

# Continuity between waking life and dreams of psychiatric patients: A review and discussion of the implications for dream research

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**Summary.** Despite positive results from the use of dreams in psychotherapy and for personal growth, research regarding the relationship between waking life and dreams of patients with mental disorders is relatively scarce. An approach to investigating the relationship between waking and dreaming is to identify the continuities (similarities) and discontinuities (dissimilarities) between the dreams and waking life. The present paper reviews the existing literature on dreams of psychiatric patients. Furthermore, it seeks to identify the continuities and discontinuities between the dreams and the waking life psychopathology of these patients, in order to shed light on the relationship between waking life and dreams. The findings demonstrate that several aspects of the waking life psychopathology of the patients show both continuity and discontinuity in dreams. An example of continuity is eating disordered patients dreaming more of food than healthy controls. An example of discontinuity is less traumatic or depressive content in dream reports of depressed than non-depressed. The results indicate that a more specific and comprehensive definition of continuity is needed, and that more attention must be granted to the phenomenon of discontinuity. Furthermore, assessments of specific symptoms should complement the patients' diagnoses for comparisons with dreams to be meaningful.

**Keywords:** Dreaming, continuity, discontinuity, mental disorders, psychiatric patients, dream content, waking life

## 1. Introduction

The mental activity of dreaming has fascinated people for ages. These mysterious scenes and images of the night can stir up the strongest of emotions, and feel as real as experiences of the waking life. Some of the earliest written records of dream reports that have been found are clay tablets documenting dreams from people in the early Mesopotamian civilizations in the third millennium BC (Bulkeley, 2008; Oppenheim, 1956). As for modern people's interest in dreams, King and DeCicco (2009) found in a sample of university students that 81% believed their dreams to contain important information. Similarly, Morewedge and Norton (2009) found that the majority of their participants, from both eastern and western cultures, believed that dreams contain hidden truths, and considered information presented in dreams to provide more important information about the world than similar waking thoughts. Clearly, dreams continue to fascinate us today.

Many attempts at an explanation of the cause and purpose of dreams are set forth (Moffitt, Kramer, & Hoffmann, 1993). The theories range from the view of dreams as nothing but a biological epiphenomenon with no purpose (Flanagan, 1995), to the view that dreams are messages from the divine (Bulkeley, 2008). Yet no consensus exists in the scientific community for any explanation of this nightly phenomenon and its relation to personality, emotions and waking life experiences. The usefulness of dreams as tools for waking life is also debated. Nevertheless, since the early 1900s, with the publication of *The Interpretation of Dreams* by Sigmund Freud (Freud, 1953), dreams have been utilized by psychotherapists as a therapeutic tool. An increasing number of studies have demonstrated the different ways in which the application of dreams in therapy have been successful as an aid both for diagnosis (Ishida et al., 2010), treatment (Gilchrist, 2013; Knudson, 2006; Widen, 2000), therapy progression (Kramer & Glucksman, 2006) and prognosis (Cartwright, Young, Mercer, & Bears, 1998; Kramer, 2000). Dreams can help clients gain insight about themselves, increase their therapy involvement, ease the access to central issues, facilitate a safe environment for exploring oneself, and aid the therapist's understanding of the client and his or her progress in therapy (Pesant & Zadra, 2004). For some patient groups more resistant to therapy, exploring issues and emotions through dreams have proven to be a good alternative (Brink & Allan, 1992). Positive results have also come from using dreams in couples therapy (Kolchakian & Hill, 2002) and group therapy (Falk & Hill, 1995). In addition to therapy, the use of dreams by healthy individuals for personal growth has been pointed out to be both valuable and underestimated in terms of its usefulness (Berube, 1999; Ullman, 2006). Furthermore, dreams have also been demonstrated to enhance waking life creativity, by yielding

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inspiration for artwork, solving work-related problems, motivating the dreamer to deal with a difficulty in his or her life, and providing emotional insights (Schredl & Erlacher, 2007).

In spite of the many indications of the benefits of dreams, the use of them remains limited. There are several reasons for this. Even though the use of dreams is demonstrated to be effective, much uncertainty still exists regarding exactly what aspects of working with dreams are effective (Pesant & Zadra, 2004). Furthermore, as science is unable to fully determine the nature and function of dreams, the development of a reliable procedure of utilizing them effectively is largely impeded. This lack of facts and established guidelines, as well as the subjective nature of dreams, probably prevents many from exploring them, personally and scientifically. For instance, feeling a lack of competence in working with dreams causes many clinicians to abstain from utilizing their patients' dreams in therapy (Crook & Hill, 2003).

### 1.1. The Continuity Hypothesis

As a way of studying the nature and function of dreaming, research has aimed at investigating the relationship between dream content and waking life. The findings of this research has accumulated in what has been coined "the continuity hypothesis of dreaming", which states that dreams reflect waking-life (for a review see Domhoff, 1996; Schredl, 2003). Many research findings support this hypothesis, and certain patterns of connection between waking-life and dreaming are identified (Gilchrist, 2013; Hartmann, 2000; Hartmann, Rosen, & Rand, 1998; Kramer, 2006; Schredl, 2006; Schredl & Hofmann, 2003; Schredl & Reinhard, 2009; Schredl, Schäfer, Hofmann, & Jacob, 1999). For instance, dreams have been found to be affected by waking life aspects such as emotions (Gilchrist, 2013; Kramer, 1993), stress (Breger, Hunter, & Lane, 1971), personality characteristics (Gilchrist, 2013; Hartmann et al., 1998), psychopathology (Brink & Allan, 1992), and level of well-being (Pesant & Zadra, 2006). Pesant and Zadra (2006) demonstrated that the lower the participants' level of daytime psychological well-being, the more their dreams contained negative emotions, aggressive social interactions and failures.

However, despite the many findings in favor of the continuity hypothesis, much uncertainty still surrounds it, as the exact formulation of the hypothesis remains vague. This means that there is a lack of specificity in terms of which aspects of waking life is incorporated, to what extent and what factors affect the incorporation rate. Schredl and Hofmann (2003) have demonstrated that a general formulation of the continuity hypothesis is not valid, as some aspects of waking life, such as cognitive activities like reading and writing, are reflected in dreams less often than other aspects (see also Hartmann, 2000). It has been suggested that threatening events are incorporated more often in dreams (Revonsuo, 2000). This is questioned, however, by the finding that emotional tone does not affect the incorporation rate, i.e., negative events are not incorporated more frequent than positive events (Schredl & Reinhard, 2009). Furthermore, the time passed since the event and at which time of the night the dream is collected from seem to affect the rate of incorporation of waking life into dreams (Schredl, 2006). Several authors emphasize that dreams deal mostly with personal and emotional concerns (Domhoff, 1996; Hall, 1953; Hartmann, 2011). This is supported by research showing that the emotional intensity of an experience increases its incorporation rate (Schredl, 2006), but more support is still

needed. In short, there is a need for a specification of what waking life aspects are incorporated into dreams, to what extent, and what affects the incorporation rate.

In order to specify which aspects of waking life is incorporated into dreams, one needs to clarify how waking life is portrayed in dreams. One perspective is that to be continuous with waking life, the dream scene must be a realistic replica of a waking event. In this perspective, an event the dreamer has not or can not experience, such as flying unaided, will be considered discontinuous. A different perspective is that such unrealistic, and seemingly discontinuous, dream scenes portray subjective aspects of experience, such as emotions, concerns, and fantasies. Such dream scenes might, then, be viewed as visual metaphors for experiences that might not be properly portrayed by a realistic course of (dream) events (Malinowski & Horton, 2011). Fosse, Fosse, Hobson, and Stickgold (2003) demonstrated that only 1-2% of dreams contain more or less exact replicas of waking life events, indicating that dreams mostly incorporate waking life in more creative ways than by direct copy.

Schredl (2012) has compiled a list with a total of 14 aspects of waking life that has been suggested by different authors to be continuous to dreaming. This list includes both overt behavior (such as actions) and covert behavior (such as thoughts and emotions). With such a large number of waking life aspects possibly being portrayed in dreams, and without a clear understanding of how these aspects may be portrayed, the assessment of continuity is likely to be a complex exercise.

