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Pathological personality traits of maladaptive daydreamers measured by the Personality Inventory for DSM-5 in a psychiatric sample

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Abstract

This study aimed to estimate the frequency of maladaptive daydreaming and to explore the pathological personality traits of probable maladaptive daydreamers. Our sample consisted of 239 psychiatric patients. After screening, 42 persons were probable maladaptive, while 197 participants prove to be normal daydreamers. Two pathological domains and three facets measured by the Personality Inventory for DSM-5 showed a moderate significant correlation with the Maladaptive Daydreaming Scale. The score of nearly every domain and facet was slightly higher among probable maladaptive daydreamers. To quantify the difference between the groups, effect sizes were calculated: Significant difference was found on the domain level in Antagonism, while on the facet level in Hostility, Grandiosity, Attention Seeking, Unusual Beliefs and Experiences, Cognitive and Perceptual Dysregulation. The group of probable maladaptive daydreamers was further examined to identify potential subgroups. Cluster analysis revealed heterogeneity in the severeness and patterns of pathological personality domains. Cluster 1 showed higher mean scores on the PID domains and on the MDS compared to Cluster 2. Clusters 1 and 2 broke further down into two subclusters: Cluster 1a and Cluster 1b differed in their mean scores on the domains of Antagonism and Detachment; the mean scores of Cluster 2a were uniformly low on each domain, while the mean values of Cluster 2b were scattered in a mixed way on the domains. Our results suggest that maladaptive daydreaming might manifest with differently pathological personality profiles in the background. This aspect might worth considering in planning treatment.

KEYWORDS

maladaptive daydreaming, MDS-16-HU, personality traits, PID-5, psychiatric patients

1 | INTRODUCTION

Firstly, we describe the phenomenon of maladaptive daydreaming, then we review the factors that previous studies have examined in relation to maladaptive daydreaming and the methodological peculiarities of these. Subsequently, the literature of the phenomenon will be discussed in accordance with our research aims, including studies on frequency data of maladaptive daydreaming in different populations, and on those examining the relationship between the phenomenon and personality traits.

1.1 | The phenomenon of maladaptive daydreaming

Maladaptive daydreaming is an excessive fantasy activity that was first described in 2002 (Somer, 2002). 'Maladaptive daydreaming (MD) is extensive fantasy activity that replaces human interaction and/or interferes with academic, interpersonal, or vocational functioning' (p. 197). Maladaptive daydreaming differs from normal daydreaming regarding its quantity and quality: It is associated with excessive amounts of time dedicated to daydreaming, a feeling of loss of control and intense distress. Moreover, it causes shame, a sense of guilt and functional impairment to the individuals affected by the condition (Bigelsen et al., 2016). Although the number of international publications assessing the phenomenon of maladaptive daydreaming is still low, it can be concluded that maladaptive daydreaming is a clinical condition causing severe personal, behavioural and interpersonal problems (Schimmenti, Somer, & Regis, 2019). Maladaptive daydreamers' fantasy world is extremely complex, containing vivid scenes, a wide range of characters and locations. Although maladaptive daydreaming is a rewarding activity for many people who consequently feel an intense yearning to daydream, the countless hours spent in the fantasy world cause a significant loss of time, and daydreaming activity becomes dominant in the individuals' lives (Ross, West, & Somer, 2020; Somer, Somer, & Jopp, 2016b).

Maladaptive daydreaming is not an official diagnostic entity, although according to Somer and his colleagues (Somer, Soffer-Dudek, Ross, & Halpern, 2017), it is a clinically well-defined phenomenon. Evidence suggests that maladaptive daydreaming is a reliable clinical construct (Somer, 2018) that can be differentiated from normal daydreaming: Maladaptive daydreamers consistently report an uncontrollable yearning for daydreaming, decreased perceived control over the mental activity, intense distress, a feeling of shame and a significant functional impairment derived from their excessive daydreaming activity (Bigelsen et al., 2016; Somer, 2018). Maladaptive daydreaming can be defined as a 'pathologically immersive use of imagination and fantasy' (Schimmenti, Somer, & Regis, 2019, p. 865). A previous study identified high levels of comorbidity in maladaptive daydreaming; however, it cannot be better explained by any other DSM-5 disorder. According to researchers, the high rates of comorbidity confirm that maladaptive daydreaming is a form of psychopathology (Somer, Soffer-Dudek, & Ross, 2017). Maladaptive daydreamers have a strong

Key Practitioner Message

- Maladaptive daydreaming is presumably frequent (17.5%) but unrecognized phenomenon in the present mixed psychiatric sample.
- More severe maladaptive daydreaming might be an indicator of more severe personality pathology.
- A low proportion of probable maladaptive daydreamers seemed to have an almost intact personality profile.
- Underlying personality characteristics should be assessed using the PID-5 when planning the treatment of maladaptive daydreaming.

desire to promote the legitimization process of this relatively newly identified mental disorder (Bershtling & Somer, 2018). They often experience misunderstanding and scepticism by mental health professionals, as well as are often misdiagnosed and treated ineffectively with the diagnosis of more familiar mental disorders (Somer, Somer, & Jopp, 2016a). Although maladaptive daydreaming has not been identified as a distinct disorder by the medical and psychological institutions, thousands of individuals identify themselves with this problem (Bershtling & Somer, 2018). They seek online support or look for understanding and help by sending personal emails to the professionals involved in the research of maladaptive daydreaming or joining to the vivid conversations of forums, chat rooms and Facebook groups dedicated to the phenomenon (Somer, Somer, & Jopp, 2016b).

