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## The moderation of attachment in the association between depressive symptoms and self-harm among a clinical sample

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### ABSTRACT

**Background:** Self-harm is a severe health problem worldwide and in particular in clinical settings. The association of depression and self-harm has been extensively studied alongside various variables that have been examined as moderating this association. However, no previous study has examined the moderating role of attachment in this association.

**Aim:** We explored the role of attachment orientation in moderating the association between depressive symptoms and self-harm among a sample of patients in a community mental health clinic.

**Method:** This study was a de-identified archival study of patients' medical charts, and used a convenience sample of 199 patients, which completed self-report measures following the initial intake appointment as part of clinic procedures.

**Results:** Findings showed that both attachment anxiety and avoidance moderated the association between depressive symptoms and self-harm, such that depressive symptoms were positively associated with self-harm only when attachment anxiety scores were high, and attachment avoidance scores were high or average.

**Conclusions:** Attachment anxiety and avoidance should be assessed in the initial intake of patients as it has a contribution to understanding self-harm vulnerability among new patients. Future studies should explore this moderation longitudinally so causality could be inferred.

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Depressive symptoms; self-harm; attachment orientation; clinical sample; psychotherapy

### Introduction

Self-harm is a major public health concern and a risk factor for future suicide (Saunders & Smith, 2016). The management of self-harm usually occurs within a complex system of health and social care, as it is a common cause of assessment, treatment, and admission to general hospitals (Larkin, Corcoran, Perry, & Arensman, 2014; Long, Manktelow, & Tracey, 2016; Sinclair, Gray, Rivero-Arias, Saunders, & Hawton, 2011). There is a positive association between current self-harm, mental health problems, future self-harm, and problems of substance misuse (Hawton, Saunders, Topiwala, & Haw, 2013). Approximately, 20% of adult psychiatric patients report self-harming behavior (Klonsky & Muehlenkamp, 2007). However, the majority of self-harm does not come to the sufficient attention of health services and many patients still do not receive enough psychosocial assessment for it, resulting in increased risk for suicide attempts and aggravating associated mental health issues (Geulayov et al., 2016; Jeffery & Warm, 2002). In the current study, we explored the moderating role of attachment anxiety and avoidance on the association between depressive symptoms and self-harm in a clinical sample at the onset of therapy.

Although the association between suicidality and self-harm is controversial (Nock and Kessler, 2006), self-harm

distinctly refers to deliberately inflicting damage, pain, or both to one's body. Self-harm may include acts intended to result in suicide (sometimes referred to as "attempted suicide"), acts without suicidal intent, and acts with a mixed (or unclear) motivation (Saunders & Smith, 2016). Repetition of self-harm is common, with up to 25% of individuals who arrive to a hospital following self-harm returning to the same hospital within the year, following further self-harm (Saunders & Smith, 2016). In the current paper, self-harm refers to intentional self-injury, without a clear declared suicidal intent.

In an evidence-based review of the reasons to self-harm, Klonsky (2007) suggested that self-harm is a strategy to alleviate acute negative affect or affective arousal (Gratz, 2003; Haines, Williams, Brain, & Wilson, 1995; Nock & Cha, 2009). It can also serve as an expression of anger or derogation toward oneself (Bennun, 1984; Herpertz, Sass, & Favazza, 1997; Klonsky, Oltmanns, & Turkheimer, 2003; Soloff, Lis, Kelly, Cornelius, & Ulrich, 1994). Other explanatory models for self-harm behaviors are related to studies examining comorbid psychopathologies of self-harm, showing that psychiatric disorders were found in over 80% of self-harm patients presenting to general hospitals, with depression, anxiety, and alcohol abuse disorders being particularly common (Hawton et al., 2013).

Since many patients who suffer from various mental health problems that are related to self-harm turn up at clinical settings (Geulayov et al., 2016), these settings are a fertile ground for studying risk factors among outpatients that may be prone to self-harm (Zlotnick, Mattia, & Zimmerman, 1999).

As mentioned, depression was found to be strongly associated with repetitive self-harm (e.g., Christian & McCabe, 2011; Hawton et al., 2013). Joyce et al. (2006), for example, found in their study that 24% of depressed patients reported a history of suicidal ideation and self-mutilation. Similarly, Lewis, Rosenrot, and Santor (2011) found that higher levels of depression were associated with stronger intent to self-harm. Limited research explored possible moderators of the association between depression and self-harm in clinical settings and particularly at the beginning of mental and behavioral health treatment. Therefore, in the current study, we explored the moderation effect of patients' attachment orientation on the association between depressive symptoms and self-harm.

