ORIGINAL ARTICLE

Relationships of attention-deficit hyperactivity disorder with defense styles and harm avoidance among male inpatients with alcohol use disorder

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ABSTRACT

Introduction: Patients with alcohol use disorder (AUD) use immature defense styles, and AUD is related with adult attention-deficit hyperactivity disorder (ADHD). Harm avoidance (HA) is related with both AUD and particularly inattentiveness (IN) dimension of ADHD.
Aim: The aim of the present study was to evaluate the relationship of defense styles with probable ADHD and severity of ADHD symptoms while controlling the effect of HA among male inpatients with AUD.
Settings and Design: The present study with cross-sectional design was conducted at the Alcohol and Drug Research, Treatment and Training Center (AMATEM) of Bakirkoy Training and Research Hospital for Psychiatry Neurology and Neurosurgery in Istanbul.
Statistical Analysis: Chi-square test, independent samples *t*-test, multiple logistic and linear regression analyses, and multivariate analysis of covariance (MANCOVA) were used.
Materials and Methods: Participants (n = 151) were evaluated with the Adult ADHD Self-Report Scale, the Defense Style Questionnaire, and the HA Dimension of the Temperament and Character Inventory.
Results: HA (particularly HA-1 [anticipatory worry and pessimism]) and immature defense style (particularly acting out) predicted the presence of probable ADHD. In linear regression analysis, HA (particularly HA-1 and HA-4 [fatigability and asthenia]), high immature (particularly acting out), and low mature defense styles predicted the severity of ADHD symptoms. In MANCOVA, immature defense style predicted both the IN and the hyperactivity/impulsivity (HI) dimensions of ADHD, whereas HA and IN dimension and low mature defense style predicted HI dimension.
Conclusions: These findings suggest that immature defense style (i.e., acting out) is related with both the presence of probable ADHD and severity of ADHD symptoms, together with HA, which must be taken into account while treating patients with ADHD among male populations with AUD.

Key words: Attention-deficit hyperactivity disorder, defense styles, harm avoidance, hyperactivity/impulsivity, inattentiveness

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INTRODUCTION

Attention-deficit hyperactivity disorder (ADHD) is a childhood-onset disorder that persists in adolescence and adulthood in more than half of these cases[1] and is characterized by hyperactivity/impulsivity (HI) and inattentiveness (IN) that negatively impact one's ability to function and fulfill social and personal obligations.[2] Studies of adults with alcohol use disorder (AUD) found the prevalence for a possible ADHD, according to screening tests ranging between 21% and 23.1%,[3-5] whereas this rate was 18.4% among Turkish inpatients with AUD.[6] ADHD was positively associated with early initiation of alcohol use, the risky use of alcohol, the presence of AUD,[7] early relapse,[8,9] and severity of alcohol-related problems.[10]

Harm avoidance (HA) is a hereditary tendency to inhibition or cessation of behavior, such as pessimistic worry in anticipation of future problems, passive-avoidant behaviors such as fear of uncertainty and shyness of strangers, and rapid fatigue.[11,12] Salgado *et al*.[13] found that the HA scores were higher in the predominantly IN subtype than the combined subtype of ADHD. They also found a positive relationship between the numbers of IN symptoms and HA scores. Faraone *et al*.[14] found that HA scores correlated positively with HI and IN symptoms. Gomez *et al*.,[15] in a population-based study of ADHD, found an association between IN and HA. In a twin study, Merwood *et al*.[16] found that HA was genetically associated with IN dimension only. Jacob *et al*.[17] reported that adults with ADHD showed significantly higher scores of the personality trait HA, compared with reference values. Perroud *et al*.[18] found that high HA scores were associated with ADHD diagnosis. They also found that high HA scores were correlated with IN symptoms, and cases with ADHD IN type showed higher HA scores compared to the combined and HI types. Finally, Kim *et al*.[19] reported that adult ADHD group had significantly higher tendencies toward HA. Thus, previous studies suggest a relationship between high HA and ADHD/ADHD symptoms, particularly IN type/IN symptoms.