1.2 | An overview of previous studies and their methodological features

Initial studies focused on the development of adequate screening and diagnostic tools for maladaptive daydreaming (Somer, Lehrfeld, et al., 2016; Somer, Soffer-Dudek, Ross, & Halpern, 2017). Further studies have examined the phenomenon of maladaptive daydreaming in relation to childhood traumatization (Abu-Rayya et al., 2020; Bigelsen et al., 2016; Bigelsen & Schupak, 2011; Somer, 2002; Somer, Abu-Rayya, & Nsairy Simaan, 2019; Somer et al., 2020; Somer & Herscu, 2017; Somer, Somer, & Jopp, 2016a), emotion regulation deficits (Greene et al., 2020; West & Somer, 2020), dissociative experiences (Bigelsen et al., 2016; Soffer-Dudek & Somer, 2018; Somer & Herscu, 2017; Somer, Lehrfeld, et al., 2016; Somer, Soffer-Dudek, & Ross, 2017; Somer, Somer, & Halpern, 2019) and comorbid disorders (e.g., sleep disturbance, dissociation, attention deficit hyperactivity disorder, anxiety disorder, depressive disorder, obsessive-compulsive or related disorder) (Marcusson-Clavertz et al., 2019; Soffer-Dudek & Somer, 2018; Somer, Soffer-Dudek, & Ross, 2017), focusing on the urgent need to develop an adequate therapeutic protocol for maladaptive daydreaming (Somer, 2018).

In the majority of studies, an online sampling technique was performed (e.g., Abu-Rayya et al., 2019; Bigelsen et al., 2016; Bigelsen &

Schupak, 2011; Greene et al., 2020; Somer, Lehrfeld, et al., 2016; West & Somer, 2020), typically investigating the adult general population. Furthermore, a small number of case studies (Pietkiewicz et al., 2018; Rebello et al., 2019; Schimmenti, Somer, & Regis, 2019; Schupak & Rosenthal, 2009; Somer, 2018), and only a few research studies involving a clinical sample, were performed (Abu-Rayya et al., 2020; Somer, 2002; Somer, Abu-Rayya, & Nsairy Simaan, 2019). The reason for choosing the previously described sampling procedure might be the fact that individuals affected by maladaptive daydreaming can be accessed more easily online, as this method provides complete anonymity (Bigelsen & Schupak, 2011).

1.3 | Epidemiology of maladaptive daydreaming in different populations

Up until now, only one study has examined the frequency of maladaptive daydreaming in general population, while four studies have investigated it in specific target groups, which will be described in the following.

Soffer-Dudek and Theodor-Katz (2022) analysed four independent Israeli samples, which included self-identified maladaptive daydreamers, to determine the frequency of maladaptive daydreaming. Researchers found a point prevalence of 2.5% of maladaptive daydreaming in the Israeli-Jewish population.

A recent study (Somer, Abu-Rayya, & Nsairy Simaan, 2019) investigated a sample of 180 Israeli Arab men, 100 of whom were recovering from substance use disorder and receiving care, while 80 individuals constituted the healthy control group; 16% of the individuals recovering from substance use disorder proved to be maladaptive daydreamers, while no member of the control group scored higher than the cut-off score of the MDS-16. For a more accurate identification of maladaptive daydreaming, the authors applied the Structured Clinical Interview for Maladaptive Daydreaming (SCIMD, Somer, Soffer-Dudek, Ross, & Halpern, 2017). Results revealed a 5% prevalence of maladaptive daydreaming among individuals recovering from substance use disorder (Somer, Abu-Rayya, & Nsairy Simaan, 2019).

Further evidence (Abu-Rayya et al., 2020) suggested that, comparing the sample of Israeli Arab female survivors of childhood sexual abuse ($n = 99$) with a control group ($n = 95$), 33% of the women surviving childhood abuse, while 19% of the control group scored higher than the cut-off score of the MDS-16.

Theodor-Katz et al. (2022) examined the prevalence of maladaptive daydreaming in individuals diagnosed with ADHD. The sample was screened by using the MDS-16, then the SCIMD was applied to identify clinical level maladaptive daydreaming; 20.5% of the sample passed the diagnostic criteria of maladaptive daydreaming, which subgroup was characterized by increased depression, loneliness and decreased self-esteem.

Ross, Ridgway and George (2020) examined the frequency of maladaptive daydreaming in a psychiatric sample; 100 patients were involved in the study from a (private) psychiatric hospital programme

specializing in dissociative disorders. The results of the study revealed that, applying the MDS-16 and the SCIMD, maladaptive daydreaming disorder could be identified in the case of 49 participants, while 23 individuals met criteria for unspecified maladaptive daydreaming.

1.4 | The relationship between maladaptive daydreaming and personality traits

The clarification of the relationship between psychiatric disorders and personality traits has long been in the focus of research. Recent studies have examined how the association between personality disorders (Samuel & Widiger, 2008; Widiger & Mullins-Sweatt, 2009) and some of non-personality disorders (Kotov et al., 2010) can be captured by the Five Factor Model (FFM) in terms of the dimensional model of general personality structure. Similar assessment should be performed with the Personality Inventory for DSM-5 (PID-5; Krueger et al., 2012), the new personality questionnaire that is based on the alternative personality disorder model of the DSM-5. The five domains of the PID-5 can be considered as the maladaptive variants of the FFM domains (Trull, 2012) and provide information about the maladaptive end points of personality (Suzuki et al., 2015). The PID-5 can be applied to comprehensively measure the maladaptive personality differences.

To the best of our knowledge, two research papers have studied the associations between maladaptive daydreaming and personality traits. Schimmenti, Sideli, et al. (2019) examined the associations between maladaptive daydreaming and the pathological domains measured by the Personality Inventory for DSM-5 – Brief Form (PID-5-BF, Krueger et al., 2012). They found significant positive correlations between the MDS score and the five pathological domains (Negative Affectivity, Detachment, Antagonism, Disinhibition and Psychoticism) both in the group of self-diagnosed maladaptive daydreamers and in the control group.

