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Report

Maladaptive daydreaming: Towards a nosological definition

Rêverie inadaptée : vers une définition nosologique

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ABSTRACT

Maladaptive daydreaming (MD) is an excessive and vivid fantasy activity that interferes with individual's normal functioning and can result in severe distress. Research has shown that MD is a clinical condition associated with a number of personal, interpersonal and behavioral problems. Therefore, a need exists to differentiate MD from other mental activities that involve an excessive or otherwise problematic use of fantasy. These include, among others, daydreaming, mind wandering, dissociative absorption, fantasy proneness, sluggish cognitive tempo, lucid dreaming, and autistic fantasy. In this article, we examine the commonalities and differences between MD and these mental activities, to promote a better understanding of the MD phenomena and their specificity, and to foster the quality of its assessment in clinical settings. A clinical case study is employed to elucidate our analysis and to demonstrate the differential diagnosis of MD.

Mots clés :
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RÉSUMÉ

La rêverie inadaptée est une activité imaginaire excessive et intense qui interfère avec le fonctionnement normal du sujet et peut entraîner une détresse extrême. Les recherches ont montré qu'il s'agit d'une affection clinique associée à un certain nombre de problèmes personnels, interpersonnels et comportementaux. Par conséquent, il s'avère nécessaire de la différencier d'autres activités mentales impliquant un usage excessif ou problématique du fantasme. Celles-ci incluent, entre autres, la rêverie, l'esprit distrait, l'absorption dissociative (le sujet est absorbé de façon involontaire par un stimulus), la propension à la fantaisie, le tempo cognitif lent, le rêve lucide et la fantaisie autistique. Dans cet article, nous examinons les points communs et les différences entre la rêverie inadaptée et ces activités mentales, afin d'avoir une meilleure compréhension du phénomène de la rêverie inadaptée et de sa spécificité, et afin de renforcer la qualité de son évaluation en milieu clinique. Une étude de cas clinique est utilisée pour illustrer notre analyse et décrire le diagnostic différentiel de la rêverie inadaptée.

1. Introduction

Maladaptive daydreaming (MD) is a clinical condition characterized by a pathologically immersive use of imagination and fantasy. People suffering from MD display an intense fantasy activity that usually involves highly vivid and complex scenarios, and which interferes with important areas of individual's functioning, such as learning, work and relationships [127]. In MD, the fantasy activity occurs for significant periods, frequently consuming more than half of the individual's waking time [13], and it may also replace human interactions [123,129]. Listening to evocative music and kinesthetic activity seem to facilitate the absorption into one's own daydreams and fantasies and are almost always associated with MD [127,100].

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Like many other psychiatric disorders [66], MD shows similarities with other clinical conditions, possibly because the psychological processes that it comprises may generate symptoms that resemble those observed in different psychopathological conditions [125] or because of comorbidity. Research has showed that MD may be comorbid with other disorders, such as attention deficit hyperactivity disorder, obsessive-compulsive disorders and dissociative disorders [130] which may lead to misdiagnosis and inadequate treatment of individuals suffering from MD.

Given its apparent relationships with other conditions, it is imperative to develop a clear understanding of MD and crucial to differentiate it from other mental activities that concern either non-problematic or problematic use of fantasy and kinesthetic activity. Accordingly, in this article we discuss from a nosological perspective several phenomena that share some similarities with MD but are not MD, and illustrate that MD can be considered a valid, reliable, and specific clinical disorder.

2. Daydreaming: a common mental activity

Daydreaming is a common phenomenon of consciousness, in which the individual undertakes or undergoes episodes of private fiction making [92]. In the mid twentieth century, Singer established the first body of empirical literature on daydreaming. His research showed that most individuals experience waking fantasies in "some form" every day, that such activity occurs most frequently before sleep, that the majority of daydreams seem to address an impulse for rewarding events, and that people usually enjoy it [106,102,104,105]. In later research, Singer [103] differentiated among different styles of daydreaming:

- a positive and constructive daydreaming, in which wishful imagery is associated with creative thought;
- a guilty and dysphoric daydreaming, in which disturbing fantasies constitute the main contents of daydreams, and;
- a daydreaming characterized by poor attentional control, in which the individual shows a severe difficulty to concentrate on his or her ongoing thought or the external task.

Therefore, seminal studies into daydreaming already distinguished between healthy and problematic forms of daydreaming. Also, one important finding of the era suggests that individual attitude to daydreaming is significant in determining its adaptive capacity. Individuals who are able to accept or enjoy moments of waking fantasy are liable to use it more constructively than those who experience reactions of fear or guilt [104,105,133].

More generally, the phenomenon of waking fantasy has accumulated a range of definitions, each emphasizing different parts of the experience. Commentators have described waking fantasy variously as "a wish" [31], a creative process of hypothesis and rejoinder [147] any given sequence of thinking that occurs as a distraction from an external task [102], the portion of stream of consciousness that occurs when one is not scanning the physical environment or undertaking instrumental sequences of thought [56,57], and an imaginative rehearsal [87].