"Defense mechanisms," a psychoanalytic concept, are considered as indicative of how individuals deal with conflict.[20] Defense mechanisms are involuntary cognitive operations that occur on an unconscious level to minimize sudden changes in internal and external environments by modifying the conscious experience of thought, feeling, and emotion.[21-23] Self-report questionnaires, such as Defense Style Questionnaire (DSQ),[24,25] assess the groups of defenses, called defensive styles, which are arranged according to the Vaillant's[21] continuum ranging from being immature or maladaptive to being mature or adaptive.[26] The theoretical basis underlying the development of a self-report inventory to evaluate unconscious processes, such as DSQ, was the integration of concepts like defense and coping into one instrument.[27] Some studies found a relationship between adaptive coping strategies and mature defenses, as well as between maladaptive coping strategies and immature defenses.[28]

Although coping mechanisms are studied frequently among patients with AUD, there are few studies considering defense styles in these populations. Nevertheless, in the previous study, we found that inpatients with AUD were using some immature defense styles (i.e., projection, acting out, splitting, and somatization) more, and immature defense (i.e., acting out and splitting) discriminated patients with AUD from the control group.[29] Furthermore, according to the early reports, individuals with substance use disorder (SUD) use defense styles such as rationalization, projection, denial, and suppression defenses more than healthy individuals.[30,31] A previous study conducted in Turkey found that sublimation, pseudo-altruism, acting out, isolation, and autistic fantasy discriminated patients with SUD from healthy controls.[32] In this study, using immature defenses was related with severity of dependency, dissociative experiences, and childhood trauma experiences.[32] Similarly, another study conducted among Turkish inpatients with AUD reported that they were using maladaptive immature defense styles more, and immature defense style was related with alexithymia, low cooperativeness, and high self-transcendence.[29] Among the same group of inpatients with AUD, an immature defense style of acting out was higher in patients with a history of self-mutilative behavior (SMB) and predicted SMB in this group.[33] On the other hand, sublimation, anticipation, and suppression (and total mature defense style score) were lower in patients with a history of suicide attempt (HSA), but only low anticipation predicted the HSA in this group of patients.[33] Finally, a study conducted among inpatients with heroin use disorder (HUD) found that they were using maladaptive immature defense styles (particularly acting out and splitting) more than healthy controls.[34] These findings may suggest that patients with SUD use immature defenses more and using maladaptive immature defenses is related with being psychologically more problematic in these populations. Thus, these patients may need substance as a way of coping with the anxiety caused by their conflicts, thus resulting in higher severity of dependence.[29,32-34] Drinking or using substances may become a predominant "avoidant" way of coping for individuals who are unable to achieve satisfactory or acceptable outcomes to stressful situations.[35] Consistent with these, those with an emotional-avoidant stress coping pattern are found to have greater severity of psychopathological symptoms and more immature defense mechanisms compared to those with a task-oriented pattern.[36] In this regard, the use of coping styles has been found to be associated with greater levels of alcohol consumption,[37] adverse consequences,[38] and relapse.[39]

There are no studies conducted among patients with AUD that evaluated the relationship of defense mechanisms

with ADHD. The only study that evaluated defense mechanisms among adults with ADHD found that they use more of immature and neurotic defense mechanisms.[40] Defense styles may show some differences according to the pathology of the population that is studied.[41] Even a subgroup of patients within the same pathology group may differ; early onset patients with AUD (Type II) scored significantly lower on the suppression subscale and significantly higher on the replacement.[37] HA is related with ADHD and/or ADHD symptoms.[13-19] Previous studies also showed that HA dimension is associated with the occurrence of negative affect such as depressive and anxiety symptoms.[42] Furthermore, an earlier study suggested that DSQ cluster C defenses (reaction formation, passive aggression, and somatization) were related with high HA.[43] These may suggest that HA is associated with negative emotions and also with a way of coping with them. Thus, the aim of the present study was to evaluate the relationship of defense styles with probable adult ADHD and severity of ADHD symptoms, while controlling the effect of HA on these relationships among inpatients with AUD.