Brenner et al. (2022) investigated the connection between fantasy functions and themes of probable maladaptive daydreamers and certain personality traits. Personality traits were measured by the short form of the Personality Inventory DSM-5 for adults (PID-5-SF; Maples et al., 2015). Research findings showed that the facet of Grandiosity was related to the contents involving wish-fulfilment, power, dominance and violence. Separation insecurity connected to fighting boredom, to recalling a rewarding pastime and to experiencing often absent caring relationships and love. Probable maladaptive daydreamers characterized by the facet of Anhedonia were likely to employ their fantasizing activity to recall rewarding pastimes or to distract from an unpleasant reality.

1.5 | The aim of the study

One of the aims of the present study was to estimate the frequency of maladaptive daydreaming in a mixed psychiatric sample. Another aim was to explore thoroughly the underlying personality features of

probable maladaptive daydreamers. Maladaptive daydreaming, which is a multifaceted clinical phenomenon, might develop on the ground of various personalities. Previous studies revealed that the severity of maladaptive daydreaming varied among individuals (Soffer-Dudek & Somer, 2018), also phenomenon appeared with a number of mental disorders (Marcusson-Clavertz et al., 2019; Soffer-Dudek & Somer, 2018; Somer, Soffer-Dudek, & Ross, 2017). Based on these results, in addition to the previously described findings of Schimmenti and his colleagues (2019) and Brenner et al. (2022), it can be presumed that maladaptive daydreaming might develop on the ground of pathological personality. For a more detailed exploration of the characteristics and the clustering of the underlying personality features of maladaptive daydreamers, the PID-5 was applied.

2 | METHOD

2.1 | Participants and procedures

The empirical study involved psychiatric patients ($n = 239$) from inpatient care and day hospital care. Another inclusion criterion was to be aged between 18 and 60, while individuals with diagnoses of acute psychotic symptoms, intellectual disability or dementia were excluded from the study. The participants provided data by filling out a complex questionnaire package administered in the presence of a researcher (first author) or a trained psychologist.

The gender distribution was balanced: 51.9% of the sample were women ($n = 124$), and the mean age was 43.7 years ($SD = 11.8$); 12.6% of the participants had primary school education or a lower level of education, 68.2% had secondary school education, while 19.2% had tertiary education.

We collected the patients' psychiatric diagnoses from their medical records. In the Hungarian health-care system, diagnoses are based on the ICD-10; DSM-5 diagnoses are not used in clinical practice. The participants had minimum 1, maximum 7 psychiatric diagnoses. The most frequent diagnoses were substance use disorders (29.9%), mood disorders (24.5%) and neurotic, stress-related and somatoform disorders (26%).

Based on the Hungarian cut-off score of the screening questionnaire for maladaptive daydreaming (MDS-16-HU; Sándor et al., 2020), two study groups were established. Forty-two participants, that is, 17.5% of the psychiatric sample, were screened as probable maladaptive daydreamers that indicated a high frequency of maladaptive daydreaming among psychiatric patients. The gender distribution of probable maladaptive daydreamers ($n = 42$) was balanced; 45.2% ($n = 19$) of the sample consisted of women. The mean age was 34.31 years ($SD = 14.96$). Regarding the educational level, 9.5% of probable maladaptive daydreamers had primary school education or a lower level of education, 76.2% had secondary school education, while 14.3% had tertiary education. Most of the probable maladaptive daydreamers received treatment for mood disorders (31.2%), substance use disorders (22%) and neurotic, stress-related and somatoform disorders (22%).

Gender distribution among normal daydreamers ($n = 197$) was balanced as well; the proportion of women was 46.7%. The mean age was 34.59 years ($SD = 15.01$); 13.2% of normal daydreamers had primary school education or lower, 66.5% had secondary school education, while 20.3% had tertiary education.

The probable maladaptive and normal daydreamer groups were compared based on the demographic variables. The groups did not differ regarding gender ($\chi^2(1) = 0.901$, $p = .343$), nor the levels of education ($\chi^2(2) = 1.501$, $p = .472$). Maladaptive (median = 47) and normal daydreamers (median = 45) did not differ significantly regarding their age, either ($U = 4199.5$, $p = .878$).

The research was conducted in accordance with the Helsinki Declaration, and we had institutional, regional (4838-2017) and national (45770-4/2017/EKU) research licences. Study participants were informed in accordance with research ethics guidelines (Szentmiklósi, 2011). The participation was voluntary, and participants gave their written informed consent to participation in the study and did not receive any compensation. Data collection was carried out using a paper-and-pencil method, administered by a trained psychologist. The trained psychologist was an independent person from the mental health team in each case in order to protect patients' voluntary decision making. Moreover, participants were assured both verbally and in writing that the rejection or interruption of the investigation would not cause any inconvenience for them.

2.2 | Measures

MDS-16-HU: The Maladaptive Daydreaming Scale is a 16-item self-report questionnaire (Somer, Soffer-Dudek, Ross, & Halpern, 2017), which was originally created in English. The scale items assess the key characteristics of maladaptive daydreaming (e.g., yearning, functional impairment, kinaesthesia and music) based on answers given on an 11-point Likert scale, resulting in scores ranging from 0–100%. MDS-16 has been performed in five cultural adaptations so far: Hebrew (Jopp et al., 2019), French (Balestra, 2019), Italian (Schimmenti, Sideli, et al., 2019), Arabic (Abu-Rayya et al., 2019) and Hungarian (Sándor et al., 2020). The psychometric properties of the MDS-16-HU were examined by Sándor and her colleagues (2020) in a Hungarian community sample. The reliability and validity of the MDS-16-HU as a screening tool for maladaptive daydreaming were tested and confirmed. Sándor et al. (2020) applied rigorous criteria to differentiate between normal and probable maladaptive daydreamers: self-identified maladaptive daydreamer status, the degree of control over daydreaming and the frequency of daydreaming. The cut-off score of the Maladaptive Daydreaming Scale in that Hungarian sample was established at 35 points out of 100. This cut-off score seemed to be 5 points lower than the cut-off score of the English version MDS-16 (Soffer-Dudek, 2021). Based on this cut-off score, individuals scoring more than 35 points were categorized as probable maladaptive daydreamers, while those who scored 35 points or less were categorized as normal daydreamers. The reliability of the MDS-16-HU was high in present study (Cronbach $\alpha = .93$).