### **Self-harm, depression and attachment orientation**

Primary relations and subsequently attachment orientation are associated with both depression and self-harm (Klonsky, 2007). According to the attachment theory, individuals' repeated experiences with their significant others result in the formation of relatively stable patterns of expectations, needs, emotions and behaviors in interpersonal interactions (Hazan & Shaver, 1987), and have an enduring effect on the individual's inter-psyche organization (Mikulincer & Shaver, 2016). Attachment scholars have categorized a secure attachment orientation and two insecure ones: attachment anxiety and attachment avoidance. Research has shown that secure attachment helps a person maintain emotional balance in the face of distress and to regulate and deescalate negative emotions such as anger, anxiety, and sadness (Bowlby, 1973; Shaver & Mikulincer, 2010). By contrast, anxiously attached individuals tend to rely on emotionally based coping mechanisms that increase distress and reduce ability to regulate emotions (Mikulincer & Shaver, 2016). Lastly, attachment avoidance results in a loss of trust in others during times of need and subsequent obsessive self-reliance strategies in the face of deficiency situations (Bowlby, 1988; Mikulincer & Shaver, 2016). Most studies address attachment avoidance and anxiety as two separate attachment orientations (Mikulincer & Shaver, 2012).

Past researches have provided a strong empirical support to the assumption that adults with insecure attachment orientation (high attachment avoidance or anxiety) are prone to suffer from depressive symptoms (Garrison, Kahn, Sauer, & Florczac, 2012; Hankin, Kassel, & Abela, 2005; Liu, Nagata, Shono, & Kitamura, 2009). Liu et al. (2009) for example, found that among Japanese students insecure attachment was associated with higher levels of depression. Hankin et al. (2005) presented similar findings showing that avoidant and anxious attachment orientations were

associated with increased depressive symptoms among young adults.

Attachment orientation was also found to correlate with self-harm. Kimball and Diddams (2007) found that attachment anxiety and avoidance were associated with self-harm behaviors among young adults. Similarly, Gratz, Conrad, and Roemer (2002) showed that among women, insecure attachment and paternal emotional neglect were positively associated with self-harm behavior, and among men, childhood separation (usually from the father) was the most important predictor of self-harm behavior. Hallab and Covic (2010) found that participants who engaged in self-harm behavior reported a poorer quality of attachment to both parents and suffered from higher levels of depression, anxiety and stress. Gormley and McNeil (2010) found that both insecure attachment orientations (anxious and avoidant) were associated with higher reports of self-injurious behaviors, whereas reports of past suicide attempts were associated to anxiety attachment but not avoidant attachment. Kimball and Diddams (2007) presented similar findings showing both insecure attachment orientations were associated to self-harm behaviors.

While the interplay between depression, suicide attempts and attachment orientation was previously studied (e.g., Grunenbaum et al., 2010; Smith et al., 2012), the moderating role of attachment orientation in the association between depressive symptoms and self-harm in a clinical sample has not been explored. In relation to the literature showing the adverse outcomes of insecure attachment (e.g., Garrison et al., 2012), we expected that the association between depressive symptoms and self-harm would be stronger among patients scoring high on attachment avoidance and attachment anxiety compared to patients scoring lower on attachment avoidance and anxiety.

Based on the literature presented, we hypothesized that: (1) There would be a positive association between depressive symptoms and self-harm; (2) The association between depressive symptoms and self-harm would be moderated by insecure attachment orientation (avoidant and anxiety) such that among patients scoring high on attachment avoidance and attachment anxiety, the association between depressive symptoms and self-harm would be stronger in comparison with patients who would score lower on attachment avoidance and anxiety.

