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# To better understand the link between psychopathy and antisocial behavior: moderation by dispositional mindfulness

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Short Title: Psychopathy and Antisocial Behavior in Young Adults

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Abstract

**Background:** Dispositional mindfulness deficits and psychopathic personality traits have been shown to be closely associated and independent predictors of antisocial behaviors in young adults. However, the interaction effects of these two factors have not yet been explored. The aim of this study was to examine the contribution of dispositional mindfulness and psychopathic traits to antisocial behaviors in a college student sample.

**Methods:** Participants were 1572 students from different French universities who completed self-report questionnaires. Regression analyses were conducted in order to test a moderation model between psychopathic traits and antisocial behaviors.

**Results:** Moderation analyses revealed that dispositional mindfulness interacted with psychopathic personality traits in predicting antisocial behaviors. In males with high levels of dispositional mindfulness, as psychopathic traits increased, antisocial behaviors increased less than in males with low levels of dispositional mindfulness.

**Conclusions:** The present study suggests possible implications for prevention and treatment of antisocial behaviors among non-clinical young adults with relatively high psychopathic traits.

**Introduction**

Antisocial behaviors (AB) are complex phenomena that are ubiquitous in our societies. AB include behaviors such as rules violation, social aggression and physical aggression [1]. Because of their high prevalence and their negative impact on perpetrators, victims and families [2, 3], the prevention, early detection and treatment of AB should represent a major public health concern.

Among the factors most often emphasized in the literature, personality characteristics seem to have a major place in understanding AB [4]. Psychopathic traits, characterized by callous-unemotional traits, egocentricity, and impulsivity have been shown to be closely associated to AB [5, 6]. DeLisi [7] argued that psychopathic traits could embody the "pejorative essence of antisocial behavior". Indeed, psychopathic personality traits have shown to predict AB, aggression, and externalizing behaviors in adolescents [8] and young adults [9]. However, there does not seem to be any consensus on whether AB are a necessary part of core component of psychopathy centered on impulsivity and erratic life style [10] or if AB are only a frequent consequence of this disorder [11]. Starting from these considerations, Steinert, Lishner, Vitacco and Hong [12] underscored the importance to identify other structural, environmental and contextual factors to explain behavioral outcomes of psychopathy. These factors could be involved in the expression of psychopathic traits and could explain the different manifestations observed in this atypical syndrom.

In parallel, the *higher-order cognition model* of personality disorders [13] postulates that the interpersonal problematics observed in high psychopathic personality traits could be governed by complex mechanisms of information processing, such as mindfulness, metacognition and mentalization. Bateman and Fonagy [14] described mentalizing as "a process by which an individual implicitly and explicitly interprets the actions of oneself and others as meaningful on the basis of intentional mental states such as personal desires, needs,

feelings, beliefs, and reasons" (p. xxi). Metacognition is a related construct, sometimes described as a modular structure [15] refering to distinct but overlapping processes that allow individuals to detect, reason and take a critical stance toward mental states in both the self and others [16]. Lastly, mindfulness can be defined as the focus of attention on one's own current experience as it is happening despite the possible presence of unpleasant psychological events [17]. According to the *higher-order cognition model*, all these factors represent potential candidates for moderators of psychopathic symptomatology, and determinants of AB development.

Recent studies relating to these factors have shown an important influence of mindfulness on aggressive and antisocial behaviors, which led to mindfulness-based interventions development aimed at reducing these conducts [18, 19]. Dispositional mindfulness refers to natural ability to practice mindfulness. This ability may vary from one individual to another and can be improved with practice [20, 21]. Dispositional mindfulness has been negatively associated to self-reported verbal aggression, anger, hostility and impulsivity in young adults [22-25]. However, the mechanisms underlying these links are unclear. Some studies suggested that heightened mindfulness state could significantly reduce some aggressive behaviors following a rejection situation [24]. It seems that in heightened mindfulness state, situations generally perceived as threats could be assessed more positively and lead to more appropriate behaviors. Others point out that dispositional mindfulness could moderate the link between hostility and aggression by reducing the use of dysfunctional emotion regulation strategies [26] or by reducing rumination [27]. Anyways, dispositional mindfulness appears to be protective factor against antisociality in young adults.