PID-5: The PID-5 is a 220-item self-report questionnaire measuring 25 pathological facets and five domains: Negative Affectivity, Detachment, Antagonism, Disinhibition and Psychoticism (Krueger et al., 2012). These five domains are considered the maladaptive variants of the domains determined by the FFM: Neuroticism, Agreeableness, Extraversion, Conscientiousness and Openness (Trull, 2012). The primary target group of the PID-5 is the clinical population (Gutiérrez et al., 2017). The items are scored on a 4-point Likert scale (0 = *very false or often false*, 3 = *very true or often true*) based on how typical the item is for the individual. The domain scores were calculated as the average scores of specific facet-triplets in line with the original PID-5 document (American Psychiatric Association [APA], 2013a). The psychometric properties of the Hungarian version of the PID-5 are adequate; however, the removal of one item was necessary (Labancz et al., 2020).

In present study, the Cronbach's alpha values indicated high reliability in the sample, as facet values ranged from .69 to .93, except for the Restricted Affectivity facet (.57), and domain values ranged from .75 to .81. Cronbach's alpha values are presented in Table 1.

2.3 | Statistical analyses

Data analyses were performed using the RStudio (Version 1.2. 1335, RStudio Team, 2015) statistical software, and most of the analyses were applied using the functions of the stat package (stat4_4.0.3); otherwise, it is indicated in the following.

The reliability of the questionnaires was measured using Cronbach's alpha (R package: RcmdrMisc).

Chi-squared tests were applied on the distribution of gender and educational level to compare the demographic characteristics of the two study groups (maladaptive and normal daydreamers). The Mann-Whitney U test was used to compare the age distributions in the two groups, as the age variable did not follow a normal distribution.

Correlations between the MDS total score and PID facets and domains were examined applying Spearman's rank correlations in case of the probable maladaptive daydreamers.

Furthermore, the facets and domains in the two groups were compared by Mann-Whitney U tests, as PID facets and domains did not follow a normal distribution. Given the high number of comparisons, Bonferroni adjustments were applied to the p values of the facets and of the domains separately (R package: stats). To quantify the difference between the two groups, effect sizes were calculated (R package: rcompanion).

The group of probable maladaptive daydreamers was further analysed by hierarchical cluster analysis to determine potential subgroups based on the PID domain scores. In the hierarchical cluster analysis, complete linkage agglomerative method was used on the Euclidean distance matrix computed between the participants' PID domain scores. For the two-clusters to seven clusters solutions, the Dunn's indices were also calculated in order to investigate the optimal number of clusters (R package: clValid). And for the best two solutions, multivariate analyses of variance (MANOVAs) were

TABLE 1 Cronbach's alpha values of the PID domains and facets (N = 239)

PID domains and facets	Cronbach's alpha
Negative Affectivity	.78
Emotional Lability	.78
Anxiousness	.90
Separation Insecurity	.78
Perseveration	.78
Submissiveness	.77
Hostility	.82
Depressivity	.91
Suspiciousness	.69
Detachment	.80
Restricted Affectivity	.57
Withdrawal	.87
Anhedonia	.85
Intimacy Avoidance	.85
Antagonism	.81
Manipulativeness	.77
Deceitfulness	.87
Grandiosity	.75
Attention Seeking	.81
Callousness	.85
Disinhibition	.75
Irresponsibility	.73
Impulsivity	.78
Distractibility	.86
Risk Taking	.86
Rigid Perfectionism	.78
Psychoticism	.78
Unusual Beliefs and Experiences	.75
Eccentricity	.93
Cognitive and Perceptual Dysregulation	.82

applied with the clustering solution as the independent variable and the PID domain scores as the dependent variables. Aiming to obtain additional information for the decision on the number of clusters, the power of these statistical analyses was studied (R package: heplots).

3 | RESULTS

Spearman's rank correlations were used to examine the relationship between the PID domains and facets and the MDS total score in the group of probable maladaptive daydreamers. Given the number of correlations, Bonferroni corrected p values were applied. Table 2 shows the results of the Spearman correlations. The results suggested that two of the five PID domains showed significant correlations with

TABLE 2 Correlations between PID domains and facets and the extent of maladaptive daydreaming

PID domains and facets	Probable maladaptive daydreamers (N = 42)
	Rho
Negative Affectivity	.45*
Emotional Lability	.45
Anxiousness	.36
Separation Insecurity	.27
Perseveration	.46*
Submissiveness	.35
Hostility	.34
Depressivity	.20
Suspiciousness	.31
Detachment	.14
Restricted Affectivity	.17
Withdrawal	.26
Anhedonia	.13
Intimacy Avoidance	.02
Antagonism	.45*
Manipulativeness	.26
Deceitfulness	.47*
Grandiosity	.43
Attention Seeking	.34
Callousness	.31
Disinhibition	.30
Irresponsibility	.26
Impulsivity	.18
Distractibility	.31
Risk Taking	.08
Rigid Perfectionism	.50*
Psychoticism	.31
Unusual Beliefs and Experiences	.22
Eccentricity	.28
Cognitive and Perceptual Dysregulation	.26

Note: Bonferroni adjusted p values:

* $p \leq .05$.

maladaptive daydreaming. The values of the significant correlation coefficients were .45 for Negative Affectivity and also for Antagonism. Regarding the facets, in case of three out of 25 facets showed moderate correlations; the values of the correlations were .46 (Perseveration), .47 (Deceitfulness) and .50 (Rigid Perfectionism).