### 1.2. Discontinuity

As necessary as defining continuity, and possibly even more challenging, is defining discontinuity, i.e. elements that seem unrelated to the dreamer's waking life. One definition includes dream content of the type already mentioned, namely that which depicts unrealistic events. Another definition of discontinuity can be dream scenes where actions, people and places are in some way altered from their waking life-form, e.g., a family member appearing younger than his or her actual age. Yet another example of discontinuity can be dreams that seem totally unrelated to the persons waking life. However, as pointed out, the conclusion of dream content being continuous or not can depend on how one understands waking life to be portrayed in dreams.

In summary, the specification and revision of the continuity hypothesis is an ongoing debate (Hobson & Schredl, 2011), attempting to define and make sense of both continuous and discontinuous elements.

### 1.3. The Aim of This Review

A considerable amount of research exists on the dreams of healthy individuals. The research on dreams of psychiatric patients, on the other hand, is scarce. Reviews of this research has been done in the past (Kramer, 1970, 2000, 2010; Kramer & Nuhic, 2007; Kramer & Roth, 1978; Mellen, Duffey, & Craig, 1993; Ramsey, 1953). These reviews examined available research on the content of the patients' dreams to understand the development and causes of psychopathology (Kramer, 2010), and to uncover the potential of dream content as a diagnostic tool (Mellen et al., 1993). No review has so far thoroughly investigated the continuity between waking and dreaming for psychiatric patients. However, the effects of mental disorders on waking life are

substantial. Consequently, the effect on dreams might also be notable, making investigations of the dreams of psychiatric patients a potential source of valuable information about the relationship between waking life and dreams. The aim of the present paper is, therefore, to identify the continuities and discontinuities between dreams and waking life of psychiatric patients, in order to contribute to our understanding of the relationship between waking life and dreams. This aim will be approached in the following manner: First, by reviewing available studies and previous reviews of dreams of patients diagnosed with one of the main mental disorders (i.e., schizophrenia, depression, anxiety disorders, personality disorders, eating disorders and obsessive compulsive disorder). Characteristics in the dreams of these patients will be identified and presented in the result section. The focus will be on dream content, but nightmare frequency and effect of therapy will also be included. Second, findings that seem to indicate continuity and discontinuity between the dreams and the waking life and symptomatology of the patients will be highlighted in the discussion part of the paper. Lastly, based on the findings, the implications for the understanding of the continuity between waking and dreaming will be discussed. Methodological issues in the field of dream research as well as directions for future research will also be considered.

## 2. Method

The present paper is a review of the aforementioned reviews on dream content for patients with mental disorders, including a systematic literature search to the present date. The earliest review (Ramsey, 1953) is not included as the reliability and relevance of its findings are inadequate. Neither is the review from 1970 (Kramer, 1970), as the studies it reviewed are also found in the later reviews. A different set of diagnoses is included in the present review, compared to the previous reviews. More details of this will be given shortly.

The literature search was performed in August and September 2013, screening the data bases PsycINFO, PubMed and MEDLINE for articles in English. Other search engines and databases were also used, such as Google, Google Scholar, Web of Knowledge and International Journal of Dream Research.

In MEDLINE and PsycINFO subject headings searched were "Dreams"/"Dreaming", paired with "Mental Disorders", "Schizophrenia", "Depression"/"Major Depression"(and "Recurrent Depression", Treatment Resistant Depression, Atypical Depression, and "Long-term Depression (Neuronal)", "Anxiety Disorders", "Eating Disorders", "Obsessive-compulsive Disorder", "Personality Disorders", and "Psychopathology". The "autoexplode" and "focus" functions were not used.

Search terms used in PubMed were "Dream\*(-s, -ing)" paired with "Mental disorder\*(-s)", "Schizophreni\*(-a, -ic)", "Depressi\*(-on, -ve)", "Anxiety disorder\*(-s, -ed)", "Eating disorder\*(-s, -ed)", "OCD OR Obsessive-compulsive", "Personality disorder\*(-s, ed)", and "Psychopathology".

The searches were limited to articles published in 2005 or later, as studies published earlier than 2005 are covered in the previous reviews, with some exceptions: The only review dealing with anxiety disorders and personality disorders included studies published in 1990 or earlier (Mellen et al., 1993), whereas obsessive-compulsive disorder (OCD) has never been included in a review on dream content. For the

present paper the search for the two former disorders therefore included studies from 1990 or later, while the search for studies on the latter disorder had no time limit. In addition, relevant studies referred to in the obtained articles were collected, as well as studies citing the obtained articles.

Inclusion criteria were studies with  $n > 1$ , i.e., not case studies, as the generalizability of findings from case studies is very limited. In addition, the studies had to investigate either dream content, nightmare frequency or effect of therapy on dreaming for patients with one of the six following mental disorders; schizophrenia, depression (including bipolar disorder), anxiety disorders, personality disorders, eating disorders, and OCD. The findings on OCD are reported separately from the findings on anxiety disorders, even though OCD is an anxiety disorder. The reason is that the empirical studies available are on anxiety disorders in general, and on OCD separately. It is therefore considered to be appropriate to separate the findings in the present review as well, to emphasize any differences between dreams of anxiety disorders in general and OCD.

Bipolar disorder is separated from depressive disorders in the most recent edition of Diagnostic and Statistical Manual of Mental Disorders, the fifth edition (DSM-V; American Psychiatric Association, 2013). Bipolar disorder is, however, included as a depressive disorder in the present review, as it was classified as a depressive disorder when the studies included in the present review were conducted.

Dreams of patients with post-traumatic stress disorder (PTSD) were not included, as recurrent, distressing dreams are symptoms of PTSD (American Psychiatric Association, 2013), and might be a failure in dream function (Kramer, 1991). It is therefore not considered helpful to study continuity between the dreams and current waking life of these patients.

Nightmare disorder was part of the previous reviews, but is not included in the present review. Nightmare disorder is not one of the main mental disorders, but a parasomnia, i.e., disturbed dreaming is the core symptom and not waking life symptoms, making searches for continuity unsuitable. Instead, studies on nightmare frequency for the different mental disorders are included, as nightmares can be considered dreams with highly negative affect. Thus, nightmare frequency might convey information of the rate of daytime negative affect incorporated into dreams (i.e., the rate of continuity).

The previous reviews included disorders with an organic basis and alcohol and substance abuse related disorders, but the focus in the present paper is on more "pure" forms of mental disorders. Furthermore, studies investigating symptoms of mental disorders in the general population were not included, to limit the findings only to people displaying pathological levels of symptoms, i.e., patients diagnosed with a mental disorder.

## 3. Results

Searching the three databases yielded 379 studies, of which 18 were included for further analysis: six on schizophrenia (Khazaie et al., 2012; Lusignan et al., 2010; Lusignan et al., 2009; Noreika, Valli, Markkula, Seppala, & Revonsuo, 2010; Scarone et al., 2008; Zanasi, Calisti, Di Lorenzo, Valerio, & Siracusano, 2011), one on anxiety (Nadorff et al., 2013), five on depression (Cartwright, Agargun, Kirkby, & Friedman, 2006; Schredl, Berger, & Riemann, 2009; Tribl, Wetter, & Schredl, 2013; Zanasi, Pecorella, Chiamonte, Niolu, & Si-

racusano, 2008; Zervas & Soldatos, 2005), four on personality disorders (Guralnik, Levin, & Schmeidler, 1999; Schredl et al., 2012; Semiz, Basoglu, Ebrinc, & Cetin, 2008; Simor & Horvath, 2013), two on OCD (Kuelz, Stotz, Riemann, Schredl, & Voderholzer, 2010; Sauteraud, Menny, Philip, Peyre, & Bonnin, 2001), and one on schizophrenia and depression (Limosani, D'Agostino, Manzone, & Scarone, 2011). In addition to this, four studies were found via references in articles, books and other internet-based databases: one on depression and schizophrenia (Mume, 2009), one on personality disorders (Simor, Csoka, & Bodizs, 2010), one on eating disorders (Zanasi, Chiaramonte, Paoletti, Testoni, & Siracusano, 2010), and one on several disorders (Swart, van Schagen, Lancee, & van den Bout, 2013). This amounted to a total of 23 studies analyzed, in addition to the previous reviews. Certain studies published prior to 2005 were obtained, analyzed and cited to provide more specific information of the findings. This applied to findings which the previous reviews yielded unsatisfactory amounts of information on, or to studies which seemed not to be included in the previous reviews.