Some theorists have contended daydreams to emerge from play in childhood. Singer [102] and Klinger [56] suggested that episodes of daydreaming develop as an internalized form of play that develops as the child becomes increasingly aware of the public nature of his or her preoccupations. These considerations are consistent with classical [155] and contemporary [28] psychoanalytic considerations on the role of playing in human life, as well as with current hypotheses on the neurobiological architecture of mind in which the domain of playing seems to have a critical role in the individual's development and approach to both internal and external reality [81].

Others have noted the role of comforting daydreams that individuals conjure up in times of distress or pressure [158,40–42], suggesting that daydreaming can be a form of self-comfort, originating in the experiences of very early childhood [92]. Commentators have also noted that fictional rewarding scenarios such as those concerning experiences of success are more likely to occur in reaction to everyday external frustrations or when a person's goals or aims are in peril [31,147,87,79,78]. Accordingly, studies have explored the adaptive role of daydreaming in the realm of plan preparation and rehearsal, emotional regulation, motivation, and learning from success and failure [87,79,78,75].

3. Mind wandering: an inner auto-pilot

Mind wandering (MW) refers to a form of task-unrelated and spontaneous thought, in which the experience of thoughts does not remain on a single topic for a long period of time, particularly when people are engaged in an attention-demanding task. Thus, MW can be defined as a form of mentation decoupled from external tasks and immediate sensory perceptions [135] Viewed as a natural activity of consciousness in the default mode network of the mind (that is, the activity in cortical regions when the brain is "at rest"; see [20,45,55,90,111], this ubiquitous psychological baseline from which people venture when attention is demanded and which they come back to when tasks require no more mindful management [110]) might be considered as a motley of reminiscence, brief reflection, fictional happenings, and anticipation of future moments likely to occur whenever interesting elements in the external world are reduced. In this respect, Smallwood and Andrews-Hanna [108] remark that "...while we may find mind-wandering frustrating, both neural and experiential evidence demonstrates that mental activity that is independent from external stimulation is a normal rather than an exceptional state" (p. 1).

However, researchers have at times considered MW as a sort of failure at being "on task". Referred to as an attentional failure [137], or periodic breakdown of attentional control [71]. Stawarczyk's historical overview [134] asserts a basic "emotionality" to episodes of MW, and researchers finding its experience to be associated with dysphoria, sadness and sub-clinical states of depression [69,112–114,109]. When poorly regulated, MW can indeed result in reduced meta-awareness and less free working memory capacity available for completing external goals [110], thus, leading to adverse effects on performing executive function tasks and academic performance.

The concept of MW owes at least half of its heritage to Eric Klinger's [56] positing of an attentional failure [137], or periodic breakdown of attentional control [71]. A range of researchers have linked episodes of MW to gains in autobiographical memory [107], to the simulation of plausible alternatives [33], to planning for the future [136], and to enhancements in creative process [8]. Increasingly, commentators have recognised that MW is a heterogeneous phenomenon with distinct and variable expression [108], in conditions that are highly individualized and capable of resolving into a stable characteristic of persons when examined comparatively in the laboratory and everyday life [80]. It is perhaps unsurprising then that the existing empirical studies on MW offer variable results in relation to the pleasantness or unpleasantness of the experience, as its rendition would seem to depend on a person's tableau of current concerns and interests.

In practice, many researchers treat MW and daydreaming almost synonymously [108,114,70]. For example, McMillan, Kaufman and Singer [70] cite in their review a range of studies into MW as being "research (that) clearly echoes and meaningfully

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extends Singer's work" (p. 4) on daydreaming, including gains in autobiographical memory and self-reflection [115] management of long term goals [116], anticipation and planning [7].

However, Poerio [89] provides useful caution, stating that while studies on the default mode network have reported substantial overlap between brain regions involved in daydreaming and MW, the latter might have other functions that are more strictly related with social cognition.

4. Sluggish cognitive tempo: impairments in attention

Sluggish cognitive tempo (SCT) is the term used for a debated syndrome related to attention disorders. Although officially endorsed criteria for its clinical recognition have yet to be developed, its most noticeable symptoms include phenomena that can be classified into two symptom domains:

- dreaminess, typical to off-task mentation, such as staring, appearing spacey, daydreaming, being lost in thoughts, and;
- sluggishness, including physical and mental lethargy, slowness in completing tasks, trouble staying awake, drowsy appearance, impaired initiative and cognitive dysfunction such as feeling easily confused, or difficulty in accurately processing questions or explanations [10,32].

SCT has some shared characteristics with attention deficit hyperactivity disorder (ADHD), but evidence suggests that its symptoms are partially independent from ADHD [98]. In fact, symptoms of SCT are correlated with ADHD-Inattentive type but not with the Hyperactive type [85], and they are associated with impairments in academic performance (especially, math performance) and executive functioning of self-organization, even after controlling for the severity of ADHD [10,9]. Moreover, working memory and inhibitory control are deficient in ADHD but not in SCT [150]. Thus, the distractibility of people suffering from SCT seems more internal in nature, similar to daydreaming and MW, compared to inattention and distractibility in ADHD that are often associated with external distraction and difficulties with executive functioning. Accordingly, SCT might be construed as an abnormal expression of MW and thus regarded as a disorder of attention but not hyperactivity [2].