Mann-Whitney U tests were applied to examine the differences between the groups of maladaptive and normal daydreamers regarding the PID domains and facets. Table 3 shows the mean, standard deviation, median values, U values and effect sizes of the domains and facets by samples. Bonferroni adjustments were applied to the p

values for the facets and for the domains separately; hence, the indicated significance levels take into account the number of comparisons. The results showed that probable maladaptive daydreamers scored significantly higher on each of the five domains compared to normal daydreamers. Analysing the facets, the two groups differed significantly in 16 out of 25 facets.

To quantify the size of the difference between the two groups, effect sizes were calculated. The obtained values revealed a size of 0.15 or higher for the Antagonism domain; as for the facets, the following ones emerged: Hostility, Grandiosity, Attention Seeking, Unusual Beliefs and Experiences, Cognitive and Perceptual Dysregulation.

We examined the maladaptive daydreamer group further to see if potential subgroups could be identified in this sample. To investigate this presumption, hierarchical cluster analysis was applied to the data of the PID domain scores of probable maladaptive daydreamers. More precisely, Euclidean distances were calculated from PID domain scores, and these were used as an input in a complete linkage agglomerative hierarchical cluster analysis. Although the sample size of our target group ($n = 42$) can be considered small, it seemed worth carrying out an additional analysis to gain important insights into the hidden segments. Figure 1 shows the results, each number referring to one participant. On the y axis, the distance of split—or merge from another perspective—is shown that is often also called height or dissimilarity measure.

Based on the results, four subclusters were identified on the basis of conceptual considerations: Four clusters seemed meaningful after exploring the detailed results. Conceptual considerations were followed by the data driven decision process and led to the same choice. The value of Dunn's index for the two-cluster solution was .17, for the three-cluster solution it was .17, for the four-cluster solution .21 and, finally, it was .24 for both the five-cluster and the next seven-cluster solutions. That is, the Dunn's index was maximized with five clusters. In order to investigate the power of the most promising cluster solutions (with four and five clusters) in differentiation of PID domain scores, MANOVA analyses were carried out with the clusters as independent variables and the PID scores as dependent variables, and eta-square statistics were calculated. The four-cluster solution as independent variable in the analyses resulted in a slightly higher eta-squared value ($F(3,38) = 8.82$, $p < .001$, $\eta^2 = .55$) than the five-cluster solution ($F(4,37) = 8.86$, $p < .001$, $\eta^2 = .54$). Based on these results, the solution with four participant groups is more parsimonious; hence, it was selected.

Hierarchical cluster analysis on a small sample size tends to have low power, meaning that the method is not very effective in finding the true membership of participants (e.g., Dalmajer et al., 2020); therefore, these results should be considered with caution. However, the medium power of the MANOVA analysis was promising. In the following section, the characteristics of these four subclusters are going to be described.

Figure 2 shows the means of the PID domains and the means of the total MDS score in the entire group of probable maladaptive daydreamers, as well as in the two main clusters and subclusters. The

TABLE 3 PID domain and facet mean values and median value differences between normal and probable maladaptive daydreamers

PID domains and facets	Normal daydreamers (N = 197)		Probable maladaptive daydreamers (N = 42)		U-test	Effect size (r)
	M (SD)	Mdn	M (SD)	Mdn		
Negative Affectivity	1.52 (.62)	1.51	1.86 (.67)	2.01	5439**	−0.03
Emotional Lability	1.59 (.70)	1.57	1.84 (.72)	2.00	4989	−0.04
Anxiousness	1.65 (.84)	1.67	2.03 (.78)	2.11	5254	−0.03
Separation Insecurity	1.33 (.72)	1.29	1.70 (.82)	1.86	5263	< −0.01
Perseveration	1.26 (.61)	1.22	1.67 (.63)	1.83	5776***	−0.03
Submissiveness	1.01 (.78)	1.00	1.24 (.79)	1.25	4884.5	−0.04
Hostility	0.92 (.60)	0.90	1.37 (.66)	1.30	5742**	−0.19
Depressivity	1.09 (.70)	1.00	1.66 (.68)	1.79	6007***	−0.02
Suspiciousness	1.36 (.64)	1.33	1.78 (.52)	1.75	5722**	−0.08
Detachment	1.01 (.64)	0.91	1.43 (.55)	1.41	5797.5***	−0.03
Restricted Affectivity	1.17 (.53)	1.14	1.35 (.55)	1.36	4996.5	0.03
Withdrawal	1.04 (.74)	0.90	1.44 (.64)	1.45	5497.5*	−0.03
Anhedonia	1.13 (.75)	1.00	1.51 (.65)	1.69	5474**	0.02
Intimacy Avoidance	0.86 (.82)	0.67	1.34 (.70)	1.33	5736**	−0.10
Antagonism	0.64 (.50)	0.53	1.03 (.57)	0.89	5861.5***	−0.17
Manipulativeness	0.76 (.67)	0.60	1.10 (.71)	1.00	5328	−0.09
Deceitfulness	0.52 (.52)	0.40	1.03 (.71)	0.90	5990.5***	−0.14
Grandiosity	0.63 (.59)	0.50	0.96 (.57)	1.00	5594**	−0.23
Attention Seeking	0.96 (.61)	0.88	1.38 (.65)	1.44	5721**	−0.18
Callousness	0.38 (.42)	0.29	0.72 (.53)	0.75	5818.5***	−0.10
Disinhibition	0.96 (.53)	0.89	1.43 (.54)	1.47	6030.5***	−0.10
Irresponsibility	0.72 (.54)	0.57	1.17 (.67)	1.14	5795***	−0.10
Impulsivity	1.09 (.72)	1.00	1.43 (.66)	1.58	5348	−0.09
Distractibility	1.08 (.71)	1.00	1.65 (.59)	1.67	6043***	−0.07
Risk Taking	1.17 (.64)	1.14	1.41 (.50)	1.43	5308.5	−0.13
Rigid Perfectionism	1.57 (.63)	1.60	1.60 (.57)	1.70	4,245	−0.11
Psychoticism	0.80 (.50)	0.83	1.37 (.56)	1.37	6478***	−0.14
Unusual Beliefs and Experiences	0.68 (.55)	0.62	1.27 (.63)	1.31	6277***	−0.17
Eccentricity	1.08 (.78)	0.92	1.56 (.72)	1.58	5660.5**	−0.07
Cognitive and Perceptual Dysregulation	0.65 (.50)	0.58	1.29 (.62)	1.33	6550.5***	−0.16