The number of studies included in the previous reviews ranged between 35 (Mellen et al., 1993) and 173 (Kramer, 2010) studies. The latter number is probably the most representative for the number of studies published up until 2005, as this was from the most recent review, which included studies from two previous reviews (Kramer & Nuhic, 2007; Kramer & Roth, 1978).

It must be noted that nightmare frequency and effect of therapy on dreaming was not found for all disorders.

### 3.1. Schizophrenia

**Dream content.** More hostility in dreams of schizophrenics than dreams of controls is reported to be one of the most consistent findings (Kramer, 2010). The hostility is mostly directed at the dreamer, yet it is less likely that the patient is the focus of the dream (Kramer, 2010). Zanasi et al. (2011) also found that schizophrenics are never the main character in their dreams.

More anxiety in dreams of schizophrenics is another of the most consistent findings reported by Kramer (2010). Hadjez et al. (2003), however, did not find more anxiety in dreams of their sample of adolescent schizophrenics than healthy controls. They further found that the schizophrenics had less involvement and emotional expression in their dreams. Controls had more vivid, rich and elaborate dreams. Zanasi et al. (2011) also found the dreams of their sample of adult schizophrenics to display reduced emotional expression. Lusignan et al. (2009) found dreams of schizophrenics to contain less neutral emotions than dreams of controls. The frequency of positive and negative emotions was equal between the two groups. It must be noted, however, that after controlling for dream length, only more strangers in schizophrenics' dreams remained significant in the study by Lusignan et al. (2009). Hadjez et al. (2003) further found that more negative schizophrenic symptoms predicted less involvement and emotion in the dreams. In contrast, Khazaie et al. (2012) found negative and positive symptoms in the schizophrenic patients to be unrelated to dream content.

The type of characters appearing in dreams of schizophrenics seem to differ from the characters in dreams of healthy controls. Kramer (2010) reported that in dreams of schizophrenics the most frequent characters are strangers, and that males and groups of people appear more often.

Lusignan et al. (2009) also found dreams of schizophrenics to contain more strangers, as well as fewer familiar characters. Khazaie et al. (2012) found fewer friends in the dreams of schizophrenics compared to healthy controls. Okuma, Sunami, Fukuma, Takeo, and Motoiku (1970) also found fewer friends in schizophrenics' dreams, and more family members. In terms of locations of the dream scenes, Zanasi et al. (2011) found that the scenes in dreams of schizophrenics are mainly located indoors, in contrast with controls.

More bizarreness and implausibility in dreams of schizophrenics compared to non-schizophrenics is also reported by Kramer (2010) as one of the most robust findings. However, the studies Kramer (2010) refers to are quite old and the more recent studies offer a more diverse impression: Noreika et al. (2010) found that the schizophrenics' dreams were more bizarre than healthy controls'. Scarone et al. (2008) and Limosani et al. (2011) on the other hand, found no difference in dream bizarreness between schizophrenics and controls, even though the waking mentation of schizophrenics were found to be more bizarre than that of controls. The results of Okuma et al. (1970) also support equally bizarre dreams for schizophrenics and non-schizophrenics. Lusignan et al. (2009) found a methodologically caused difference; whereas external judges rated the dreams of both schizophrenics and controls equally bizarre, schizophrenics rated their own dreams less bizarre than controls did. In a similar manner, Lusignan et al. (2010) found that controls reported a feeling of bizarreness for their REM dreams, whereas the schizophrenics did not. Furthermore, in the study by Hadjez et al. (2003) external judges found dreams of schizophrenics to be less implausible than controls. In a sample of psychiatric inpatients, including schizophrenics, Schredl and Engelhardt (2001) found that the dreams of the patients were less bizarre than those of controls. However, the schizophrenics had more bizarre dreams than the rest of the patients, and the "paranoid ideation" and "psychoticism" scales of the symptom checklist correlated positively with bizarreness in the dreams of the patients. Thus, research findings on dream bizarreness for schizophrenics are mixed.

**Nightmare frequency.** Regarding nightmares for schizophrenic patients, both (Mume, 2009) and Lusignan et al. (2009) found that schizophrenic patients report significantly higher frequency of nightmares compared to controls.

**Effect of therapy on dreaming.** Kramer and Nuhic (2007) reported that a decrease in affect in dreams is the first change seen during successful treatment with phenothiazine.

In summary, the available research indicates that compared to controls dreams of schizophrenics are shorter, contain more hostility, more strangers, with the dreamer rarely being the main character. Results are inconsistent on the level of bizarreness, whereas nightmares seem more prevalent in schizophrenics than controls.

### 3.2. Depression

**Dream content.** Even though most dream characteristics are similar to those of controls, several distinct differences in dream content have been found (Kramer, 2010). One of the most stable findings in dreams of depressed patients concerns the type of characters included, whereby family members are more frequent in dreams of depressed (Kramer, 2010).

Mellen et al. (1993) reported in their review that dreams of depressed contain greater negative mood tone. Similarly, negative dream emotions were related to intensity of depressive symptoms and anxiety in a large sample of depressed outpatients (Schredl et al., 2009). Furthermore, in the latest review (Kramer, 2010) it is stated that dreams of depressed contain more failures and misfortunes than schizophrenics' dreams. However, in the same review it is stated that dream reports of depressed contain less traumatic or depressive content than dreams of non-depressed, during a depressive episode and after remitted depression (Kramer, 2010). Also, Cartwright et al. (2006) found that depressed patients reported less negative and more neutral affect in their dreams compared with the control group. Lastly, Schredl & Engelhardt (2001) found no difference in emotional tone or emotional intensity between dreams of depressed and controls.

Mellen et al. (1993) concludes that dreams of depressed patients frequently has a time orientation focused on the past. This was found earlier by Hauri (1976). In his review of 2010, however, Kramer draws a different conclusion, stating that past focus is not always found in, nor unique to, dreams of depressed.

Affects like anxiety and hostility are not often found in dreams of depressed, and their dreams contain more friendly and fewer aggressive interactions than schizophrenics' dreams (Kramer, 2010). If hostility is present it is directed toward and away from the dreamer with similar frequency, in contrast with schizophrenics' dreams, where hostility is usually directed at the dreamer (Kramer, 2010). This differs from the review of Mellen et al. (1993) where it is stated that in dreams of depressed, anxiety and threat are mostly directed inwards toward the dreamer. A finding of the depressed patients' behavior in their dreams comes from Zanasi et al. (2008), demonstrating that depressed patients have a more passive role in their dreams.

Bipolar depressed patients (though not a depressive disorder in DSM-V; American Psychiatric Association, 2013) are found to report more dreams with death themes than unipolar patients, and to have dreams with themes of death and injury prior to shift to mania (Beauchemin & Hays, 1996). Limosani et al. (2011) found daytime cognition of bipolar patients to be more bizarre than that of controls, and equally as that of schizophrenics. Dreams on the other hand were similarly bizarre for all groups. On the other hand, Schredl and Engelhardt (2001) found that the depressed patients, as well as the other non-depressed patients, reported less bizarre dreams with more physical interaction, compared to healthy controls.

Even though earlier studies (e.g., Beck & Hurvich, 1959) indicated that masochism (e.g., rejection, disappointment and humiliation) is prevalent in dreams of depressed patients, the more recent review of Kramer (2010) conclude that this is not so. Masochism seems more common in depressed women, and then more likely a trait characteristic (i.e., not attributable to the depression; Kramer 2010).

Thoughts and attempts of suicide have been found to affect dream content. Kramer (2000) reported findings of increased incidence of death themes in dreams of depressed suicide attempters. In concordance with this, Mellen et al. (1993) reported in their review that dreams of depressed who had attempted suicide had more death content, destructive violence, masochistic ideation and apprehension than dreams of less depressed clients. Dreams of patients

with thoughts of suicide but no suicide attempt contained little death content, but masochistic reference and intense anxiety (Mellen et al., 1993). Severely depressed patients dreamed more often about death and aggression than mildly depressed patients (Schredl & Engelhardt, 2001). Mellen et al. (1993) further characterizes dreams of mildly depressed persons as noteworthy for containing themes of loss and abandonment.