5. Dissociative absorption: a trance-like state

The construct of dissociative absorption (DA) signifies a narrowing of attention and the propensity to become immersed in a single stimulus, either external (e.g., a movie or music) or internal (e.g., a thought or a fantasy), while neglecting other stimuli in the environment [122]. DA is presumed to be a non-volitional automatic state lacking in meta-conscious self-awareness [19].

The origins of the construct are rooted in hypnosis research and could be traced back to Hilgard's [49] research on imaginative involvement where she reported that some highly hypnotizable individuals experienced imagined events with an "almost total immersion in the activity, [and] with indifference to distracting stimuli in the environment" (p. 5). Similar findings were reported by Tellegen and Atkinson [144] who concluded that highly hypnotizable individuals had an inclination for absorption, or what they called an openness to self-altering experiences that could be characterized as states of total attention. "Absorption and imaginative involvement" was a term used later in the dissociation literature to describe one of the three subscales of the Dissociative Experiences Scale (DES-II) [22] along with depersonalization – derealization and dissociative amnesia (e.g., [5]) This domain of dissociation showed positive associations in research with well-validated measures of absorption and hypnotizability [117].

DA involves elements that span between normal ubiquitous phenomena to severe psychopathology. A good illustration of normative DA is the experience of arriving by car somewhere while realizing that one has no memory for the trip or parts of it. However, DA might be so intense and pervasive that it may represent a disintegration or splitting of awareness, which is associated with psychopathological indices such as distress, depression, anxiety, psychoticism and obsessive-compulsive symptoms (e.g., [60,118–120]). Of course, many psychological disorders branch from normal experiences that have become pathological by causing distress or dysfunction, indicating that the pervasiveness of an experience alone cannot essentially indicate its direct association with normality or abnormality. Accordingly, Schimmenti and Şar [99] examined via a correlation network approach a wide range of dissociative experiences, and found a cluster of phenomena that they conceptualized in terms of trance-like states and that are strictly related to DA (e.g., when watching television or a movie, one becomes so absorbed in the story that is unaware of other events happening around him or her) [96]. In that light, Schimmenti and Şar [99] showed that it was not the specific experience of dissociative absorption, detachment or compartmentalization that may foster further dissociative symptoms and psychopathology, but the combination and interaction of such experiences.

DA is related to other constructs describing task-unrelated spontaneous or self-generated mentation. For example, like MW and daydreaming, it represents a decoupling of attention from sensory perception, and shifting focus to internally-generated mentation [111]. However, unlike MW and daydreaming, DA is a mental function that can be focused either internally (e.g., daydreaming), or externally and volitionally (e.g., music or a movie), and it is the intensity and involuntariness of immersive trance-like focus in these experiences that defines whether it lies within the normal range or within the scope of dissociative psychopathology. It is the inclination to persist in the decoupled state, either external or internal, that may possibly be the defining feature of DA [120].

6. Fantasy proneness: a conglomerate of personality traits

One of the earliest modern concepts to address the propensity for self-generated and task-unrelated states of consciousness is fantasy proneness (FP). This term was coined by Wilson and Barber [153,154] who described it as a distinctive pattern of personality traits observed among excellent hypnotic subjects and characterized by involvement in fantasy. In line with some of Hilgard's earlier findings [49,47,48] fantasy-prone individuals report a lifelong vivid, imaginative involvement in reading, play activities, and mystical and religious experiences, together with claims of having particular psychic abilities and out of body experiences.

Lynn and Rhue [62] and Rhue and Lynn [93] concurred that the developmental antecedents of FP included physical abuse and loneliness and that it represents a distinct trait associated with hypnotizability and creativity. More recent evidence showed a modest but significant relationship between hypnotic responsiveness and FP, but these data did not support Wilson and Barber's [153] claim that highly hypnotizable persons distinctively devote a large amount of waking time daydreaming [39]. Psychological testing revealed that a subset of fantasy-prone individuals was significantly maladjusted [39,63,91]. The latter findings were also confirmed by Waldo and Merritt [151] who reported that high scorers on measures of FP were more likely to report having utilized mental health services than low scorers, with scores on FP

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associated with scores on global psychopathology. FP characteristics concerns the individual's proclivity to experience physiological stress reactions to observed violence on television and in the movies, to relive personal life experiences vividly when recalling them, and to achieve orgasm in the absence of touching [154]. However, criticisms have been raised on leading measures of fantasy proneness because of the heterogeneity of their items and the presence of items with an uncertain face validity [58,97]. Despite the limitation of the fantasy proneness construct, as measured, there is some evidence that this pattern of personality traits may moderate the development of dissociative disorders [73,83,84] in individuals who were abused and neglected during childhood [148].

7. Autistic fantasy: a defence mechanism

The term autistic fantasy (AF) has its origin in the work of Bleuler [15,16] who coined the term schizophrenia to describe the group of mental illnesses then known as dementia praecox. Bleuler's work characterises more a habit of mentation rather than the construction of specific fantasy scenarios. He identified autistic thinking as a type of thought indifferent to reality and concerned principally with the fulfillment of wishes. Bleuler coined the term in reference to the fact he encountered it initially and most clearly in the autism of the schizophrenias. He, nevertheless, saw a degree of autistic thinking to be present in every person and he marked its appearance in the play of children, in daydreaming, in creative endeavour and mythology. In adaptation, he considered autistic thinking to have a role largely in enhancing the energy of everyday strivings in so far as they prioritise goal attainment while ignoring or leaving unacknowledged either discouragement or obstacle. Bleuler considered the pathological expression of AF to derive from its excessive use, giving rise to a withdrawal from social concerns in favour of an inner world of fantasy.