Note: Bonferroni adjusted p values:

*p ≤ .05.

**p ≤ .01.

***p ≤ .001.

results indicated that the group of probable maladaptive daydreamers can be divided into two major clusters: Cluster 1 can be labelled as More severe, while Cluster 2 can be named as Less severe cluster. Sixteen individuals in Cluster 1 (More severe) showed higher mean scores on each PID domain. Cluster 1, then, broke down into two further subclusters, which mainly differed in their mean scores on the domains of Antagonism and Detachment. Cluster 1a showed a high score on Antagonism and a low score on Detachment, while Cluster 1b showed a low mean score on Antagonism and a high mean score on Detachment. Based on these results, Cluster 1a can be labelled as Antagonist, while Cluster 1b can be named as Detached. Moreover,

the mean of the MDS total score was the highest in Cluster 1a, when compared to any other cluster.

Cluster 2 (Less severe), involving 26 individuals, showed lower mean scores on the PID domains and on MDS compared to Cluster 1. Subsequently, Cluster 2 also broke down into two subclusters: Cluster 2a labelled as Almost normal and Cluster 2b named as Mixed. In the case of Cluster 2a (Almost normal), the mean scores of the five patients on each domain were uniformly low, while in the case of Cluster 2b (Mixed), the mean values on the domains were scattered in a mixed way. Both subclusters showed relatively low MDS mean total scores.

4 | DISCUSSION

One of the aims of the present study was to estimate the frequency of maladaptive daydreaming in a mixed psychiatric population. Out of 239 patients receiving psychiatric care, 42 were screened as probable maladaptive daydreamers based on the cut-off score of the MDS-16-HU. The 17.5% frequency of maladaptive daydreaming

among the psychiatric patients with mixed diagnoses involved in the study can be considered high. Every sixth patient in the present psychiatric sample might be struggling with maladaptive daydreaming, but without focused exploration, it remains unrecognized. This high frequency might be explained by the fact that maladaptive daydreaming functions as a non-adaptive compensatory strategy for the daydreamers' deficits and insecurities (Somer, 2002; Somer, Somer, & Jopp, 2016a, 2016b) or can also be considered as an attempt to regulate emotions (Somer, Somer, & Jopp, 2016a). Maladaptive daydreaming allows the individual to fulfil unmet needs through wish-fulfilling daydreams, as well as to act out impulses in fantasy in a safe but experienced way. These tendencies, not surprisingly, might be common in those individuals (i.e., psychiatric patients), who struggle with deficiencies in their life and lack adaptive coping strategies.

Our results were based on the use of the MDS-16-HU, which is a screening measure, not a diagnostic tool. Thus, it enables us only to estimate the frequency of the phenomenon. However, our findings confirm that the assessment of maladaptive daydreaming with a diagnostic tool (e.g., SCIMD) might be reasonable and necessary among psychiatric patients.

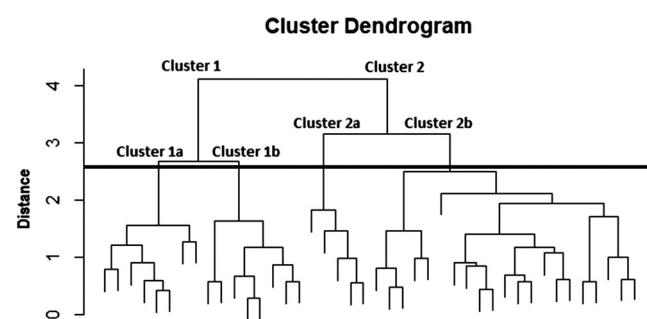


FIGURE 1 Cluster dendrogram of probable maladaptive daydreamers based on the Euclidean distances calculated from PID domain scores