However, the link between psychopathy, mindfulness and AB is unclear and a comprehensive understanding of related processes is necessary. Preliminary investigations on this field have shown that mindfulness interacted with aggression in predicting Antisocial

Personality Disorder (ASPD) traits. Indeed, Velotti, Garofalo, D'Aguanno, Petrocchi, Popolo, Salvatore et al. [28], found that in offenders with increased dispositional mindfulness, aggression was more strongly related to ASPD traits. This individuals tend to displayed predatory and premidated AB, regardless of their preserved capacity to perceive and understand what they think and feel, and what others think and feel [29]. As Cleckley [30] already noted, at high levels of psychopathy, self and other understanding can become a means of controlling others, of domination and manipulation, and lead to more frequent and serious AB.

Conversely, among offenders with poorer mentalizing, the positive association between aggression and ASPD traits was significantly weaker and low levels of dispositional mindfulness alone was sufficient to predict high levels of ASPD traits. Similar results have been reported with empathy and alexithymia [31].

Nevertheless, given potential construct difference between psychopathic and ASPD traits [32, 33], a study based on a dimensional perspectives and on non-incarcerated individuals could extend this finding and lead to interesting advancements. Psychopathy gives more prominence than ASPD to traits such as callousness, impassibility and fearless dominance which highly contribute to increased AB [34]. These traits could be associated to low mindfulness and reduced capacity to perceive emotional signals and mental states of others. In this line, Taubner et al. [35] found that mentalization moderated the link between psychopathy and proactive aggression in an adolescent community sample.

Moreover, some studies suggested that the latent factor model of psychopathy in females is not the same as that for men [36], and psychopathy in females does not always relate to the same correlates as in men [37]. Therefore, taking these factors into account, could help to better understand the regulation processes involved in young adults with AB.

In sum, two hypotheses can be identified. On the one hand, a high level of dispositional mindfulness associated with increased psychopathic traits could give rise to more frequent and severe AB. On the other hand, we assume that dispositional mindfulness could protect from antisocial acting out in non-clinical individuals with relatively high psychopathic traits through an increased awareness and perception to psychological and physical states of self and others.

Thus, the current research aimed to examine the contribution of dispositional mindfulness and psychopathic traits to AB in a college student sample. Since *higher-order cognitions* could govern most issues related to interpersonal relationships, we hypothesized that dispositional mindfulness could moderate the link between psychopathic traits and AB and act as a sort of buffer.

## Materials and Methods

### *Participants*

The data were collected through an online survey that was distributed to students from different French universities. The link was shared on social networks in groups specifically dedicated to students. The final sample consisted of 1572 young adults (488 males, 31%; 1084 females, 69%) of which 8.75% of the data were previously excluded (outliers). Participants ranged in age from 18 to 28 years old; mean age of males = 20.41 (*SD* = 2.06) and mean age of females = 20.25 (*SD* = 1.99). As regards the participants' fields of study, 31% were studying science or engineering, 16% economics, commerce, management or communication, 14% social sciences, 13% medicine or paramedical studies, 8% literature, 4% education or pedagogy, 4% history, geography or political science, 3% law, 2% art or design, 1% philosophy, 1% art history or archaeology, and 2% were studying other subjects. The objectives of the study were presented to all participants at the beginning of the online questionnaire, specifying that this was a study on "personality and behaviors of students".

Each of the participants had to give her/his informed consent and confirmed their student status. The participants were assured of the anonymity of their answers. The study followed the World Medical Association Declaration of Helsinki and ethical issues of the current research were explored at a research meeting. No compensation was offered to participate in the study.

*Measures*

Antisocial behavior frequency was measured with the Subtypes of Antisocial Behavior Questionnaire (STAB-Q) [1]. The STAB-Q is composed of 32 items on 5-point scale that assess three subtypes of antisocial behaviors: rules violation, social aggression and physical aggression (e.g., "Felt better after hitting"). In this sample, the Cronbach's α was .87.