**Nightmare frequency.** Research on nightmares and depression generally indicates that patients with depression, and symptoms of psychopathology in general, experience significantly higher rates of nightmares (Hublin, Kaprio, Partinen, & Koskenvuo, 1999; Kales et al., 1980; Mume, 2009; Swart et al., 2013; Zervas & Soldatos, 2005).

**Effect of therapy on dreaming.** Kramer, Whitman, Baldrige, and Ornstein (1968) reports that clinical improvement in depression, following use of antidepressant treatment, leads to decreased hostility in their dreams, while intimacy, motility and heterosexuality increases. Also, two other studies have found that dream emotions become more positive during treatment with trimipramine (Riemann, Löw, Schredl, & Wiegand, 1990; Schredl et al., 2009). Conversely, Armitage, Rochlen, Fitch, Trivedi, and Rush (1995) found no effect of medications (SSRI and nefazodone) on dream content despite daytime symptom improvement. A possible explanation to these divergent findings might be that the medications used have some divergent effects (Tribl et al., 2013).

In summary, several unique characteristics are found in dreams of depressed. Among these are shorter dreams, and more family members. However, due to a limited number of studies, as well as methodological issues in the existing studies, only few findings can be reported as being relatively certain.

### 3.3. Anxiety Disorders

The following findings on dream content for patients with anxiety disorders are taken from a single study by Gentil and Lader (1978). Four other studies (Desroches & Kaiman, 1964; Nadorff et al., 2013; Schredl, Kronenberg, Nonnell, & Heuser, 2001; Swart et al., 2013) were found, but these dealt exclusively with the relation between nightmare frequency and anxiety disorders.

**Dream content.** The anxiety patients had significantly less activity and successfully accomplished goals in their dreams compared to both high-anxiety and low-anxiety controls. The dream content of the patients also expressed significantly more failure and sadness.

The dreams of the anxiety patients contained more social interactions in total, less friendly interactions and more aggressive interactions. The frequency of dream reports in which the aggression was directed at the dreamer increased linearly with increase in daytime anxiety. That is, in the dreams of the low-anxiety normals no aggression was directed toward the dreamer, in the dreams of the high-anxiety group 46% of the aggression was directed at the dreamer, and in the patients' dreams 60%. The aggression typically fell in one of two categories; either 'creatures' or 'strangers' attempting to physically harm the dreamer, or the dreamer being rejected or abandoned, usually by the husband or another known male person. The latter category was the most common.

Dream content correlated significantly with most of the aspects of daytime attitudes tested, illustrated by the fol-

lowing examples: Successful goal accomplishment in dreams corresponded to the subjects' ratings of their waking life and themselves as more successful; and increased apprehension in dreams corresponded to tension in waking life. The more the daytime category 'the human body' was labeled as 'tense', the more references to body parts were found in dreams. The author's characterized this as an inverse relationship, as it was contrary to their expectations.

**Nightmare frequency.** Desroches and Kaiman (1964) demonstrated that subjects diagnosed with an anxiety disorder had significantly higher frequency of frightening dreams than the control group. Similarly, Swart et al. (2013) found a markedly increased frequency of nightmare disorders in patients with an anxiety disorder (15.6%), compared to the prevalence in the general population (2-5%). And lastly, Nadorff et al. (2013) found that older adults with generalized anxiety disorder (GAD) had more bad dreams than those without GAD. Schredl et al. (2001) on the other hand, found that patients with panic attacks reported similar frequency of nightmares as controls.

Summed up, negative themes like rejection, aggression, failure, passivity and sadness seem to be more common in dreams of anxiety disorder patients compared to controls. The available research on nightmares and anxiety disorders, though limited, seem to indicate that nightmares are more prevalent in most of these patients than in the general population.

### 3.4. Personality Disorders

Only Mellen et al. (1993) have done a review that included description of dreams for this patient group. They included six studies, dealing mostly with nightmares and night terrors. Five more studies were found published after 1990 (Guralnik et al., 1999; Schredl et al., 2012; Semiz et al., 2008; Simor et al., 2010; Simor & Horvath, 2013).

**Dream content.** In the study by Simor et al. (2010), the BPD patients rated their own dreams more distressing than the controls did. There was also a tendency for the dreams of the patients to have longer effect on waking mood, though this did not reach significance. Similarly, Schredl et al. (2012) found that BPD patients reported dreams with a more negative emotional tone than the healthy controls did. The patients with comorbid post-traumatic stress disorder (PTSD) tended to report even more negatively toned dreams, but this was not significant. When external judges rated the dreams, no difference in dream emotions was reported. General characteristics of the dream (number of dream persons, bizarreness, and occurrence of verbal and physical interaction) were not different between patients and controls in the study by Schredl et al. (2012). Neither were borderline specific symptoms such as strong emotional shifts or injuries of the dream ego, which occurred very rarely. Health related topics, on the other hand, was reported more by the patients than controls, especially those without comorbid PTSD (Schredl et al., 2012).

Guralnik et al. (1999) studied the dreams of patients with various personality disorders (PD). Surprisingly, the dreams of the PD group contained more friendly and less aggressive interactions than the control group (using Hall and Van de Castles (1966) norms). Furthermore, the dreams of the patients contained less apprehension and confusion than the dreams of the controls. The patients had more unfamiliar and ambiguous settings in their dreams, and a trend toward more strangers, though this was not significant. Of other re-

ported dream activities, the patients reported more movement, as well as auditory, verbal and thinking activities. And finally, a far greater proportion of both of the groups' dreams ended with misfortune than with a positive outcome, with no significant difference between the groups.

**Nightmare frequency.** Mellen et al. (1993) reported that the occurrence of a personality disorder have been connected with higher incidence of nightmares. They also reported that patients with BPD and schizotypal personality disorder suffer more often from lifelong nightmares than the general population. Several other studies have found more frequent nightmares in BPD patients (Schredl et al., 2012; Semiz et al., 2008; Simor et al., 2010; Simor & Horvath, 2013). Semiz et al. (2008) further found that BPD patients with comorbid nightmare disorder (ND) showed more severe psychopathology than BPD patients without ND.

Conclusively, patients with BPD seem to rate their dreams as more distressing and with a more negative emotional tone than controls. The available research indicates that patients with personality disorders have a higher frequency of nightmares than the general population.

### 3.5. Eating Disorders

**Dream content.** Eating disorder patients frequently dream of food, bulimics more so than anorexics (Kramer, 2010; Mellen et al., 1993). Similarly, Zanasi et al. (2010) demonstrated that references to food occurred four times as frequent in the dreams of anorexic patients than dreams of controls. Schredl and Montasser (1999) reported a difference between anorectic and bulimic patients; whereas the bulimics dreamt more than controls about food, anorexics dreamt more of rejecting food.

Zanasi et al. (2010) found that the dreams of anorexic patients displayed reduced expression of emotions compared to controls. In contrast, Mellen et al. (1993) reported dreams of eating disordered patients to be vivid and emotional. Both Schredl and Montasser (1999), Frayn (1991), and Brink and Allan (1992) found more negative emotions and increased emotional intensity in dreams of eating disordered subjects compared to controls. Schredl and Montasser (1999) further showed that dreams of bulimics displayed reduced frequency of positive emotions compared to controls. Kramer (2000) reported that anorexics seem more anxious in their dreams compared to other groups. Frayn (1991) found fewer pleasurable themes and fewer dreams in color in dreams of anorexics compared to controls. In their dreams the anorexics often looked younger than their actual age, and they frequently dreamt of having a distorted body, e.g., enlarged belly (Frayn, 1991). Increased references to body distortions was also found in Brink and Allans (1992) study, but not in Schredl and Montasser's (1999) study.

Kramer (2000) reported that eating disordered patients may have less hostility in their dreams compared to controls, with bulimics having more hostility than anorexics. In contrast, (Mellen et al., 1993) states that eating disordered often dream of being the recipient of violence.

Brink and Allan (1992) found that compared to controls the eating disordered patients had increased frequency in their dreams of the following scenarios or feelings: A sense of impending doom at the end of the dream, ineffectiveness, an attitude of inability to succeed, being attacked by a person, animal or thing, and anger. Brink, Allan, and Boldt (1995) further identified the following themes in dreams of the eating disordered: Self-hate, a sense of being controlled

by others, a sense of being watched and judged, and an inability to self-nourish.