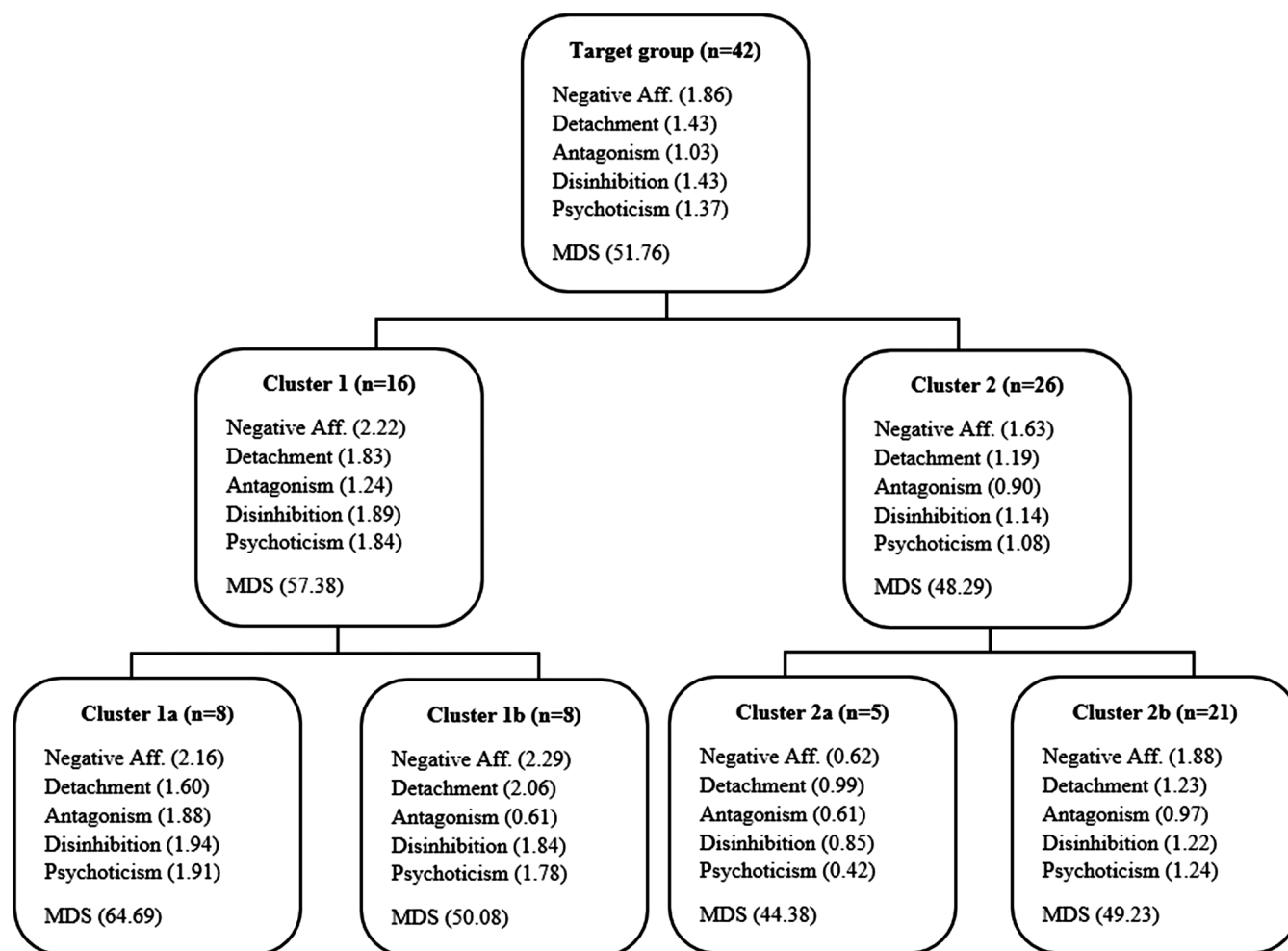


FIGURE 2 Mean values of PID domain scores for the daydreamers' clusters obtained in a hierarchical cluster analysis

Regarding the domains, our findings partially confirmed the results of Schimmenti and his colleagues (2019), as moderate correlation was found between maladaptive daydreaming and the following pathological domains: Negative Affectivity and Antagonism. Although in the Italian sample of maladaptive daydreamers a significant relationship was revealed between each domain and maladaptive daydreaming, these weak and moderately strong correlations were found applying the PID-5-BF (Schimmenti, Sideli, et al., 2019). The clarification of the relationship between PID domains and maladaptive daydreaming requires further investigation using different versions of the PID-5.

A previous study (Soffer-Dudek & Somer, 2018) confirmed correlation between the intensity of maladaptive daydreaming and anxiety, social anxiety and negative affect. These results are in line with our findings as probable maladaptive daydreamers are characterized by Negative Affectivity. This finding indicates that maladaptive daydreaming is not an effective coping strategy for dealing with negative emotions. Also, it might be possible that negative emotions are so potent that daydreaming activity is not able to attenuate them. Moreover, excessive daydreaming activity itself, considering the subjective experience of lack of control over daydreaming and its harmful consequences, may generate anxiety and negative emotions. Probable maladaptive daydreamers in our sample might be also characterized by Perseveration, which may be consistent with previous studies' findings, revealing that problematic daydreamers perform this mental activity even though it is neither adaptive nor effective (Somer, Somer, & Jopp, 2016a). Rigid Perfectionism, along with Perseveration, could be related to the high comorbidity rates with obsessive-compulsive spectrum disorders (e.g., Salomon-Small et al., 2021; Somer, Lehrfeld, et al., 2016; Somer, Soffer-Dudek, Ross, & Halpern, 2017).

The higher level of Antagonism domain and Deceitfulness facet indicates antisocial and narcissistic features. We cannot preclude the possibility that these antisocial and narcissistic characteristics are manifest features of maladaptive daydreamers' personality, but it is also possible that the self-description of maladaptive daydreamers reflects the fantasies, emotions and relationship patterns lived in their imaginary world. Based on the results of Somer (2002), dominance, violence, aggression and brutality might be displayed in an ego-syntonic way in maladaptive daydreamers' mental life. Another study (Somer, Somer, & Halpern, 2019), applying the method of qualitative analysis of drawings, confirmed that the fantasy world is an integral part of the maladaptive daydreamers' self-perception. These results might indicate that maladaptive daydreamers have some maladaptive personality characteristics that might be difficult to integrate into their self-image and to express attitudes and feelings arising from these explicitly. Based on the findings of previous research examining the phenomenology of maladaptive daydreaming, it can be suggested that one of the most common themes of maladaptive daydreaming is ego-syntonic aggression, dominance and violence (Somer, 2002). Thus, the possibility may arise that desires and urges impregnated with antagonism and deceit do not explicitly manifest but in the fantasy world of maladaptive daydreamers.