Currently, AF describes a primitive defense mechanism, in which a person deals with emotional conflict and stressors by indulging in excessive daydreaming as a substitute for active problem solving [38]. Defense mechanisms are normal and unconscious (that is, automatic and reflexive) psychological mechanisms that help ward off unpleasant feelings of anxiety arising from unacceptable or potentially harmful stimuli [24] There is agreement that defense mechanisms are ordered on a continuum [86], so that the use of mature defenses (such as humor and sublimation) is healthy and imply a good ability to adapt to reality, while the pervasive use of immature (such as rationalization and undoing) or even primitive defenses (such as projection and acting out) imply a severe alteration of painful mental contents and/or radical distortion of external reality [38]. While psychiatric nosology has historically considered AF as a feature of narcissistic personality associated with a preoccupation with fantasies of "unlimited success, power, brilliance, beauty or ideal love." [3], the psychoanalytic literature has conceived AF as a pathognomic defense of schizoid personalities [27,44,72] that arises in response to an internal conflict between the desire to be in relationship with others and the fear of being engulfed, enmeshed and controlled by others [38,82] Accordingly, AF has been shown to empirically predict the presence of clinical symptoms [23,152] and maladaptive personality functioning [38].

Immersive daydreaming in AF, thus, has not the purpose to repudiate real world strivings in favour of an inner life of daydreams and well-developed scenarios, but to protect the mind from internal conflicts concerning one's self-image and relationship with others, either by flight into new fantasies or by enclosing negative experiences into fantasied circumstances of triumph. Accordingly, being a normal psychological defense, AF is not pathological by itself. It becomes pathological when an individual relies excessively on it.

8. Lucid dreaming: scripting one's own dreams

Dreaming while being aware that one is in the dream state is known as lucid dreaming (LD). LD is a clear and coherent sleep-related state of consciousness [145] that was objectively demonstrated when lucid dreamers signaled their awareness during rapid eye movement (REM) sleep [59]. In fact, LD constitutes a hybrid state of waking and sleeping consciousness [65] with about a third of lucid dreamers reporting an ability to script the contents of the dream [139,149]. LD has been related to creativity [14] and to a better cognitive, emotional, and social functioning while awake [43] associated with higher levels of mental health [6], assertiveness, autonomy, and self-confidence [26]. It is especially the intensity of LD that has been linked to positive affect and positive evaluation of one's own psychological state; conversely, experiencing waking awareness within the dream state was associated with mild to moderate levels of psychopathological distress, likely related with poorer sleep quality resulting from the intrusion of waking awareness to restorative sleep [6]. However, the control and volition associated with LD is experienced as having a positive effect on the individual's life, and this probably explains why about 65% of lucid dreamers report that this state has a favorable impact on them [156] Aviram and Soffer Dudek's report [6] however, suggested that LD should not be necessarily considered as suggestive of well-being; rather, it is the sense of control in LD that evokes positive affect associated with lesser distress, whereas those who did not sense control of dream events tended to experience negative affect. A meta-analytic study [76] on 34 LD studies comprising a pooled sample of 24,282 participants showed that LD is a quite common experience during lifetime, as it has occurred to about 55% of individuals; furthermore, approximately a quarter of lucid dreamers report to experience lucid dreams as often as once a month or more. There is also evidence that LD may have a potential beneficial effect in psychotherapy. For example, Zadra and Pihl [157] reported that LD induction training is effective in the treatment of recurrent nightmares, with significant reductions or even the elimination of this form of parasomnia. In another report, LD exercises and discussing possible constructive solutions for the nightmare resulted in decrease in nightmares frequency and in an improvement in sleep quality [132]. These extended case studies were also substantiated by controlled studies [52,131]. Despite the apparent similarities with phenomena observed in other decoupled states such as daydreaming, LD clearly differs from them because it occurs during sleep [51] and is less related with potentially negative outcomes.

9. Intense imagery movements: the imagining body

The locution "intense imagery movements" (IIM) describes what has been conceived as a common and distinct pediatric subgroup of motor stereotypies [94]. It entails episodes of stereotyped, paroxysmal complex movements in the context of intense and enjoyable imagery, typically featuring themes inspired by computer games, cartoons, fantasy scenes or movies. Children who display IIM report conscious engagement in acts of daydreaming or imagination, with stereotyped movements tending to occur simultaneously, but with limited conscious awareness. These children present with significant impairments in sustaining attention to external stimuli and slow processing of information and problems, but they also show strengths in memory and oral expression [95]. IIM may interfere with children's daily functioning and well-being. IIM can be related to a stereotypic movement