Dispositional mindfulness was assessed using the Five Facet Mindfulness Questionnaire Short Form (FFMQ-SF) [38, 39]. The FFMQ-SF is composed of 24 items, rated on a 5-point scale, assessing five facets: observing, describing, acting with awareness, non-reactivity to inner experience and non-judgment of inner experience (e.g., " Usually when I have distressing thoughts or images I can just notice them without reacting"). In this sample, α was .80.

Psychopathic traits were assessed using the Youth Psychopathic traits Inventory Short Form (YPI-SF) [40, 41]. The YPI-SF is a 18-item 4-point scale, with three subscales corresponding to affective, behavioral and interpersonal dimensions (e.g., "I think that crying even when nobody sees it, is a sign of weakness"). The YPI-SF showed adequate psychometric properties, and studies support its validity in emerging adults samples [40]. In this sample, total scale α was .79.

*Statistical analysis*

Relationships between AB, dispositional mindfulness and psychopathy were examined by conducting Pearson zero-order correlations. Moderation analysis were performed including

sex as a covariate and, as it was significant, the analysis were repeated for males and females separately. All predictors and moderating variables (i.e., psychopathic traits and dispositional mindfulness) were centered to reduce the effects of multicollinearity, and interaction terms for each equation were calculated by multiplying psychopathic traits with dispositional mindfulness.

Statistical analysis were performed using IBM SPSS Statistics 25.0.

**Results**

Descriptive statistics and correlation coefficients are reported in Table 1. As expected, AB were negatively related to dispositional mindfulness and positively related to psychopathic traits. Consistent with prediction, dispositional mindfulness was negatively associated with psychopathic traits.

To test the hypothesized moderation models between psychopathic traits and AB, a regression analysis (for males and females) predicting AB was conducted. In the first step we entered psychopathic traits (males, $\beta = .57$; $p < .001$; females, $\beta = .47$, $p < .001$) and dispositional mindfulness (males, $\beta = -.24$; $p < .001$; females, $\beta = -.22$, $p < .001$). The product of the two centered predictors was entered in the second step. The interaction term of psychopathic traits × dispositional mindfulness was significant and predicted 2% and 0.2% of the variance of AB for males and females, respectively (males, $\beta = –.13$, $t = –3.58$, $p < .01$; females, $\beta = –.06$, $t = –2.17$, $p < .05$). As a whole, the model explained roughly 42% of the variance of AB for males and 32% for females.

Significant interactions were probed and simple slopes analysis were conducted to examine the nature of the effect. Regression lines were plotted for both psychopathic traits and dispositional mindfulness. These lines were created by plotting three separate points: the mean minus one standard deviation, the mean, and the mean plus one standard deviation. As shown in Fig. 1 (left panel), high levels of dispositional mindfulness in males were associated

with lesser numbers of antisocial behaviors among participants with higher scores on psychopathic traits. Conversely, low levels of dispositional mindfulness in males were associated to higher numbers of antisocial behaviors among participants with higher scores on psychopathic traits. For females (right panel), the same trend was observed but should be considered cautiously because of a small explained variance.

**Discussion**

Although previous researches have investigated the link between psychopathic traits and AB and between dispositional mindfulness and AB, no research has explored the joint contribution of these variables in a college student sample. The aim of the current study was to explore the moderating effect of dispositional mindfulness on the relationship between psychopathic traits and AB in order to propose treatment targets for individuals with these characteristics.

Results demonstrated a negative association between dispositional mindfulness and psychopathic traits and between dispositional mindfulness and AB. This finding suggests that dispositional mindfulness could protect against acting out and antisocial tendency in young adults, confirming the previous research that highlighted this link [22, 24]. Indeed, dispositional mindfulness could promote metacognitive awareness, decrease rumination, enhance attentional capacities through gains in working memory and contribute to effective emotion regulation strategies [42] which could lead to reduce AB.