MATERIALS AND METHODS

Subjects

The study was conducted at the Alcohol and Drug Research, Treatment and Training Center (AMATEM) of Bakirkoy Training and Research Hospital for Psychiatry Neurology and Neurosurgery in Istanbul, between February 2017 and August 2017. It is a specialized center for SUDs with four different clinics and 84 inpatient beds (24 beds for patients with AUD) and accepts patients from all over Turkey. The procedures in the study were in accordance with the ethical standards of our responsible local committee on human experimentation and with the latest version of the Declaration of Helsinki. In this context, patients' written informed consent was obtained after the study protocol was thoroughly explained. As we detected a probable ADHD in 1 of every 5 or 4 patients in our previous studies,[6,10] it was planned to include 170 inpatients with AUD in the present study in order to detect at least 30 probable ADHD cases. One hundred and seventy consecutively admitted inpatients with AUD without a history of any other SUD were considered for participation in the study. Cases with drug use disorders additional to AUD were excluded from the study to ensure that the sample was homogeneous, which otherwise may have cause bias. Participants were taken from a clinic specific for AUD, and none of the inpatients had drug use disorder diagnosis additional to AUD.

Although structured instruments were not used to evaluate other axis-I psychiatric disorders during the evaluation, before hospitalization, it is evaluated whether there is a severe major psychiatric comorbidity to obstacle compliance for the inpatient treatment. Nevertheless, unspecific psychotic symptoms may be overlooked during preliminary assessment; thus, these symptoms were particularly evaluated during the study.

The excluding criteria were illiteracy, mental retardation or cognitive impairment, and comorbid psychotic disorder. Thus, three patients were excluded because of illiteracy, three patients because of cognitive impairment, and two patients because of comorbid psychotic disorder. Seven patients refused to participate in the study, and four patients were excluded as they left the treatment program prematurely, before filling in the forms. Therefore, 151 consecutively admitted male inpatients with AUD according to the DSM-5[44] diagnostic criteria were considered for participation in the study. Interviews with the study group were conducted after a detoxification period, that is, 3–4 weeks after the last day of alcohol use.

Measures

Defense Style Questionnaire-40

The defense mechanisms were evaluated by the DSQ,[45] a 40-question self-report questionnaire which was translated and recently validated into Turkish.[46] The DSQ-40 assesses the defense strategies used by individuals to cope with stressful situations or events. Items are rated on a nine-point scale and measure the tendency of individuals to endorse specific defenses. The DSQ-40 comprises three factors (mature, neurotic, and immature) and 20 defense mechanisms as originally described in the DSM-III-R. Each of the defenses is represented by two items on the DSQ-40. For example, "denial" is measured by the statements: "People say I tend to ignore unpleasant facts as if they didn't exist" and "I fear nothing." The mature style consists of four defenses (sublimation, humor, anticipation, and suppression), as does the neurotic style (undoing, pseudo-altruism, idealization, and reaction formation). The immature style consists of 12 defenses (projection, passive aggression, acting out, isolation, devaluation, "autistic fantasy," denial, displacement, dissociation, splitting, rationalization, and somatization). Cronbach's alpha coefficients for defense styles are described as moderate (0.58) to high (0.80).[45]

Adult ADHD Self-report Scale (ASRS-v1.1)

ADHD symptoms were measured with the ASRS,[47,48] an 18-item scale based on Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV-TR) criteria.[49] As a self-report scale, ASRS was found to be a reliable and valid scale for evaluating ADHD for adults and shows a high internal consistency and high concurrent validity with the rater-administered measure.[50] It should be noted that, in their study, Kessler *et al*.[47] administered the measure to a general population and not specifically to individuals who reported having symptoms of ADHD. The 5-point Likert-type scale ranges from "0" (never) to "4" (very often). Thus, higher scores indicated more ADHD symptomology.