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disorder (SMD). SMD is a neurodevelopmental disorder that has its onset in childhood, and involves repetitive, nonfunctional motor behaviors (e.g., hand waving or head banging, but also self-biting, self-hitting, and skin-picking) that can markedly interfere with normal activities or results in bodily injury [4]. However, motor stereotypies seem not to be the only feature of SMD. Freeman and colleagues [30] reported that children with SMD, contrary to their parents, liked their movements, which were usually associated with excitement or imaginative play. A closer examination of the SMD phenomenology in their study reveals striking similarities to more active forms of daydreaming and even with MD. In fact, motor behavior in SMD appears volitional and pleasurable (unlike, for example, tics), though interfering with other domains of functioning, such as learning. Also, children with SMD report that movements such as hand and arm flapping, pacing and running, are associated with their daydreams, similar to what has observed in maladaptive daydreamers [127]. Therefore, similarly to what happens in other time-consuming decoupled behaviors such as excessive MW, SCT, DA, and MD, SMD can compromise external attention demands; however, differently from people suffering from MD and other decoupled behaviors, movements of children with SMD are stereotyped and obsessively enacted, and imagery while performing the movements often concerns elements of favored cartoons and movies that are "stuck" and repeated in the child's mind [30].

10. Imaginary companions: from the inner to the outer world

Daydreaming and fantasy are important in children's lives and are first observed before age two [61], peaking during kindergarten years [143], when many children are actively engaged in pretend- and role-playing. This is a developmental stage in which children start to use mental imagery that can be clearly separated from physical reality. This is what Fonagy and colleagues have termed "pretend mode" [29], a mental state in which thoughts and feelings can be envisioned and talked about but they correspond to nothing real. The acquisition of this sense of pretend in relation to mental states is essential for mental health, because it relates with knowing that internal experience may not reflect external reality, thus the internal states do not necessarily have direct implications for the outside world.

By age seven, about 37% of children take imaginative play a step farther and create an invisible, or imaginary companion (IC) [34,35,141], a universal behavior across cultures [74]. Girls seem to be twice as likely to engage in imaginary relationships, and about 60% of children report to have more than one IC [68]. Evidence suggests a wide range of sensory experiences associated with children's interactions with ICs, including reports of their auditory images [138], physical attributes and personality [140]; many children even offer details about hearing or touching their ICs [37].

Developmental psychology research has shown that ICs may play an important role in children's cognitive [21] and verbal skills [146], as well as coping [36] and stress management [50]. ICs provide entertainment, playmates and even friendship that enable a child to overcome times of boredom and loneliness, and they can also be a source of comfort when the child is experiencing difficulties.

Additionally, some children may use ICs as a way to cope with traumatic experiences [67]. A study based on interviews of middle school students at high risk for developing behavior problems found that having an IC was associated with better coping strategies but lower social preference with peers. However, by the end of high school, those high-risk children who had had an IC in middle school showed better adjustment on multiple measures [142]. This finding suggests that a capacity to create an IC may lead to better adjustment in some instances, as it may help the child with envisioning and imagining others' mental states, and, thus, with the development and exercise of his or her empathy and theory of mind (the ability to attribute, predict and explain the behaviors of other peoples in terms of their beliefs, thoughts, and desires; [11]. Therefore, even if sometimes treated as real by children, ICs do not negatively affect children's development and well-being, nor do they negatively interfere with their life and achievements.

11. Maladaptive daydreaming: a clinical disorder

Maladaptive daydreaming (MD) is a newly defined clinical condition characterized by an excessive and extremely vivid fantasy activity with a profound sense of presence, capable of generating powerful emotions. This mental activity interferes with individual's normal functioning and results in painful distress. In fact, maladaptive daydreamers (MDers) report a psychological dependence on this from of mentation experienced as a pressure to daydream extensively, sometimes for several hours every day, causing distress and impaired functioning [123]. MD is not yet familiar among scholars or mental health professionals; thus, it is not yet recognized as a psychiatric nosology. However, empirical research is currently demonstrating the validity, reliability and specificity of this clinical construct. Research on MD had already identified a number of qualities marking this condition [127,100,12]:

- MDers discovered their ability to activate fanciful fantasies during childhood;
- MDers need privacy to engage in this mental activity;
- Stereotypical movement (e.g., pacing) are usually employed to trigger and maintain daydreaming;
- MD is often facilitated by exposure to evocative music;
- MDers tend to struggle with the outcomes of adverse experiences or ongoing social and emotional difficulties, such as shame and social anxiety;
- MD tends to develop as a gratifying and comforting experience but evolves into a harmful mental practice that consumes precious time resources at the expense of physical and social needs or academic and professional obligations;
- scenarios in MD are fanciful, can be first- or third-person focused, and are often intertwined with psychologically compensatory themes involving fantasized emotional support, representations of idealized selves achieving competency and social recognition.

Thus, MD can be represented as a vicious cycle in which MDers use daydreams to seek comfort from their stressors, only to experience further distress about the damage of daydreaming to their life, relationships, and achievements, which they try to ease and counteract with more daydreaming [125]. In fact, accumulating evidence suggests that unlike immersive daydreaming, MD is a reliable clinical construct manifested by distress rooted in MDers' struggle to control their yearnings to immerse themselves in fantasy as well as intense embarrassment and anguish caused by MD interference with social and daily functioning. This pattern of symptoms and individual responses to distressing states show striking similarities with those observed in addictive behaviors, so that some scholars have suggested that in certain cases MD can represent a behavioral addiction [100,88].