Comparing the two groups in the light of pathological personality characteristics, the results suggested that probable maladaptive daydreamers scored significantly higher on Antagonism domain and on five facets compared to normal daydreamers. Examining the effect sizes, we intended to quantify the practical significance of the difference between the two groups. At the domain level, Antagonism emerged, which consists of the facets described above. At the facet level, the facets belonging to Antagonism, namely, Hostility, Grandiosity and Attention Seeking, showed a greater difference between the two groups. As previously described, feelings, desires and needs deriving from these features might be experienced in the imaginary world.

As for the facets, not surprisingly, greater differences were also observed at Unusual Beliefs and Experiences and Cognitive and Perceptual Dysregulation facets. This finding highlights the possibility that maladaptive daydreamers perceive their subjective reality in an unusual way as they absorb into their fantasy world in an intensive, addictive and uncommon manner.

According to Somer's (2018) suggestion, maladaptive daydreaming is a multifaceted clinical entity that is difficult to categorize. Considering that maladaptive daydreaming might develop as the final outcome of several causes and mediators (Somer, Abu-Rayya, & Nsairy Simaan, 2019; Somer & Herscu, 2017; Somer, Somer, & Jopp, 2016a), it seemed to be worthwhile to examine the group of probable maladaptive daydreamers further, with a focus on identifying potential subgroups in the sample. Hierarchical cluster analysis was applied to test this presumption.

Our results showed that in the case of a subgroup of probable maladaptive daydreamers (Cluster 1), more severe pathological personality domains could be identified. The members of Cluster 1a (Antagonist) were characterized by experiencing frequent and intense emotions (Negative Affectivity), interpersonal conflicts (Antagonism), impulsive behaviours without considering the potential future consequences (Disinhibition) and unusual and eccentric experiences (Psychoticism) (APA, 2013b). The members of Cluster 1b (Detached) were also characterized by strong negative affectivity, eccentric and unusual experiences and ignorance of future potential consequences. However, these patients are different from the individuals in Cluster 1a, as they tend to choose to retreat from social interactions (Detachment) instead of becoming involved in open conflicts, as they are not openly antagonistic.

Another subgroup was also identified (Cluster 2). Participants belonging to this subgroup had a less pathological personality, based on the scores of the PID domains. In this cluster, individuals of Cluster 2a scored similarly low mean scores on the PID as a previous Hungarian community sample did (Labancz et al., 2020). This result suggests that a smaller proportion of maladaptive daydreaming (almost 12%) might develop on the ground of a less pathological personality, which is similar to a normal personality.

As the maladaptive daydreaming model described by Somer, Somer, and Jopp (2016a) shows, maladaptive daydreaming is a phenomenon with complex aetiology. An innate capacity for vivid fantasy is a necessary, but not a sufficient condition to develop maladaptive daydreaming, and a variety of developmental paths can lead to its

appearance. This maladaptive coping strategy can develop on the basis of different personalities and several environmental factors may influence its development, features and maintenance. Although the present study did not attempt to examine these developmental paths—which should be aimed by future research—our results showed that maladaptive daydreaming can also occur with mild and severe personality pathology in the background as well.

Overall, our results suggested a presumably high frequency of maladaptive daydreaming in the present psychiatric sample. This finding draws attention to the importance of screening and monitoring especially in those cases when suspicion of maladaptive daydreaming arises. Many maladaptive daydreamers keep this mental activity hidden from others. In psychiatric care, this tendency can be even more pronounced, as patients might be afraid of being labelled psychotic.

Overall, it can be assumed that, although in terms of the severity and the pattern of pathological personality traits, the present sample of probable maladaptive daydreamers is heterogeneous, the vast majority of them have pathological personality traits, and consequently, treatment planning, assessment of potential comorbidity and work on the personality seem to be necessary. The authors recommend the use of the PID-5 for examining patients' personalities, apart from the use of the MDS-16-HU and the SCIMD.

4.1 | Strengths and limitations

To the best of our knowledge, this was the first study that attempted to examine the associations between maladaptive daydreaming and pathological personality characteristics in a mixed psychiatric sample. Accordingly, this was also the first attempt to estimate the frequency of maladaptive daydreaming in a mixed psychiatric sample.

Regarding the sample composition, it is noteworthy that the gender distribution was proportionate, and individuals with a wide age range and with a heterogeneous level of education were involved.

Regarding the distribution of gender, age and educational level, the groups of maladaptive and normal daydreamers were similar; thus, an accurate comparison of the two samples was possible.

In this study, unlike most research studies examining maladaptive daydreamers, the questionnaire package was administered by a trained psychologist. In this way, emerging comprehension difficulties regarding each questionnaire could be prevented.

Although we aimed to involve as large a sample as possible ($n = 239$), we were eventually able to screen 42 individuals as probable maladaptive daydreamers, which may lead to a limitation of the results' generalizability. When comparing the two groups, the differences shown in the PID facets were not large; thus, findings should be interpreted with caution. A sample of 42 participants enabled us to examine the subgroups of probable maladaptive daydreamers; however, further research will be needed to confirm the characteristics of the subgroups revealed by the present study. Furthermore, our results can be applied to patients from inpatient care and day hospital care and cannot be generalized to those maladaptive daydreamers who do not receive mental health treatment.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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