Zanasi et al. (2010) demonstrated that the anorexic patients reported their dreams more often in present tense, in a non-linear fashion, and that the patients' dreams lacked indicators of context.

In conclusion, research indicate that dreams of eating disordered patients contain more references to food, as well as differing from dreams of controls in terms of emotional tone and expression. Several other characteristics have been found in the dreams of these patients, but replication of these results are lacking.

### 3.6. Obsessive-Compulsive Disorder

**Dream content.** Kuelz et al. (2010) found that compared to healthy controls dreams of OC in- and outpatients contained less positive emotions, also after controlling for dream length and waking-life depressive symptoms. This pertained to the observer ratings, not the patients' self-ratings. No difference in negative emotions was found between the groups. Similarly, Sauteraud et al. (2001) found no difference in anxiety, sadness or the expression of failure between OC outpatients and healthy controls.

In the study by Kuelz et al. (2010) the OC inpatients, in the second week of their hospitalization, had higher levels of OC content in their dreams compared to healthy controls, whereas the OC outpatients did not. Sauteraud et al. (2001) did not find any difference in OC themes between dreams of controls and OC outpatients in treatment. Kuelz et al. (2010) further found that the patients' dreams had non-significant trends toward being less complex and having slightly less affective intensity. Two thirds of the patients reported that in the past three months before the study they were not able to remember their dreams, or they dreamed equally often in black and white as in color. None of the healthy controls reported dreaming in black and white.

**Effect of therapy on dreaming.** Kuelz et al. (2010) found that OC themes in the patients' dreams reduced during the first five days of exposure treatment. The level of positive emotions, however, stayed the same during treatment (being lower than healthy controls), while negative emotions showed a small, non-significant reduction.

In short, few differences are found between dreams of OC patients and healthy controls. The patients' dreams might contain less positive emotions, more often be black and white, and at times contain more OC content, but more studies are needed for any conclusions to be drawn.

## 4. Discussion

The following discussion will be divided in three parts. In the first part, the main findings for each disorder that seem to indicate continuity between waking and dreaming will be highlighted and discussed. In the second part, the same will be done with the findings that seem to indicate discontinuities. In the final part, the possible implications for the continuity between waking and dreaming and the implications for future research will be discussed.

### 4.1. Findings Supporting the Continuity Between Waking and Dreaming

**Schizophrenia.** The increased hostility in dreams of schizophrenics (Kramer, 2010) might be a reflection of the common

schizophrenic symptom of expecting hostility from others ("persecutory delusions"; American Psychiatric Association, 2013), indicating continuity. Similarly, the increased number of strangers (Kramer, 2010; Lusignan et al., 2009) and reduced number of friends (Khazaie et al., 2012; Okuma et al., 1970) in schizophrenics' dreams can be a reflection of the lack of social relations in these patients' lives. These two findings can also reflect the hospital setting many of the schizophrenic subjects resided in at the time of dream collection, as hospitalized patients are constantly interacting with unknown people (staff, other patients and their visitors). The fact that many of the schizophrenics are residing in hospitals at the time of the studies may also explain the majority of the schizophrenics' dream scenes being located indoors (Zanasi et al., 2011). This would indicate continuity of actual experiences or circumstances. Another possibility is that these indoor dreams reflect the schizophrenics' negative symptoms of social withdrawal, isolation and difficulties with interpersonal interactions (Zanasi et al., 2011).

Other possible reflections of negative schizophrenic symptoms are reduced involvement and emotional expression in their dreams (Hadjez et al., 2003; Zanasi et al., 2011). These two findings more or less corresponds to the two most prominent symptoms of schizophrenia; avolition (lack of participation in work or social activities) and diminished emotional expression (American Psychiatric Association, 2013), i.e., indications of continuity.

The schizophrenics' reduced role as main character in their dreams (Kramer 2010; Zanasi et al. (2011) might reflect continuity with the daytime delusions of not being in control over one's actions and thoughts common in schizophrenia (American Psychiatric Association, 2013).

Further, Kramer (2010) reported that the level of paranoia seem to be similar in waking and dreaming for schizophrenics, and that content of hallucinations and dreams have been found to be similar, i.e., clear indications of continuity. Indicative of continuity is also more anxiety in dreams of schizophrenics (Kramer, 2010), which may simply reflect daytime symptoms of anxiety and phobias common in these patients (American Psychiatric Association, 2013).

**Depression.** The findings of more negative mood tone in dreams of depressed (Mellen et al., 1993), and negative dream emotions correlating with intensity of depressive symptoms in depressed outpatients (Schredl et al., 2009) are clear indications of continuity. However, as will be discussed in the next section, other studies have obtained results contradicting these findings.

Depressed patients having a more passive role in their dreams (Zanasi et al., 2008) seems to be a continuation of their typical lack of planning and initiative. More death content in dreams of depressed patients with a history of suicide attempt (Mellen et al., 1993) also seems indicative of continuity. The same applies to the finding of themes of loss and abandonment in dreams of mildly depressed persons (Mellen et al., 1993), as one can imagine feelings of loneliness (abandonment) as part of a depression.

More physical interaction in depressed patients' dreams (Schredl & Engelhardt, 2001) might, according to the authors, be a manifestation of a more conflict-laden interaction with others in waking life, which would reflect continuity of social interactions. The finding of less bizarre dreams for depressed patients than for controls (Schredl & Engelhardt, 2001) may indicate increasingly realistic portrayals of waking life issues as the emotional distress increases. This as-

sumption receives some support by Schredl, Pallmer, and Montasser (1996) demonstrating an association between high levels of general anxiety and more realistic bad dreams. Such portrayals of waking life would be examples of continuation of concerns and life circumstances. However, as these latter two assumptions of connection between waking life and dreams demonstrate, more research is generally needed for more certain conclusions of continuity or discontinuity to be drawn.

Dream emotions becoming more positive as daytime symptoms improve from successful pharmacological therapy (Riemann et al., 1990; Schredl et al., 2009) shows a clear relationship of continuity between waking and dreaming. The same goes for Kramer et al. (1968)s study, demonstrating decreased hostility in dreams with medication supported symptom improvement.

**Anxiety Disorders.** The results of Gentil and Lader (1978) “were consistent with the ‘continuity’ hypothesis of dream function” (p.297), showing a distinct link between daytime attitudes and dream content. The authors hypothesized that the finding of more failure and sadness in dreams of the anxious patients may reflect symptoms of depression often co-occurring with pathological anxiety, which would be a continuation of daytime symptoms. The authors also suggested that there was continuity between more aggression directed toward the dreamer in the patients’ dreams and the findings of Beck, Laude, and Bohnert (1974) demonstrating that anxious patients frequently anticipated physical harm and psychosocial trauma. Similarly, less friendly and more aggressive interactions in the patients’ dreams may reflect their negative interpersonal expectations in daytime. The finding of less success and activity in the anxious patients’ dreams might be viewed as a continuation of their feeling of not coping with their fears, and strategies of avoidance frequent in anxiety disorders (American Psychiatric Association, 2013; Behar, DiMarco, Hekler, Mohlman, & Staples, 2009).

All the correlations between dream content and daytime attitudes (Gentil & Lader, 1978) further demonstrates the continuity between waking and dreaming in this sample of anxiety patients.

**Personality Disorders.** More negative dream emotions (Schredl et al., 2012) and more distressing dreams (Simor et al., 2010) in BPD patients might simply express more negative and distressing daytime emotions as a result of their illness, which would be continuity of emotions. More health related topics in dreams of BPD patients might reflect the distress from being mentally ill (Schredl et al., 2012), reflecting continuity of concerns.

Simor and Horvath (2013) hypothesized that the cause of the heightened prevalence of nightmares in BPD patients (Mellen et al., 1993; Schredl et al., 2012; Semiz et al., 2008; Simor et al., 2010; Simor & Horvath, 2013) may be that the dreams depict traumatic childhood experiences typical of BPD patients (Ball & Links, 2009), as dreams have been shown to portray the main emotional and interpersonal concerns of the dreamer (Cartwright et al., 2006). This is another example of a hypothesis in apparent need of more research.