Recent research has confirmed that MD differs significantly from normative daydreaming in terms of quantity, content, experience, controllability, distress and interference with life functioning [13]. MD has been associated in research with

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attention deficit, dissociative, obsessive-compulsive, shame, and social anxiety symptoms, and with global psychopathology [13,100,121,126].

Research evidence has also shown that MD can be reliably detected by means of measures that are specifically aimed to assess this construct. The original Maladaptive Daydreaming Scale (MDS) demonstrated good validity, sound internal consistency and temporal stability and discriminated well between self-identified individuals with and without maladaptive daydreaming, while showing high sensitivity and specificity levels [128]. The revised 16-item version (MDS-16) demonstrated equally excellent psychometric qualities in its English [129], Hebrew [53], Italian [100], and Arabic versions [1]. Moreover, a structured clinical interview for maladaptive daydreaming (SCIMD) developed on the basis of suggested diagnostic criteria yielded good-to-excellent agreement between the MDS-16 and the SCIMD, and good-to-excellent inter-rater agreement [129].

Further indication that MD is a pathological condition can be gleaned from its relationship to DSM-5 disorders: 74.4% of MDers diagnosed based on self-reports and clinician-administered assessments, met criteria for more than three additional DSM-5 disorders and 41.1% met criteria for more than four. The most frequent comorbid disorder was attention deficit hyperactivity disorder (76.9%, mostly Inattentive type); 71.8% met criteria for an anxiety disorder; 66.7% for a depressive disorder; and 53.9% for an obsessive-compulsive or related disorder. Remarkably, 28.2% of MDers have attempted suicide [130]. In sum, individuals meeting criteria for MD suffer from a clinical disorder characterized by unique features that are not present in normal daydreaming, mind wandering, sluggish cognitive tempo, dissociative absorption, fantasy proneness, autistic fantasy, lucid dreaming, intense imaginary movements, and play with imaginary companions and cannot be better explained by existing psychiatric disorders.

The following case aims to illustrate the unique phenomenology of MD.

12. Performing on the internal stage: a case of MD[1]

Jane is a 22-year-old single woman, an undergraduate philosophy student. She described herself as having been a child who liked to spend significant amounts of time daydreaming about cartoon and TV characters while rocking in her backyard hammock. She talked about her parents as loving and supportive and portrayed her childhood as fairly peaceful and uneventful. Jane has always liked singing and secretly aspired to accomplish herself as a performing artist. However, being a bashful child, she had avoided invitations to perform for family or in school. She reported that during adolescence she wasted many hours imagining herself on stage singing in front of huge admiring audiences. Jane reported she had always enjoyed daydreaming greatly despite the fact that fantasizing had significantly compromised her ability to study. Jane had also attended voice development classes for which she was required to practice daily. The patient presented for psychotherapy with a previous diagnosis of ADHD manifesting in severe concentration problems, depression and social anxiety. Previously prescribed Methylphenidate (Ritalin) improved her academic performance but had no impact on daydreaming. She discontinued taking her medication after two weeks because of a paradoxical effect on her daydreaming which seemed to increase.

Jane reported daydreaming several hours every day. She stated that her MD had compromised her studies and her ability to allocate time for practice singing. Jane's shyness also manifested in her social isolation and romantic abstinence. She described a tendency to drift into daydreaming in which she envisioned an idealized future as a successful student, an accomplished singer and happy partner. Listening to music, watching music videos, and walking to school were strong MD triggers and facilitators.

12.1. Case conceptualization

Jane reported a lifelong, probably innate, capacity for immersive daydreaming characterized by an intense sense of presence. She had developed her capacity for intense immersive absorption not only into a freestanding source of daily pleasure, but also into a rewarding distraction from daily stress. The client's vivid daydreaming habit had evolved into a time-consuming behavior with a detrimental impact on her already compromised social life, as well as on her academic and musical studies. As is typical of addictive patterns, Jane resorted to more daydreaming to soothe her distress associated with wasting time. The extensive, fanciful and detrimental aspects of her fantasies differentiated it from normal daydreaming. The pre-planned purposeful characteristics of her daydreaming set it apart from passive mind wandering. Jane's fanciful fantasies and the resulting distress and dysfunction exceeded phenomena of immersive concentration on any stimuli and was incompatible with mere absorption. Since no psychic experiences or slowness of thinking and behavior were noted, the possibility of her presenting with fantasy proneness or sluggish cognitive tempo were ruled out, as was lucid dreaming, a sleep-related occurrence. No obssessive-compulsive, psychotic or compartmentalization symptoms were identified. Jane suffered from difficulties in concentration, but these were explained by the distracting yearning to daydream and the compromising impact of daydreaming imagery on her performance. Further assessment revealed that Jane scored above the empirically-derived cut-off score of the 16-item MDS [100]. A structured clinical interview for maladaptive daydreaming [129] confirmed that Jane indeed met the suggested diagnostic criteria for MD.