Developed under the auspices of the World Health Organization, ASRS is also a short, six-item screening instrument, in which the questions were extracted, using stepwise logistic regression, from a larger survey of 18 questions comprising the Adult Self-Report Survey that taps the 18 specific "Criterion A" symptoms defining the disorder in DSM-IV. The ASRS 6-item screen was developed for community-based studies and exhibits strong concordance with clinician diagnoses as well as sound psychometric properties.[51] Each response given as "sometimes", "often" and "very often" for items 1-3 and each response given as "often" or "very often" for items 4-6 are assumed equal to 1 point. A total score of 4 or more indicated probable ADHD. We, therefore, used this recommended definition to identify highly likely ADHD cases in our sample and named as "probable ADHD." Previous data suggest that this approach is widely used and the 6-item screening version has been shown to outperform the full 18-item version in sensitivity (68.7% vs. 56.3%) and specificity (99.5% vs. 98.3%) in American general population.[48,52] Nevertheless, the result of the test does not replace a clinical diagnosis, and the clinician must take false positives into consideration by evaluating the ASRS positives with gold standard scales. The scale had previously been validated in Turkish in a sample of university students.[53] Specifically, in a sample of patients with AUD, the psychometric characteristics of the Turkish version have been analyzed by Evren *et al*.,[54] in which satisfactory properties have been identified. Cronbach's alpha coefficients were found to be 0.89 for IN, 0.76 for HI, and 089 for ASRS.

Temperament and Character Inventory

For the evaluation of HA, the Temperament and Character Inventory (TCI) of Cloninger *et al*.[12] was used in the Turkish version, forced-choice, self-report scale.[55] HA is a 35-item multifaceted higher-order temperament trait that consists of the following four aspects of lower-order traits: anticipatory worry and pessimism (HA-1, 11 items), fear of uncertainty (HA-2, 7 items), shyness with strangers (HA-3, 8 items), and fatigability and asthenia (HA-4, 9 items). The reliability and validity of the Turkish version of the TCI were supported by its psychometric properties and construct validity.[55] In the Turkish version, Cronbach's alpha was 0.85 for HA.[55] In the present study, Cronbach's alpha was 0.86.

Statistical analysis

The Statistical Package for the Social Sciences (Chicago, IL, USA) 17.0 for Windows was used for all the analyses. We used Student's *t*-test to compare the groups on continuous variables. Categorical variables were compared using the Chi-square statistics. Correlation analyses (Pearson, bivariate) between the ADHD scores, HA scores, and defense styles were performed. Taking the presence of probable ADHD as a dependent variable and HA and defense styles (mature, neurotic, and immature) as independent variables, hierarchical logistic multiple regression analysis was conducted. Taking the severity of ADHD symptoms as a dependent variable and HA and defense styles (mature, neurotic, and immature) as independent variables, hierarchical linear multiple regression analysis was conducted. Taking the severity of IN and HI symptoms as dependent variables and HA and defense styles (mature, neurotic, and immature) as covariates, multivariate analysis of covariance (MANCOVA) was conducted. For all statistical analyses, *P* values were 2-tailed and the differences were considered statistically significant at $P < 0.05$.

RESULTS

Age, duration of education, onset of alcohol use, and marital status did not differ between those with probable ADHD ($n = 38$, 25.2%) and those without ($n = 113$, 74.8%). Inpatients with probable ADHD were more unemployed and had higher HA and immature defense style (acting out, autistic fantasy, and somatization) scores and lower mature defense style (sublimation) scores [Table 1]. ADHD scores were mildly and positively correlated with HA and immature defense style whereas mildly and negatively correlated with mature defense style [Table 2]. In logistic regression model, HA (particularly HA1) and immature defense style (particularly acting out) predicted the presence of probable ADHD [Table 3]. In linear regression analysis, HA (particularly HA1 and HA4), high immature (particularly acting out), and low mature defense styles predicted the severity of ADHD symptoms [Table 4]. Immature defense style predicted the IN dimension of ADHD, together with HA, whereas immature defense style predicted HI dimension of ADHD, together with low mature defense style in MANCOVA [Table 5].