**Eating disorders.** More food in eating disordered patients’ dreams (Kramer, 2010; Mellen et al., 1993; Zanasi et al., 2010) is a clear indication of continuity between waking and dreaming. The dream difference, in which bulim-

ics dream more about food and anorexics more of rejecting food, seems also concordant with the diagnoses, in which anorexics are more restrictive of food intake (American Psychiatric Association, 2013). The frequent dreams of body distortions (Brink & Allan, 1992; Frayn, 1991) also seem quite obvious in terms of its continuity, as a distorted body image is a symptom of eating disorders. Moreover, increased anxiety in dreams of anorexics (Kramer, 2000) seems continuous with the comorbid anxiety disorders frequent in these patients (American Psychiatric Association, 2013).

According to the textual analysis of Zanasi et al. (2010), their finding of the anorexic patients reporting their dreams more often in present tense is an indication of less empathic abilities. This is continuous with the finding of less empathy in anorexics than healthy controls (Morris, Bramham, Smith, & Tchanturia, 2013). The patients’ dreams further lacked context indicators in their dreams, making the dreamer poorly placed in the narrative of the dream (Zanasi et al., 2010). The authors suggested that this, in conjunction with the anorexics’ nonlinear dream narratives, reflects the anorexic patients constantly doubting themselves and feeling inadequate, creating “the unsteady representation of the outer and inner world distinctive of anorexic subjects” (Zanasi et al., 2010, p.9). This would express continuation of subjective experience and self-conception. Zanasi et al. (2010) further connect the reduced expression of emotions characteristic of the patients’ dreams with the symptom of alexithymia (difficulty with understanding and expressing emotions) often associated with anorexia (Cochrane, Brewerton, Wilson, & Hodges, 1993). The opposite findings, of more emotionality and increased emotional intensity in eating disordered patients’ dreams (Brink & Allan, 1992; Frayn, 1991; Mellen et al. 1993; Schredl & Montasser, 1999) might be a continuation of the unstable emotions and difficulties with emotion regulation in bulimics (Johnson & Larson, 1982; Whiteside et al., 2007).

The scenarios and themes in dreams of the eating disordered women in the studies of Brink and Allan (1992) and Brink et al. (1995), mentioned in the result section, are in line with studies of eating disordered women’s personality characteristics (Lehman & Rodin, 1989; McLaughlin, Karp, & Herzog, 1985; Sheppy, 1985; Strauss & Ryan, 1987; Williams et al., 1993), suggesting continuity of self-conceptions, conceptions of other people and of the world (Hall, 1953). In addition, the frequent theme of ineffectiveness in their dreams (Brink & Allan, 1992) seems to be a continuation of the feelings of ineffectiveness associated with anorexia (American Psychiatric Association, 2013). The eating disordered patients being more alone (Enke, Ohlmeier, & Nast, 1968, cited in: Schredl & Montasser, 1999) corresponds to the general feeling of alienation and loneliness found in anorexic patients (Sheppy, 1985).

Furthermore, the increased frequency of negative emotions in dreams of eating disordered patients (Brink & Allan, 1992; Frayn, 1991; Schredl & Montasser, 1999) can be seen as a reflection of the comorbid depression prevalent in these patients (Casper, 1998), as well as eating disordered patients’ intense fear of gaining weight. Schredl and Montasser (1999) proposes that fewer males and less verbal interaction in dreams of anorexics may express a tendency for social withdrawal, possibly reflecting continuity of actual daytime behavior.

**Obsessive-compulsive disorder.** Kuelz et al. (2010) suggested that the high frequency of OC content in the dreams



of the OC patients at the beginning of hospitalization can be interpreted as a reflection of the patients' preoccupation with their illness, which would be continuation of concerns. Lastly, the reduced level of positive emotions in dreams of OC patients compared to controls is not surprising, considering the fact that emotional well-being in these patients have been found to be reduced (Eisen et al., 2006). Thus, this finding seems to indicate continuity of emotions.

Briefly summarized, there are several instances of continuity in dreams of all the patient groups included. The number of continuity examples vary between the disorders, but this variation more or less corresponds to the number of studies available on the different disorders. However, as mentioned, the proposed continuities are hypotheses in more or less need of further research.

#### 4.2. Findings Reflecting Possible Discontinuities Between Waking and Dreaming

**Schizophrenia.** More bizarreness in schizophrenics' dreams can be seen as a continuation of their frequent bizarre delusions (American Psychiatric Association, 2013). However, some studies found equally much (Limosani et al., 2011; Okuma et al., 1970; Scarone et al., 2008) and even less (Hadjez et al., 2003; Schredl & Engelhardt, 2001) bizarreness in dreams of schizophrenics than dreams of controls. This is interesting, and might indicate a ceiling effect; a limit of bizarreness in dreams, beyond which increasing waking thought bizarreness has no influence. The cause and function of such a limit is open for speculation. Schredl and Engelhardt (2001) found less bizarreness in dreams of several psychiatric patient groups, and suggested that waking life stressors in patients' dreams may be reflected in a more realistic manner. As noted previously for less bizarreness in dreams of depressed, perhaps dreams depict daytime issues increasingly realistic as the emotional distress increases, i.e., as the seriousness of the problem increases. However, these mixed findings might reflect methodological issues, or the inadequacy of using diagnostic categories as waking life references (c.f. Noreika, 2011), an issue that will be dealt with more thoroughly later in this paper. Also intriguing is the finding by Lusignan et al. (2009) of less self-rated bizarreness in dreams of schizophrenics compared to controls and less than ratings by external judges. This is opposite of the study by Schredl and Erlacher (2003) demonstrating that external judges underestimate the level of bizarreness in dreams of healthy individuals compared to the participants' self-ratings. Possibly the schizophrenics are more used to having strange thoughts, making them underestimate the bizarreness of their dreams.

The schizophrenics rarely being the main character in their dreams (Kramer, 2010; Zanasi et al., 2011) might, rather than being an indication of continuity, be a compensatory reaction to the self-oriented delusions of being exceptional, being the center of attention and so forth, frequent in schizophrenia (American Psychiatric Association, 2013). Moreover, the finding of more family members in dreams of schizophrenics (Okuma et al., 1970) could also be an expression of discontinuity, as one can imagine schizophrenics not interacting more with their family than healthy people. Alternatively, this could be an expression of the schizophrenics' need for support from their family, which makes them think more about their family. This would imply continuity of thoughts (Hall, 1953) and concerns (Domhoff, 1996) rather

than actual experiences. Support comes from King's (2006) finding that reduced emotional wellbeing predicts more familiar characters in dreams.

Hadjez et al. (2003) found no relation between positive psychotic symptoms in schizophrenic adolescents and their measures of dream content. This can indicate that positive schizophrenic symptoms, e.g., hallucinations, have no effect on certain dream content variables, i.e., a discontinuity.

**Depression.** According to Kramer (2010), less traumatic or depressive content in dream reports of depressed than non-depressed suggests a compensatory relationship between waking and dreaming in depressed. The same applies to the findings of less negative affect in dreams of depressed (Cartwright et al., 2006), and no difference in emotional tone or intensity between dreams of depressed and controls (Schredl & Engelhardt, 2001). Considering the negative waking mood and emotions in depressed, these two findings seem discontinuous on the level of emotions, and might be a dream compensation (as suggested by Jung, 1960). Furthermore, these results are in opposition to Gilchrist's (2013) finding of strong correlations between emotions in waking and dreaming for non-diagnosed individuals, as well as the claim by Hartmann (2011) of there being no discontinuity for emotions. As mentioned, this also contradicts findings reported in the previous section (Kramer, 2010; Mellen et al., 1993; Schredl et al., 2009). The reason for these contradictions may be differences between patient samples, and methodological differences between the studies, making replication studies crucial.

The finding of more family members in dreams of depressed (Kramer, 2010) may be indicative of discontinuity, assuming that depressed people do not interact more with their family members in waking life than healthy persons. However, as mentioned for the same finding in schizophrenia, this may instead be an expression of depressed patients thinking more about their family when mentally ill and in need of their support. This would imply continuity of thoughts (Hall, 1953) and concerns (Domhoff, 1996).

From the perspective of dreams depicting self-conceptions (Hall, 1953), the rare occurrence of hostility and aggressive interactions in dreams of depressed (Kramer, 2010) can be viewed as a compensation (Jung, 1964; Samson & de Koninck, 1986) for the highly negative self-evaluations common in depression (American Psychiatric Association, 2013).