The current study also demonstrated that mindfulness moderated the link between psychopathic traits and AB. This finding is in line with the *higher-order cognition model* hypothesis [13] that tends to explain the behavioral expression of personality disorders by a deficit in complex information-processing mechanisms such as mindfulness. Thus, dispositional mindfulness could reduce the usually reported link between psychopathy and AB. Of note, a comparable link was previously studied by Velotti et al. [28, 31] in two

incarcerated male offender samples where dispositional mindfulness moderated the relationship between aggression and ASPD traits. These authors reported that at high level of mentalization (i.e., high mindfulness and empathy, and low alexythymia), what really predicted ASPD traits was aggression. That is if people have temperamentally based aggressive tendencies, even if they mentalize they still behave antisocially. Instead, when mentalizing is poor, the role of aggression is less important, and the poor capacity to make sense of mental states becomes the dominant factor of misbehavior. Concurrently, we found that increased dispositional mindfulness in males non-offenders was associated with lesser numbers of AB among participants with higher scores on psychopathic traits. It is possible that the protective effect of mindfulness against AB only holds for moderate levels of psychopathy.

The results of the current study have several implications. They suggest that fostering dispositional mindfulness could be a relevant treatment target for decreasing AB among college students with moderate and non-clinical levels of psychopathic traits. However, the small explained variance found for females tends to relativize this link and suggests to explore other moderators that could vary through gender considerations. If psychopathy has various presentation in males and females [36, 37], our results may not reflect a clinical vs community samples difference, but a male vs female difference.

Identifying stable and malleable predictors of AB is critical to designing effective intervention and prevention programs for community at-risk individuals. For clinicians, it may be beneficial to assess both personality characteristics and dispositional mindfulness when determining treatment paths for AB, since dispositional mindfulness could be differently involved in AB in clinical and non-clinical samples. People displaying moderately high psychopathic traits and low mindfulness skills could significantly benefit from mindfulness-based interventions. Given that dispositional mindfulness is negatively associated with AB,

mindfulness training could be particularly helpful in preventing these behaviors among college students.

**Limitations**

There are limitations to this study. First, although internet data collection methods using online completion of self-report questionnaires from self-selected samples are consistent with findings from traditional methods [43], the possibility that participant self-selection may have biased the results cannot be excluded. Second, the cross-sectional nature of the data does not capture the evolution of these processes over time. Third, whether the results of the current study are applicable to a forensic sample is unknown, since all participants were university students not displaying clinically significant levels of AB. Indeed, we could note that in our study total STAB-Q score ($M$ = 24.12) rated significantly lower than a previous study in adjudicated sample ($M$ = 55.05) [1]. Fourth, the use of total scores for psychopathy is objectionable but arguable. According to the *moderated-expression model* [12], psychopathy, although being a multidimensional construct, can be considered as a uniform set of core traits, whose manifestations could vary according to external variables. In the same way, our goal being to understand antisociality as a global phenomenon, we chose to use the total score of the antisocial behavior scale. However, other studies could split, for example, proactive and reactive aggression to denote the subtlety and the relative involvement of dispositional mindfulness in these behaviors. Fifth, we we did not take into account some structural, environmental, contextual moderators that could also explain this relationship (e.g., trauma history, peer influence, other personality traits).

**Conclusions**

The results of the current study provide continued support for the use of mindfulness training in the prevention and treatment of AB in non-clinical samples. Although mindfulness-based treatments have been found to be an effective means of reducing

aggressive behavior [18], there are some avenues to better understand this process. Interventions targeting other *higher-order cognitions* also deserve to be investigated, since they have proved effective in reducing anger, hostility, paranoia, and suicidal and self-harm behaviors for comorbid antisocial and borderline personality traits [44]. Similarly, incorporating metacognitive abilities as a potentially important mechanism of change has been emphasize as fundamental in order to reduce aggression and anger among domestic violence perpetrators [45]. Increasing the capacity to self-reflect can help the perpetrator explore the cognitive and affective antecedents of their violence while reducing self-serving cognitive distorsions. Finally, based on the possibility of individualized treatments, our results provide important information about another specific personality profile that could benefit from mindfulness-based interventions.

## Statement of Ethics

All participants had to give their written informed consent and confirmed their student status to participate in this study. The protocol and the ethical issues of the current research were explored at a research meeting of our laboratory.

## Disclosure Statement

The authors have no conflicts of interest to declare.

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## Author Contributions

JB, BM, SB, HC, and PR participated in the design of the study. JB and SB carried out data collection. JB wrote the first draft of the manuscript. All authors approved the final manuscript.