12.2. Treatment synopsis

Jane expressed a wish to become more effective in life. She wanted a better control on her daydreaming habit, so that she could have more time to dedicate to the important goals of her life, including doing well in her academic studies, advancing her musical skills, and improving her social anxiety. Traditional dependency treatment aims for total abstinence from maladaptive behaviors. However, in Jane's case, total abstinence was not the goal, primarily because daydreaming is a universal experience comprising much of normal mental activity [57]. Instead, it was decided to help her curb her extensive uncontrolled bouts of daydreaming. Jane was asked to maintain a diary in which she noted the circumstances surrounding her MD as well as her associated thoughts and feelings. Based on the emergent daydreaming patterns, she was instructed to reinforce herself with self-praise for successful interceptions of MD. Accountability was encouraged by instructing Jane to text reports of self-monitored MD time and applied coping measures she had acquired in therapy. Intermittent feedback was provided in the form of encouraging text messages or brief phone coaching sessions to remind her of the skills and resources available to her (e.g., calling a friend). Jane also learned to employ a number of coping statements she found very convincing and helpful: "Daydreaming is detrimental to me and I am determined to control it"; "I will mindfully deal with my challenges in the present rather than escape into a future fantasy"; "Problems in life can only be successfully addressed in the present.". Jane responded to cognitive and acceptance and commitment-informed therapy (ACT) [46] interventions that focused on her social anxiety. She learned to recognize her social

[1] The name of the patient has been changed, and details of the case have been omitted or disguised to protect confidentiality.

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apprehension as representing exaggerated worries about shaming herself rather than as reality-based concerns and to accept her rather reserved interpersonal style as normal and potentially likeable. She resolved to commit herself to the joy of singing and be more mindful of her vocalization pleasures. Jane also benefited from mindfulness training where she learned to shift her attention to experiences occurring in the present moment [54]. The inclusion of mindfulness training in Jane's treatment was based on evidence that it can enhance attention [64], decrease mind wandering and improve cognitive performance [77]. Mindfulness meditation has been associated with significant reductions in substance use and relapse risk [17,18], so it was thought to be a promising modality in the treatment of MD.

12.3. Treatment outcome

As a philosophy student, Jane showed a keen interest in the principles behind the Zen Buddhist ideas and theory behind ACT. She became an avid disciple of mindfulness practice and showed a dutiful adherence to the cognitive-behavioral and the ACT components of the treatment. She terminated her therapy after 11 months as she reported she had met her self-defined treatment goals: an improved control over her immersive daydreaming and subsequent enhancements of her academic, recreational and social functioning. Follow-up testing and interview confirmed that she was obviously still enjoying her immersive daydreams daily, but she no longer met the suggested diagnostic criteria for MD.

13. Discussion

The field of research on consciousness sometimes resembles a Tower of Babel, when aberrations of attentiveness to the outer world are concerned. The turf is replete with overlapping constructs that sometimes seem to add more bewilderment than clarity. The purpose of this paper was to differentiate maladaptive daydreaming (MD) from other existing constructs concerning common and uncommon mental activities that are associated with:

- self-generated and task-unrelated states of consciousness and;
- more generally, with a twofold stream of consciousness featuring an immersion in the inner world that is partially or fully separated from the demands of one's external surroundings.

The main objective was to favor a deeper understanding of MD, and to facilitate the sometimes-difficult task to distinguish it from other related constructs. This in order to shed light on the ontological question and the nosological dilemmas to be associated with any newly identified clinical entity such as MD. We believe that this theoretical process is critical for quality assessment, and eventually the development of optimal treatment interventions, for both MD and the other, apparently similar, mental conditions. To facilitate the nosological differentiation between the examined constructs, their distinctive features are summarized and compared in Table 1. To quantify the similarity of the compared constructs across relevant criteria, in Table 1 we regarded a characteristic classified as occurring sometimes (+-) as present and a characteristic classified as unknown in its occurrence (?) as absent. The last column of the table (on the right) reflects the calculated similarity of MD with the other constructs: the higher the number, the greater the similarity.

As it can be observed in Table 1, all analysed constructs present some overlap with at least one other construct. MD is no exception as it also shares some features with the analysed concepts. Yet, MD seems quite distinct from all the other mental phenomena, with MW seeming the most dissimilar mental activity. Actually, our findings do not render support to the broad definition of MW as "engaging in cognitions unrelated to the current demands of the external environment" [101] a definition that encompasses both MW and daydreaming. To reiterate: MW does not usually constitute a unified, purposeful complex fantasy narrative that emanates from a sense of agency, but is mostly a more passive, off-task stream of associations, a receptive state of the mind in its "default mode" functioning. Moreover, unlike MW, the pathological from of daydreaming (MD), involves such unique characteristics as kinsthesia and is associated with some hallmarks of psychopathology: distress, dysfunction and comorbidity with other psychiatric disorders [130].

Notably, Table 1 shows that MD is very similar to the construct of imaginary friends. This consideration is in line with reports highlighting the typical presence of imaginary friends as developmental precursors of MD [123,124]. Table 1 also presents relevant similarities between MD and daydreaming. Indeed, both phenomena reflect intentional forms of focused fantasizing and an active mental state. MD, however, represents a capacity for a more immersive state of fantasy, eliciting a rewarding experience associated with a sense of presence [123], with the other differences being, of course, the excessive and pathological characteristics of MD [129], not present in normal daydreaming.