**Personality Disorders.** The dreams of both the PD patients and controls ended mostly with misfortune (Guralnik et al., 1999). This lack of difference seems counterintuitive, and hence discontinuous, as one can imagine mentally ill patients to view their life as more misfortunate than healthy persons. Another finding contrary to expectations is the one by Schredl et al. (2012), of no typical borderline symptoms in dreams of BPD patients. These findings may suggest a compensatory relationship between dreaming and waking (Jung, 1960).

The finding of more friendly and less aggressive interactions in the dreams of the PD patients than those of controls (Guralnik et al., 1999) also appear counter intuitive, as impairment in social functioning is a criterion for personality disorders (American Psychiatric Association, 2013). It also conflicts with the results of Pesant and Zadra (2006) demonstrating hostility and aggressiveness in dreams to be inversely correlated with (daytime) psychological wellbeing, and one would expect mentally ill persons to feel re-

duced well-being. Furthermore, the reduced apprehension and confusion in dreams of the PD patients (Guralnik et al., 1999) seems discontinuous on the level of emotions, as one imagines PD patients to feel more apprehension and confusion in their waking lives than healthy persons.

**Eating Disorders.** The increased emotionality (Mellen et al., 1993) and emotional intensity (Brink & Allan, 1992; Frayn, 1991; Schredl & Montasser, 1999) in dreams of eating disordered patients could, rather than the mentioned continuity, represent a discontinuation and compensation for the difficulty in expressing emotions common in anorexics. The tendency for anorexics to look younger in their dreams than their actual age (Frayn, 1991) is a clear discontinuation of their waking physical appearance. However, considering that this is not a random finding, but a tendency for anorexics to dream specifically of looking younger, this finding questions the appropriateness of the expression discontinuity. Rather than being a discontinuation of physical appearance, this finding seems more likely to be a continuation of something, e.g., the patients' feelings of being immature, which would make this finding a continuation of self-conceptions. This is a hypothesis in need of empirical testing.

**Obsessive-Compulsive Disorder.** The lack of difference in negative emotions between OC patients and controls (Kuelz et al., 2010; Sauteraud et al., 2001) seems discontinuous, as the negative impact of OCD is substantial, considering its status as one of the most debilitating medical conditions (Murray & Lopez, 1996 in: Eisen et al., 2006). The finding of no difference in OC themes between dreams of patients and controls (Sauteraud et al., 2001) also seems discontinuous, considering the amount these patients spend on OC related behavior (the diagnostic criteria is more than 1 hour daily; American Psychiatric Association, 2013).

The reduction of OC content in dreams of OC inpatients during the first days of exposure treatment (Kuelz et al., 2010) is interesting. The authors comment that this reduction could indicate a thorough daytime processing of emotions and issues related to their illness, directly reducing their occurrence in dreams. Such a processing-related reduction would suggest that dreams do not deal with issues that are solved during waking. This notion can be questioned, however, as the treatment was not successfully finished when these dreams were recorded. The patients were in their initial period of treatment, when issues related to the illness probably still were the focus. An alternative explanation is that simply being in a therapy program impacts the general state of mind, making the patient perceive the problem as more solvable (Kuelz et al., 2010). Yet another explanation is that the reduction of OC content in dreams indicates compensation for the mental overload of focusing on the illness during these days of exposure.

The fact that emotional intensity in dreams did not increase during exposure (Kuelz et al., 2010) is also intriguing, as exposure treatment typically is emotionally strenuous. The possible explanations for this may be the same as mentioned for the previous finding.

In summary, several continuities and discontinuities can be found in dreams of psychiatric patients. The waking life aspects found to be reflected in dreams (i.e., continuous) are emotions, self-conceptions, interpersonal expectations, symptoms, concerns, thoughts, attitudes, personality variables, and actual experiences and circumstances such as social relations, social interactions, behavior patterns, and actual behavior.

The cited literature on nightmare frequency further supports continuity between waking and dreaming. Compared to the general population, heightened prevalence of nightmares is found in patients with depression (Hublin et al., 1999; Kales et al., 1980; Mume, 2009; Swart et al., 2013; Zervas & Soldatos, 2005), anxiety (Desroches & Kaiman, 1964; Nadorff et al., 2013), personality disorders (Mellen et al., 1993; Schredl et al., 2012; Semiz et al., 2008; Simor et al., 2010; Simor & Horvath, 2013), and schizophrenia (Lusignan et al., 2009), indicating a role for emotional distress in the production of nightmares, as pointed out by Levin and Nielsen (2007). This, in turn, indicates a continuity between negative emotions in waking and dreaming (nightmares).

A generous amount of discontinuities were identified in addition to the continuities. This could indicate a compensatory mechanism of dreams. However it could also be the case that these findings appear discontinuous because of the lack of specifying which waking life aspects to look for, as well as a lack of knowledge of how the aspects are portrayed in dreams. This issue will be discussed more extensively in the following part of the discussion.

#### 4.3. Implications for the Continuity Between Waking and Dreaming

As mentioned in the previous section, several waking life aspects are found to be reflected in dreams, pointing to the need for a more specific definition of continuity. This entails specifying which waking life aspects are incorporated into dreams, what affects the incorporation rate, and identifying different ways these aspects can be expressed in dreams. Without a more specific definition of continuity, the continuities identified (or missed) by different researchers become haphazard, determined by each researchers opinion on what aspects of waking life are manifested in dreams and how they are manifested. This is shown in the present review, in which the continuities reported are based on what was considered by the authors of the included studies, as well as the authors of the present review, to be expressions of continuity.

In addition to a more specific definition of continuity, there is a need for an understanding of discontinuities, of which a notable amount was found in the present review. One approach to discontinuity involves a consideration of ways in which waking life aspects can be expressed in dreams. Some authors have suggested that dreams can convey metaphors for emotional states, thoughts and conceptions (Hall, 1953; Hartmann, 1996; Malinowski & Horton, 2011). Calvin Hall (1953) viewed dreams as portraying the dreamer's subjective *conceptions* of his life, rather than the objective activities. In this view of dreams, continuity is not solely replicas of waking events. Dream scenes that seem unrealistic and discontinuous, depicting activities the dreamer clearly has never engaged in, might rather be visual metaphors for the dreamer's subjective experiences, and hence continuous. As Hartmann (1996) notes, we use metaphors in our everyday speech and thought, e.g., "my boss is a monster", making it quite possible that dreams utilize this form of communication as well. Malinowski and Horton (2011) pointed out that metaphorical picturing of waking life experiences allows thoughts, concerns and emotions to be presented visually. They illustrated this quite nicely in their paper by citing a woman viewing her dream of a semi-failed spaceship as an expression of her confusion about whether

her new career had really “taken off” or not (Malinowski & Horton, 2011). Furthermore, Schredl (2007) demonstrated how dreams of flying unaided correlated with positive emotions, providing support for the assumption that unrealistic dream scenes can be continuous with waking life emotions. Systematic research on continuity between waking life and dreams as metaphors is, however, very rare.

Another implication from viewing dreams as expressions of thoughts (Hall, 1953) and concerns (Domhoff, 1996) is that dreams can be continuous with the dreamer’s mental preoccupations, even though they are discontinuous with other aspects of the dreamer’s waking life. An example from the present paper is more family members in dreams of schizophrenics (Okuma et al., 1970). This finding could indicate continuity of increased thoughts about their family which the schizophrenics might experience when in need of their support through the illness.

A further possibility is that an inverse, seemingly discontinuous, relationship between waking and dreaming serves the function of a balancing of the psyche, such that too much of an experience in waking life yields less or none of it in dreaming. This could indicate a compensatory function of dreams (Jung, 1964; Samson & de Koninck, 1986). A finding from the present paper in line with this possibility is less traumatic or depressive content in dream reports of depressed than non-depressed (Kramer, 2010). Yet another possible explanation for discontinuous findings is that dreams are inherently creative, making it inappropriate to use either of the labels continuity and discontinuity.

In short, there is much to consider when identifying and understanding continuities and discontinuities in dreams. Yet it seems that making sense of these two phenomena is necessary in order to get an understanding of the relationship between waking and dreaming. Achieving this would probably entail a more thorough investigation of what aspects of waking life are manifested in dreams, and in what way.