## **Method**

### **Participants**

Records from 199 individuals over the age of 18 (72 men, 127 women,  $M_{\text{age}} = 41.01$ ,  $SD = 10.15$ ) who were patients at a community-based clinic, were used for this study. Most of the participants were married (61.8%) and parents (79.4%; Table 1). 49.7% of the participants had an academic degree (see Table 1). Most participants (59.3%) reported good medical condition (very few health issues) with only 1.5% reported suffering from severe illness. No patient that participated in the study was diagnosed with a currently active psychotic disorder or mental retardation. Regarding

**Table 1.** Sociodemographic characteristics of the study sample ( $N = 199$ ).

Variable	$N$ (%)	Mean	SD
Gender			
Men	72 (36.2%)		
Women	127 (63.8%)		
Family status			
Single	46 (23.1%)		
Married	123 (61.8%)		
Separated	27 (13.6%)		
Widowed	3 (1.5%)		
Age		41.01	10.15
Income			
0–5000	37 (18.6%)		
5001–10,000	38 (19.1%)		
10,001–15,000	29 (14.6%)		
15,001–20,000	27 (13.6%)		
20,001–25,000	20 (10.0%)		
25,001–30,000	14 (7.0%)		
30,001–35,000	2 (1.0%)		
Did not disclose	32 (16.1%)		
Education			
Partial high school	8 (4%)		
Full high school	51 (25.6%)		
Partial academic	41 (20.6%)		
Academic degree	99 (49.7%)		
Parental status			
Parents	158 (79.4%)		
Not parents	41 (20.6%)		
Number of kids		2.02	1.37
Sample size by years			
2015	23 (11.6%)		
2016	44 (22.1%)		
2017	132 (66.3%)		

previous psychiatric history, most participants (95%) reported that they did not attempted suicide and 0.5% reported that their suicide attempt was with life-threatening severity. Most of the participants (98%) were not previously hospitalized due to psychiatric condition. Only 0.5% of the participants reported current use of non-prescribed drugs. Among participants, 4.5% reported ever being arrested (1% reported the arrest was not due to speed driving). All participants were adults who sought mental health services in a community mental health clinic that offers reduced fee services to diverse patient population. The clinic offers a variety of mental health services, including assessment, psychotherapy (including different treatment modalities tailored to client's presenting problem, such as cognitive-behavioral therapy, psychodynamic therapy, crisis intervention, group therapy and family and couples therapy) and psychopharmacology.

### Procedure

Questionnaires were administered from October 2014 to November 2017 through the Niturix online platform ([www.niturix.com](http://www.niturix.com)). Following their intake session, all patients were invited to complete a series of self-report measures as part of regular clinic procedures and to give their consent to have those measures included in studies performed by the clinic. Patients were informed that the work in the clinic is accompanied by research, and received an explanation about the importance of completing the questionnaires in the beginning stage of their treatment.

After the intake and before being matched with a therapist, patients were invited to sign an informed consent and fill out questionnaires through a link sent either by e-mail, or on a tablet provided to them at the clinic. The questionnaires used in this research were part of a bigger battery that participants were asked to complete after the intake as a standard clinic procedure. Research assistants informed patients that the questionnaires were confidential and that participation was a voluntary part of their treatment in the clinic. They were given contact details of the intaker, and were invited to write or call if any question rose. This study was a de-identified archival study of these patients' medical charts. The study was approved by the ethics committee of the institutional review board of the school of psychology in the Interdisciplinary Center (IDC) Herzliya (the local committee does not supply reference number), and data collection was in accordance with ethical guidelines. Patients have given consent for their data to be anonymously used for research.

### Measures

#### Self-harm

Two items assessing the existence of self-harm ideation and behavior were based on the Patient Health Questionnaire 9 (PHQ-9, Simon et al., 2013), which relates to the frequency in which thoughts "that you would be better off dead or of hurting yourself in some way" were experienced over a period of two weeks. The two items were "Have you wanted to hurt yourself in any way?" and "Have you hurt yourself in any way?". Each was assessed over the past two weeks. Participants were asked to rate items on a scale of 1 (*not at all*) to 4 (*nearly every day*). The correlation between the two items was  $r = 0.43$ ,  $p = 0.01$ .

#### Depressive symptoms

The short version of the Depression Anxiety Stress Scales (DASS-21, Antony et al., 1998) is a self-report questionnaire listing negative emotional symptoms. The scale is divided into three subscales: depression (e.g., "I felt that life was meaningless"), anxiety (e.g., "I experienced trembling") and stress (e.g., "I found it difficult to relax"). Participants rated how often a particular symptom was experienced in the past week. Ratings were made on a scale ranging from 1 (*did not apply to me at all*) to 4 (*applied to me most of the time*). For the purposes of this research, we used only the depression scale score. The respondent's score was the items' mean rating, with higher scores referring to higher depressive symptomatology. The scale's Cronbach's  $\alpha$  in the current study (0.91) indicated good internal consistency.