DISCUSSION

The main findings in the present study are that HA (all four subscales) and immature defense style (i.e., acting out, autistic fantasy, and somatization) scores were higher and mature defense style (i.e., sublimation) scores were lower among AUD inpatients with probable ADHD. HA (particularly HA-1 [anticipatory worry and pessimism]) together with immature defense style (particularly acting out) predicted the presence of probable ADHD, whereas HA (particularly HA-1 and HA-4 [fatigability and asthenia]), immature defense style (particularly acting out), and low mature defense style predicted the severity of ADHD symptoms. When dimensions of ADHD were evaluated, HA and immature defense style predicted the symptom severity of IN, whereas using higher immature defense styles and lower mature defense styles predicted the symptom severity of HI.

The defense styles were not much studied among patients with AUD in literature, whereas coping was relatively more frequently studied. One reason for this is that defense

Table 1: Comparing sociodemographic variables and scale scores according to the presence of probable attention-deficit hyperactivity disorder

	Probable ADHD				t/χ^2	*P*
	Absent (*n*=113), 74.8%		Present (*n*=38), 25.2%			
	Mean	SD	Mean	SD		
Age	45.68	11.00	45.87	9.63	−0.093	0.926
Duration of education	8.65	3.48	8.29	4.05	0.536	0.593
Onset of alcohol use	18.88	6.22	18.16	4.79	0.658	0.512
HA	18.22	6.66	23.50	5.65	−4.380	<0.001
HA-1	5.81	2.50	7.45	2.49	−3.507	0.001
HA-2	4.54	1.63	5.47	1.69	−3.026	0.003
HA-3	3.84	2.10	5.08	1.79	−3.522	0.001
HA-4	4.04	2.31	5.50	2.50	−3.182	0.001
Mature	45.70	10.28	40.37	10.31	2.696	0.008
Sublimation	11.81	4.29	9.40	3.91	3.076	0.003
Neurotic	47.37	11.31	46.13	11.67	0.580	0.563
Immature	105.20	32.69	120.45	25.88	−2.612	0.010
Acting out	8.54	4.72	11.03	4.02	−3.979	<0.001
Autistic fantasy	8.74	5.03	10.95	5.27	−2.319	0.022
Somatization	10.26	4.72	12.24	4.65	−2.244	0.026
	n	Percentage	*n*	Percentage	χ^2	*P*
Marital status						
Married	63	55.8	20	52.6	1.835	0.399
Single	19	16.8	10	26.3		
Divorced/widow	31	26.4	8	21.1		
Employment						
No	41	36.3	20	52.6	16.24	0.001
Yes	28	24.8	8	21.1		
Part-time	14	12.4	5	13.2		
Retired	30	26.5	5	13.2		

Only defense mechanisms that are found to have difference were shown. HA – Harm avoidance; HA-1 – Anticipatory worry and pessimism; HA-2 – Fear of uncertainty; HA-3 – Shyness with strangers; HA-4 – Fatigability and asthenia; ADHD – Attention-deficit hyperactivity disorder; SD – Standard deviation

Table 2: Correlations between the scale scores

	IN	HI	ASRS
HA	0.523*	0.298*	0.473*
HA-1	0.439*	0.282*	0.413*
HA-2	0.402*	0.238*	0.368*
HA-3	0.340*	0.134	0.278**
HA-4	0.423*	0.253**	0.388*
Immature	0.295*	0.242**	0.304*
Neurotic	−0.014	0.030	0.007
Mature	−0.273**	−0.274**	−0.306*