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**Table 1**. Correlations, Means and Standard Deviations for Antisocial Behavior, Dispositional Mindfulness, and Psychopathic Traits

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Males ($n$ = 488) $M$ ($SD$) | Females ($n$ = 1084) $M$ ($SD$) | $t$ | $p$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. Antisocial behavior** | **-** | | | | | | | | | **26.22 (15.77)** | **23.17 (11.47)** | **-4.3068** | **> .001** |
| 2. Physical aggression | .84* | - | | | | | | | | 10.52 (7.97) | 9.54 (6.30) | -2.6143 | > .001 |
| 3. Rule-breaking | .61* | .33* | - | | | | | | | 3.68 (4.81) | 2.15 (2.91) | -7.7763 | > .001 |
| 4. Social aggression | .81* | .47* | .31* | - | | | | | | 12.02 (6.99) | 11.48 (5.75) | -1.5890 | .11 |
| **5. Psychopathic traits** | **.55*** | **.44*** | **.46*** | **.40*** | **-** | | | | | **43.50 (10.57)** | **38.91 (9.87)** | **-8.3397** | **> .001** |
| 6. Interpersonal | .37* | .23* | .33* | .32* | .79* | - | | | | 15.82 (5.65) | 13.32 (5.04) | -8.7743 | > .001 |
| 7. Affective | .37* | .31* | .34* | .24* | .68* | .36* | - | | | 12.97 (4.72) | 10.15 (3.64) | -12.8790 | > .001 |
| 8. Behavioral | .45* | .41* | .31* | .30* | .68* | .27* | .18* | - | | 14.71 (4.62) | 15.44 (4.79) | 2.8207 | > .01 |
| **9. Dispositional mindfulness** | **-.28*** | **-.26*** | **-.09*** | **-.25*** | **-.14*** | **.06*** | **-.02** | **-.34*** | **-** | **76.65 (12.55)** | **73.12 (12.65)** | **-5.1193** | **> .001** |

* $p < .05$.

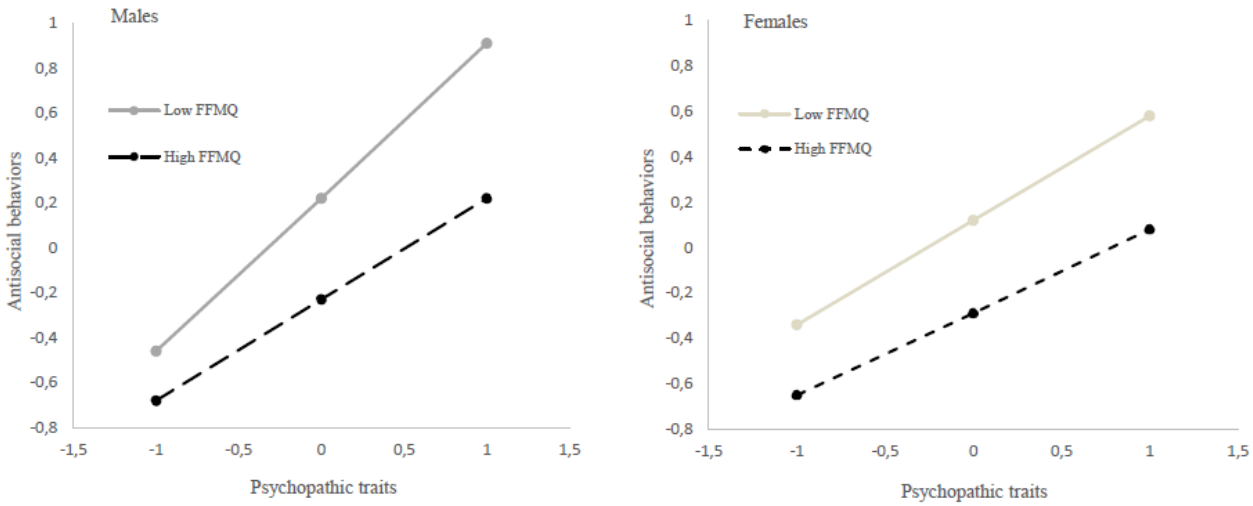



**Fig. 1.** Dispositional mindfulness as a moderator of psychopathic traits on antisocial behaviors for males and females.