#### Attachment orientation

The Experiences in Close Relationships scale (ECR; Brennan, Clark, & Shaver, 1998) was used to examine attachment orientation. The ECR is a 36-item self-report questionnaire which consists of two 18-item subscales, Anxiety (e.g. "I worry about being abandoned") and Avoidance (e.g. "I don't feel comfortable opening up to

other people in close relationships”). Participants were asked to think about their close relationships and to rate the extent to which each item was self-descriptive. Ratings were made on a 7-point scales ranging from 1 (*not at all*) to 7 (*very much*). The respondent’s scores were computed by averaging the relevant items, with higher scores referring to higher attachment anxiety and/or attachment avoidance. Cronbach’s alpha coefficients for the anxiety and avoidance sub-scales were 0.91 and 0.87, respectively.

## Data analysis

Data analysis was conducted using SPSS 25. Pearson correlations were calculated for the main study variables. Next, two hierarchical multiple regressions with three steps were conducted to examine our hypotheses regarding an association between depressive symptoms and self-harm and a moderation effect of attachment anxiety/avoidance on this association. For this purpose, sociodemographic variables were entered in the first step, attachment anxiety/avoidance and depressive symptoms in the second step, and the interactions between them in the third step. Simple slope analysis (Aiken & West, 1991) was performed using PROCESS for SPSS (Hayes, 2013) to more closely examine the interactions.

## Results

Means and standard deviation of the study’s main variables (depressive symptoms, self-harm, attachment avoidance and attachment anxiety) appear in Table 2. Intercorrelations between these variables revealed, as expected, that self-reported depressive symptoms correlated significantly with reports of self-harm and attachment insecurity (Table 2).

To test our hypotheses regarding the moderating effect of attachment orientation on the association between depressive symptoms and self-harm, we conducted two hierarchical multiple regressions. In Step 1 of each regression, five socio-demographic variables (gender, age, income, family status and parental status) were entered. These variables are assumed to have a relation to self-harm based on past studies (e.g. Klonsky, Oltmanns, & Turkheimer, 2003; Parker et al., 2005). In Step 2 of each model, depressive symptoms and one of our hypothesized moderating variables were entered into the analysis. The interaction (depressive symptoms  $\times$  attachment anxiety/attachment avoidance) was entered in Step 3. All continuous variables were standardized (*z* scores) prior to analysis to overcome multicollinearity.

Our analysis revealed that a non-significant portion of the variance in self-harm (5.2% for both attachment anxiety and attachment avoidance) was accounted for by the socio-demographic variables entered in Step 1.

When predicting self-harm, Step 2 (containing main effects of depressive symptoms and attachment anxiety) accounted for 6.8% of the variance over that accounted by Step 1 ( $\Delta R^2 = 0.068$ ,  $p = 0.001$ ) while Step 3 (containing the interaction) additionally accounted for 7.5% of the variance ( $\Delta R^2 = 0.075$ ,  $p < 0.001$ ). In parallel, when predicting self-

**Table 2.** Means, standard deviations and correlations between the study variables.

Variable	M	SD	Range	1	2	3	4
1. Self-harm	2.15	0.59	2–8	–			
2. Depressive symptoms	4.30	4.86	0–21	0.30**	–		
3. Attachment avoidance	3.07	0.93	1.2–6.3	0.12ns	0.33**	–	
4. Attachment anxiety	2.77	1.11	1.1–6.32	0.21*	0.48**	0.27**	–

\* $p < 0.05$ ; \*\* $p < 0.01$ .

**Table 3.** Summary of results of hierarchal multiple regression analyses predicting self-harm by depressive symptoms, attachment anxiety and their interaction.

Predictors	Self-harm	
	$\Delta R^2$	$\beta$
Step 1	0.052	
Gender		0.021
Age		–0.010
Family status		0.098
Income		0.116
Parental status		–0.247
Step 2	0.068*	
Attachment anxiety		0.087
Depression		0.244*
Step 3	0.075**	
Attachment anxiety		–0.001
Depression		0.146
Attachment anxiety $\times$ Depression		0.321**
Total $R^2$	0.195	
<i>N</i>	199	

\* $p < 0.05$ ; \*\* $p < 0.01$ .