MD also displays relevant similarities with intense imagery movements (IIM) with their typical stereotypical motions. Accordingly, research on MD has displayed the relevance of body movements in fostering MD [129], and body movements have been conceptualized together with listening to music as the domain of sensory-motor retreat in MD [100]. Further research is required to

Table 1
Comparison of maladaptive daydreaming characteristics to those of other related constructs.

Characteristics construct	Usually first observed in childhood	Volition	Distress and/or dysfunction	Conscious control over actions	Elaborate fanciful fantasy	Fantastic contents	Kinesthesia	Music	Waking activity	Physical and cognitive slowness	Psychic abilities	Similarity score
Maladaptive daydreaming	+	+	+	+	+	+	+	+	+	-	-	
Daydreaming	+	+-	-	+-	-	-	-	+-	+	-	-	7 (64%)
Mind wandering	-	-	-	-	-	-	-	-	+	-	-	3 (27%)
Sluggish cognitive tempo	+	-	+	-	-	-	-	-	+	+	-	4 (36%)
Dissociative absorption	?	+-	-	+-	-	-	-	+-	+	-	-	6 (55%)
Fantasy proneness	+	-	+-	-	?	+	-	-	+	-	+	5 (45%)
Autistic fantasy	+	-	-	-	+	?	-	-	+	-	-	5 (45%)
Lucid dreaming	-	+-	-	+-	+	+	-	-	-	-	-	6 (55%)
Intense imagery movements	+	-	+	?	?	+	+	-	+	-	-	7 (64%)
Imaginary friends	+	+	-	+	+	+-	+-	-	+	-	-	9 (82%)

Symbols must be interpreted as follows: + = Yes; +- = Sometimes; - = No,? = Unknown.

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determine if certain forms of IIM (or its probable DSM corollary: Stereotypical movement disorder) are childhood precursors of MD.

Still, no perfect match occurred with any of the observed constructs. Moreover, some similarity scores are inflated in Table 1 by those occurrences in which a given characteristic that is observed in MD has been also observed sometimes in another reviewed construct. Therefore, the study of MD similarities and dissimilarities with other constructs support its conceptualization as a specific mental activity.

While a thorough attempt to distinguish MD from existing psychiatric disorders is beyond the scope of this manuscript, a nosological article would not be complete without at least a rudimentary discussion of differential diagnosis. We will, henceforth, outline very briefly the main differences between MD and four potentially related DSM-5 [4] diagnoses, namely:

- obsessive-compulsive disorder (OCD);
- schizophrenia;
- attention deficit/hyperactivity disorder (ADHD), and;
- dissociative identity disorder (DID), and will argue that MD cannot be better explained by existing psychiatric diagnoses.

First, while some forms of MD involve a compulsive and time-consuming need to fantasize, unlike OCD the motivations to daydream in MD are not commonly related to the need to repeat the same images in an effort to achieve perfection or to avoid a dreaded outcome. Furthermore, mental compulsions in OCD do not involve fanciful narratives of fantasy or kinesthesia.

Second, unlike schizophrenia, the fantasy in MD, although sometimes featuring visual auditory components, is volitional, complex and creative. Moreover, MD does not present with delusions, thought disorder or flat affect.

Third, MD has a 77% comorbidity with ADHD-Inattentive type [130], indicating that the two disorders share some core features associated with attention resources and skills. Such a remarkable comorbidity rate raises the question if one of the disorders might not be a subtype of the other. Daydreaming indeed occurs in ADHD, however, it is not necessary for its diagnosis [4]. This is likely related to the fact that most distractions in ADHD are external, while the attentiveness of most people with MD is compromised by fantasy. Additionally, kinesthesia and exposure to music, two seemingly pathognomic characteristics of MD, are absent in ADHD. This suggests that MD can contribute to attention deficits, while ADHD is less likely to cause MD.

Lastly, the existence of inner worlds is common to both MD and DID. The inner protagonists in both kinds of paracosms (i.e., imaginary worlds) can be considered as meaningful expressions of the individual's personality. However, several differences between the two disorders determine their distinctness. While, DID is almost invariably a result of severe childhood abuse and neglect [25], only about one quarter of the individuals who identified themselves as suffering from MD reported childhood adversities [12]. Furthermore, in MD the internal protagonists never take executive control over the person's behavior as it happens in DID, and in DID the internal protagonists always represent the individuals' identities, unlike in MD.

14. Conclusions

Research on MD is rapidly growing, but an important limitation for its development was the lack of clear distinctions between MD and other related constructs involving a twofold inner/outer stream of consciousness. Being apparently similar in its manifestations to other widely studied constructs, MD still risks going unrecognized in clinical contexts, or to be simplistically conceived as a single symptom of another diagnostic category.

Yet, it is imperative that clinical understanding stands on the solid ground of psychopathology, nosology, and differential diagnosis. In this respect, the evidence presented in the current article identifies MD both as a unique state of consciousness, as well as a distinct mental disorder with its own features. Also, considering the empirical data already collected on MD, the growing number of self-help groups of MDers on the Internet, and the requests for consultations coming from MD clients, the time has come for psychiatry to give this disorder the clinical attention it deserves.

Disclosure of interest

The authors declare that they have no competing interest.

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