#### 4.4. Adequacy of Diagnoses as Waking Life References

Another discovery from the present review is that similar dream content trends are found in dreams of different diagnostic groups. Examples are more family members in dreams of both schizophrenics and depressed compared to controls, and reduced expression of emotions in dreams of both schizophrenics and eating disordered patients compared to controls. The implication of this is that using solely diagnostic categories as waking life references seem inadequate for examining the relationship between waking and dreaming. As pointed out by Noreika (2011), the content of the patients’ waking life is inferred from common sense assumptions, as well as the criteria of the patients’ diagnoses. This is apparent from the present review, in which many of the inferences about continuity are based on what the patients *probably* experience, feel, etc. Few studies analyze reports of waking life activity and symptoms of the patients and compare them with their dreams. As a result, the conclusions about dreams reflecting waking life or not are more or less indirect, and possibly incorrect. An illustration: In order to be diagnosed with schizophrenia one must display a minimum of 2 out of 5 possible symptom categories, each comprising a variety of different symptoms the patient may or may not have, at varying intensities. The

phase of the patient’s illness, as well as the individual effect of psychopharmacological treatment, are other influencing factors. As a result, the possible heterogeneity in the patient population is great. This heterogeneity in the samples reduces both the probability of obtaining significant results, as well as the validity of the inferences about continuity or not. The impact the difference between patients can have on dreams is demonstrated by a study finding differing rates of nightmares between depressed with and without melancholic features (Besiroglu, Agargun, & Inci, 2005). The heterogeneity of patients could possibly also explain the mixed findings on, e.g., bizarreness in schizophrenics’ dreams, as well as the many studies finding few differences in dream content between patients and controls. The impact of this heterogeneity applies even more to diagnoses such as personality disorder, which are comprised by several subcategories with important differences (e.g., antisocial PD, borderline PD, etc.). Studying the dreams of these patients as one group may not yield findings indicating specific dream characteristics for these patients, nor information useful for diagnosis and treatment.

In short, using diagnoses as the only basis for deciding if the dreams show continuity or not seem inadequate. What is interesting when using patient samples is if their dreams are affected by their *symptoms*, not by their diagnoses. Thus, the diagnoses should be complemented by direct measures of their symptoms and other aspects of waking life the researcher is interested in investigating in terms of continuity. This was successfully demonstrated by Schredl and Engelhardt (2001), finding symptoms to be more related to dream content than diagnostic classification. The methodological weaknesses in the studies of dreams of psychiatric patients will now be summarized.

#### 4.5. Methodological Issues in Dream Research for Psychiatric Patients

Awareness of methodological issues is crucial when evaluating the findings in the field of dream research for psychiatric patients, as a considerable amount of methodological issues permeates this field of research. The reviews by Kramer (1978; 2000; 2010), Kramer and Nuhic (2007), and the paper by Schredl (2011) are recommended for readers eager to learn more in detail of these issues. In the following section a brief overview of the challenges facing the study of dreams in psychiatric patients will be delineated.

The studies performed before Kramer’s review of 1978 mostly did not report the basis for the patients’ diagnoses (Kramer & Roth, 1978). Today studies usually include description of the background for the diagnoses. Many of the older studies also lacked control groups (Mellen et al., 1993), impeding any clear conclusions about the unique characteristics in dreams of psychiatric patients. Furthermore, the samples are still today sometimes quite small, especially in the laboratory studies. However, asserting anything about the adequacy of the sample sizes is difficult, as the studies rarely perform analyses of statistical power.

Psychoactive medications are used by the patients in most of the studies. This can affect the findings, as these medications often are intended to relieve the symptoms one are looking for manifestations of in the dreams. Some medications are also shown to have direct effect on dreaming, e.g., by reducing REM sleep (Tribl et al., 2013). Treatment other than pharmacological (e.g., psychotherapy) can also

have a marked impact on the results (e.g., Kuelz et al., 2010), as well as the phase of the illness (acute vs. chronic).

The dreamer's context during daytime and sleep is of relevance, yet not often discussed. For example, recording dreams in a sleep laboratory affects the dream, e.g., by incorporation of lab elements (Schredl, 2008). The difference between residing in a hospital vs. being an outpatient also has potential, though unknown, effects on dreaming.

Not all studies control for dream length when quantifying the occurrence of different elements in the dreams. This can be of great significance, as shown by Lusignan et al. (2009) negating most of the differences in dream content between the schizophrenic patients and controls when controlling for dream length. Dream recall frequency should ideally also be controlled for, as this can affect dream content (Schredl, 2011).

Furthermore, the procedure in which the dream is elicited and reported is not always described (Kramer, 2010). Several methods of dream collection are available (diary dreams, asking for the most recent dreams, dreams obtained by laboratory awakenings), all with their advantages and drawbacks. Effect of the experimental setting and biases due to retrospective recall are some of the possible disadvantages. Adequate dream reporting can also be compromised by low motivation, e.g., in the case of depression, and by impairment in verbal abilities for schizophrenics.

The procedure of scoring dream content is also crucial. Some studies use standardized instruments, others do not. The rating instruments provide replicability and reliability, though issues regarding validity still exist (Schredl, 2010). In addition, some instruments measure the same phenomenon (e.g., the bizarreness scales developed by Revonsuo and Salmivall (1995), and Hobson, Hoffman, Helfand and Kostner (1987)). Consequently, the choice of instrument can affect the results. Further, to ensure that the scoring process can be replicated there should be at least two raters, unaware of the study's hypotheses and the data source of the dream report, with high inter-rater reliability. This has traditionally been done too seldom (Kramer, 2010), but is more common today.

In summary, the scientific standard of the studies is often below what is desirable. However, in recent years, there has been an improvement in the quality of research designs, along with the development of instruments providing greater reliability and standardizing of the procedure of dream content assessment (e.g., Hall & Van de Castle, 1966; Schredl, 2010).

## 5. Directions for Future Research

The current studies on dreams of psychiatric patients seem not to have gone deep enough to expand the knowledge on the relationship between waking and dreaming thoroughly. Future dream research should probably rather aim at measuring specific symptoms using questionnaires and/or clinical interviews and comparing them with dream content (cf. Schredl & Engelhardt, 2001). Another interesting paradigm is to ask patients to record their daily events and symptoms (or using records done by caregivers or psychiatrists) and investigate how dream content changes with different experiences from day to day. This was, for example, done in the study by Dippel, Riemann, Majer-Trendel, and Berger (1988), showing notable changes in dreams of an anorexic patient during therapy.

As pointed out, defining what aspects of waking life one is looking for is important, as this determines what findings are obtained. Including subjective aspects of experience such as emotions, conceptions, concerns and thoughts in addition to the actual events is probably of importance. Furthermore, an evaluation of different ways in which dreams can express waking life seems essential. Research on metaphorical expressions of subjective experiences might be a promising approach in this regard. Viewing dreams as metaphors and expressions of subjective conceptions and concerns is not at all new in the world of dream interpretation, but in quantitative dream research this has not been thoroughly explored. In addition to these issues more specific to the assessment of continuity, the general methodological issues mentioned in the previous section should also be taken into account when conducting future research, to increase the reliability and validity of the results.

## 6. Conclusive Remarks

In conclusion, the present paper demonstrates that dreams of psychiatric patients display continuity with several waking life aspects, drawing attention to the importance of a more specific and comprehensive definition of continuity. Furthermore, several discontinuities have also been identified in the dreams of psychiatric patients, possibly indicating a compensatory function of dreams. However, when considering different ways the dream can express different waking life aspects (e.g., as metaphorical expressions of subjective aspects of experience), these discontinuities might not seem so discontinuous after all, further emphasizing the need for a more comprehensive definition of continuity. The present paper also stresses the inadequacy of basing inferences of continuity on presumptions of the patients' waking life. Future research should rather compare dreams with direct measures of waking life (e.g., occurrence of specific symptoms), as well as identify more specifically which aspects of waking life are incorporated into dreams, with a greater focus on the subjective aspects of experience. How these aspects may be portrayed in dreams should also be considered. In addition, discontinuities should be explored more thoroughly. Achieving these aims would increase our knowledge of the relationship between dreaming and waking life, which in turn would move us closer to an understanding of the nature and function of dreams. Considering the positive results already available from the use of dreams in psychotherapy and for personal growth, increasing our understanding of dreams could potentially make them tools of great value to our waking lives.

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