other parasomnias, the violence is invariably brief and highly affective. Fourth, in PDRA, the subject does not suffer injuries, but injures others. In other parasomnias, the subject is often injured. Fifth, PDRA does not include amnesia. Although there is typically no amnesia in RBD, some degree of amnesia is present in sleepwalking and nocturnal seizures. Sixth, PDRA is not potentiated by alcohol or sedative–hypnotics. Other parasomnias are commonly precipitated by ingested drugs. Seventh, PDRA is not potentiated by a lack of sleep, while the other parasomnias are. Eighth, PDRA violence is not followed by shock, horror, or perplexity. Other parasomnias that cause violence are often immediately followed by the subject's horror or perplexity. Ninth, in

PDRA, the subject is fully awake. In the parasomnias, the violence occurs when the individual is suddenly awakened (night terrors and somnambulism). Tenth, PDRA victims were either deliberately injured or killed. Other parasomnias result in victim injury caused by aimless, impulsive, flailing behavior. These differences are summarized in Table 2.

5.5. Forensic directions

Evaluation of PDRA begins with the clinician's attention to how the patient views, responds to, or is affected by his nocturnal dreams. Open-ended questions, such as, ''Tell me about your dreams?'' may solicit continuity between daytime fantasies and dreaming. Questions can be asked which explore the continuum described by Mack (1969):

1. How vivid are the patient's dreams? How many different senses are stimulated by them? Is the patient preoccupied with his dreams?
2. Does the dream cause intense anxiety or fear?
3. Are there lingering affective or perceptual elements of the dream after awakening?
4. Can the patient distinguish between dreaming, fantasy, and waking cognition?
5. Does the patient believe the dream is prophetic, prescient, or magical?

Data sources should include patient interviews, staff progress notes, prior psychiatric and psychological reports, and psychological testing. Projective testing, such as the Thematic Apperception Test, can uncover affects and perceptions associated with self- and other representations. The Rorschach is particularly useful in accessing deeper levels of personality structure and dynamics, and can directly measure the patient's reality testing and formal thought. Sensitivity to reality impairment (*X*–%) and formal thought disorder (WSum6 Special Scores) on the Rorschach can be a source of initial diagnostic formulations, as well as a measure of change over time while in treatment. Manifest dream content may also emerge

Table 2
Differential diagnosis of psychotic dream-related violence from other parasomnias that may be associated with violence

Psychotic dream-related violence	Other parasomnias
1. Violence directly related to manifest dream	Sleep-arousal violence
2. Major mental disorder diagnosed	No major mental disorder
3. Planning, often delusional, for violence	Violence brief, reactive, unplanned
4. Severe injury to others, not to self	Minor injury to self and others
5. No amnesia for violence	Often amnesia (SW, seizures)
6. No drug potentiation	Often potentiated by drugs
7. No lack of sleep potentiation	Often potentiated by lack of sleep
8. No shock, horror, or perplexity; sorrow or guilt following remission of psychosis	Sudden shock, horror, or perplexity
9. Fully conscious and awake	No or partial consciousness
10. Victims deliberately injured or killed by a lethal weapon	Injury caused by impulsive flailing with or without a weapon

during Rorschach testing due to the ambiguity of the stimuli. Such data will not be uncovered using self-report measures, such as the MMPI-2 or neuropsychological tests.

An innovative group treatment approach utilizing dreams was developed by Wilmer (1982). A dream seminar was introduced on an inpatient unit for chronic schizophrenics at a Veterans' Administration hospital. Patients met once a week to discuss their dreams. The program appeared to benefit patients with insomnia and night terrors and assisted them in developing insight.

Although there has been resistance in Western psychiatry to focus upon the psychotic patient's dreams, there appears to be no empirical evidence that this is harmful. Evidence from our study and the wisdom of the ancients, on the other hand, suggest that the manifest dreams of patients—and their ability to test reality—may have great diagnostic, treatment, and risk management benefits. Alternatively, patients who are terrified by their dreams and would benefit from forgetting them may be able to paradoxically reach this goal by confronting their dream content, understanding that it is separate from external reality, and compartmentalizing such experiences as an aspect of their major mental disorder.

6. Summary and conclusions

PDRA appears to be a distinct form of SRV that should be included in existing classification schemes alongside other parasomnias that may cause violence. Although PDRA is not a parasomnia per se, it appears to have sufficient differential criteria to warrant further research and study. PDRA also acknowledges the wisdom of the ancients that dream content influences human behavior. It extends our understanding of the continuity of cognitive processes across the sleep–wake cycle that may, in the face of major mental disorder, lead to preventable and treatable violent behavior.

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