*P<0.001; **P<0.01. ASRS – Adult ADHD self-report scale; IN – Inattentiveness; HI – Hyperactivity/impulsivity; ADHD – Attention-deficit hyperactivity disorder; HA – Harm avoidance; HA-1 – Anticipatory worry and pessimism; HA-2 – Fear of uncertainty; HA-3 – Shyness with strangers; HA-4 – Fatigability and asthenia

mechanisms are considered to be largely unconscious (they occur without conscious effort and without conscious awareness), with a long-standing tendency, and thus highly resistant to change, whereas coping strategies are considered to involve a conscious and purposeful effort.[56] The psychodynamic concept of unconscious defense mechanisms that serve to protect against anxiety and psychic pain[45] offers an additional approach to capturing aspects of coping. Mature defenses are generally thought to operate to protect self-esteem while immature defenses are thought to operate through rigid and excessive distortions to protect the integrity of the self. These often result in impaired personal and interpersonal functioning.[57] Greater use of "mature" defense styles has been associated with greater psychological well-being in the general population[58] and the improvement in symptom severity,[59-62] whereas "immature" styles have been linked with comorbid depressive symptoms and poorer physical health.[63,64] Consistent with these, previous studies conducted among populations with SUD[32,34] and AUD[29,33] and also the present study suggested that populations with SUD use maladaptive immature defenses more and using these defenses is related with both severity of dependency and being psychologically more problematic. Thus, because immature defenses generally block conscious awareness of distressing material, rather than allowing the individual to consciously acknowledge it,[65] using substances may be a chemical way of avoiding (so-called "coping" with) problems related with this psychopathology. Nevertheless, we did not evaluate negative affect (i.e., anxiety and depression), which may be considered as one of the main limitations in the present study.

The two defense mechanisms most frequently used by the sample of adults with ADHD were autistic fantasy and acting out.[40] In the present study, although both autistic fantasy and acting out were higher among those with probable ADHD, acting out was the only immature defense style that was

related with both probable ADHD and the severity of ADHD symptoms. In previous studies, inpatients with AUD[29] and HUD[34] were using maladaptive immature defense style of acting out more than healthy controls. Furthermore, acting out discriminated patients with SUD from healthy controls[32] and predicted the history of SMB among patients with AUD.[33] Acting out occurs when the individual deals with emotional conflict by engaging in actions rather than reflecting on feelings. People who rely on acting out would fall into the category of impulsive personalities, which is common for both AUD and ADHD. This nomenclature is misleading as it implies an uncomplicated readiness to do whatever one feels like doing at the moment. Much of what may look like spontaneous, uncomplicated impulsiveness is often unconsciously and very complexly driven behavior, behavior that is anything but innocently expressive and random.[66]

Table 3: Predictors of the probable attention-deficit hyperactivity disorder in hierarchical logistic multiple regression

	B	SE	Wald	df	*P*	Exp (*B*)	95% CI for Exp (*B*)	
							Lower	Upper
Step 1								
HA	0.140	0.036	14.899	1	<0.001	1.150	1.071	1.235
Immature	0.017	0.007	6.042	1	0.014	1.017	1.003	1.031
Step 2								
HA-1	0.256	0.084	9.235	1	0.002	1.292	1.095	1.524
Acting out	0.150	0.044	11.725	1	0.001	1.162	1.066	1.267

Nagelkerke R^2 – Step 1=0.227; Step 2=0.226. HA – Harm avoidance; HA-1 – Anticipatory worry and pessimism; SE – Standard error; CI – Confidence interval

In a previous study, Akvardar *et al*.[67] found higher HA scores among Turkish alcoholics than healthy controls. In this study, it was suggested that individuals high on HA might use alcohol to relieve negative emotions. Several previous studies suggest a relationship between higher HA and ADHD and severity of ADHD symptoms,[13,17-19] particularly with IN type[18] and severity of IN symptoms.[13-15,18] In all four available studies on mood disorders, compared to the general population, HA scores were found to be much higher before treatment for depression,[11,68] which may suggest that HA may be influenced by environmental factors such as negative affect.

Limitations

One of the main limitations of the present study was that the data were not corrected for the influence of residual anxiety and depressive symptoms (which may still be present after detoxification of patients with AUD), which may be related with ADHD, HA, and immature defense styles. Second, severe ADHD symptoms may be associated with weaker cognitive performance, which makes results less reliable because we used self-rating scales in the present study. Furthermore, self-rating scales may only show high risk rather than the diagnosis. Third, because Turkish versions of structured instruments to assess ADHD were not available, we used ASRS, which was found to be a reliable and valid adult ADHD screening instrument for inpatients with AUD[54] and which we used successfully in previous studies.[6,10] Fourth, unfortunately, we did not evaluate the childhood ADHD and other childhood disorders. Fifth, all the patients were smoking regularly, although we did not evaluate the

Table 4: Predictors of the severity of attention-deficit hyperactivity disorder symptoms measured with total adult attention-deficit hyperactivity disorder self-report scale score in hierarchical linear multiple regression

Model	Unstandardized coefficients		Standardized coefficients	*t*	*P*
	B	SE	β		
Step 1					
HA	0.648	0.130	0.361	4.987	<0.001
Immature defense style	0.125	0.027	0.323	4.675	<0.001
Mature defense style	−0.278	0.084	−0.245	−3.324	0.001
Step 2					
HA-1	1.445	0.350	0.306	4.125	<0.001
HA-4	0.905	0.385	0.180	2.351	0.020
Acting out	0.766	0.174	0.311	4.396	<0.001

Step 1 – F=25.656, df=3, 147, P<0.001, Adjusted R^2=0.330; Step 2 – F=23.009, df=3, 147, P<0.001, Adjusted R^2=0.320. HA – Harm avoidance; HA-1 – Anticipatory worry and pessimism; HA-4 – Fatigability and asthenia; SE – Standard error

Table 5: Predictors of inattentiveness and hyperactivity/impulsivity in multivariate analysis of covariance

Covariates	Dependent variables	Type III sum of squares	df	Mean square	*F*	*P*
Immature defenses	IN[a]	631.743	1	631.743	16.903	<0.001
	HI[b]	285.121	1	285.121	9.258	0.003
Neurotic defenses	IN	3.059	1	3.059	0.082	0.775
	HI	23.681	1	23.681	0.769	0.382
Mature defenses	IN	169.021	1	169.021	4.522	0.035
	HI	342.725	1	342.725	11.128	0.001
HA	IN	1396.569	1	1396.569	37.367	<0.001
	HI	155.230	1	155.230	5.040	0.026

[a]R^2=0.365 (adjusted R^2=0.348); [b]R^2=0.199 (adjusted R^2=0.177). IN – Inattentiveness; HI – Hyperactivity/impulsivity; HA – Harm avoidance

amount of cigarettes that they smoked or the severity of their nicotine use disorder. Finally, as this is a cross-sectional study, the longitudinal designs are required to clarify the causal relationship of defense styles with ADHD. The use of maladaptive defenses might be the consequence of alcohol dependency: during the active phase of the disorder, their capacity to use mature adaptive defenses may diminish, and they may use more immature defense styles, but if they could stay sober for a long time, their defensive style may return to a higher degree of maturity.[69] Thus, the hypothesis that the use of maladaptive defenses is a state-dependent phenomenon cannot be rejected yet.[59,70] Future follow-up studies should evaluate the changes in defense styles during the sobriety period among patients with AUD and should compare those with and without ADHD.

CONCLUSIONS

Notwithstanding these important limitations, these findings suggest that inpatients with AUD who have "probable ADHD/severe ADHD symptoms" are using maladaptive immature defense styles more, particularly acting out, which can be taken into account in the development of therapeutic programs for these patients. It has been argued that no mental status or clinical formulation should be considered complete without an effort to identify the patient's dominant defense mechanisms[71] and the clinical improvement may be accompanied by a shift toward the use of more mature defenses.[59] Furthermore, HA seems to be related with "probable ADHD/severe ADHD symptoms" additionally to acting out. Indeed, avoiding difficult feelings has been suggested to be a common phenomenon among patients with AUD,[72] which may offer some explanation as to why the use of immature defenses more and mature defenses less is associated with ADHD in patients with AUD. Thus, these results might suggest that immature defenses (particularly acting out) and HA may be taken into account while treating patients with ADHD among populations with AUD and the use of specific strategies in the clinical and psychotherapeutic management of these patients.

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Conflicts of interest
There are no conflicts of interest.

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