**Table 4.** Summary of results of hierarchal multiple regression analyses predicting self-harm by depressive symptoms, attachment avoidance and their interaction.

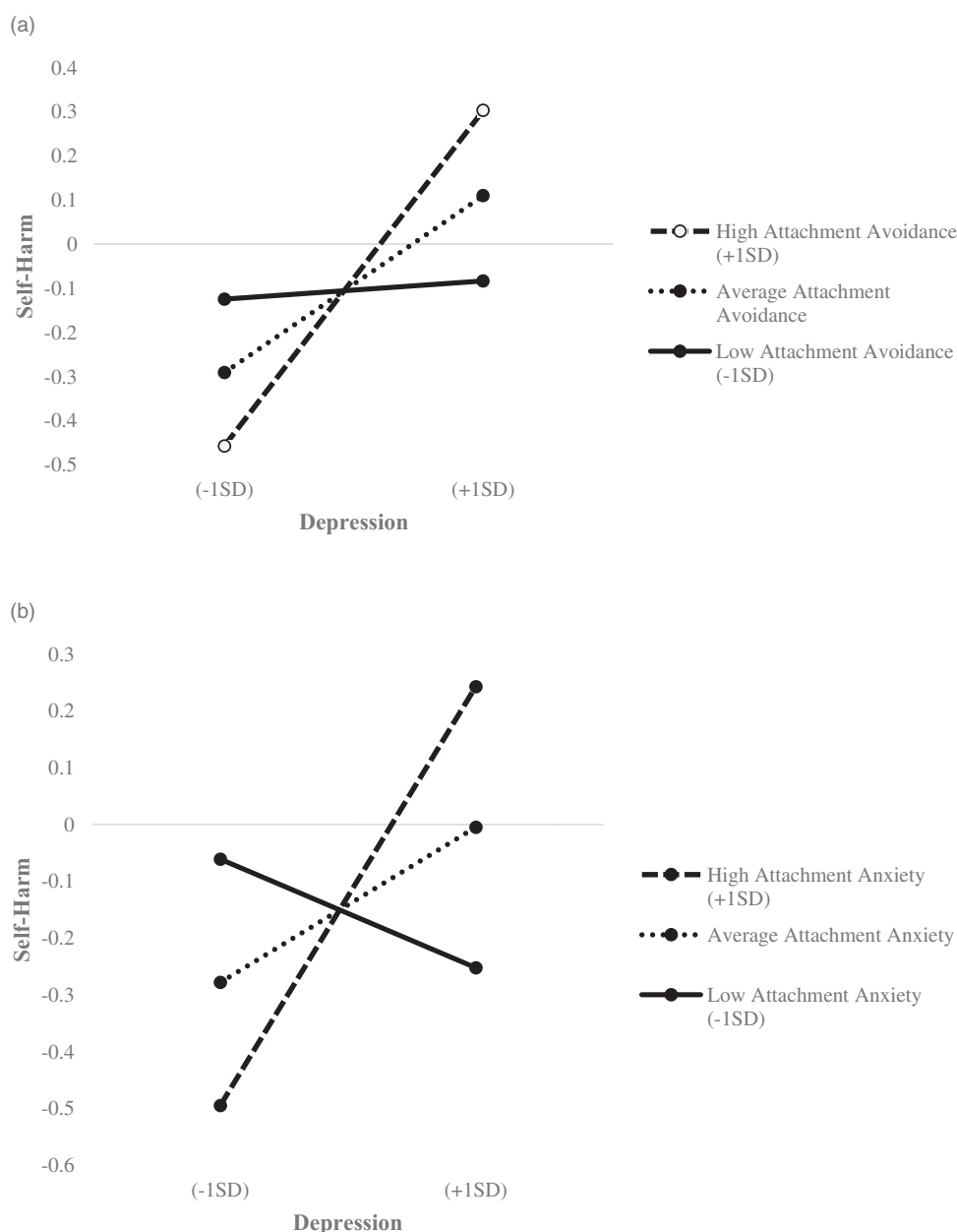
Predictors	Self-harm	
	$\Delta R^2$	$\beta$
Step 1	0.052	
Gender		0.021
Age		–0.010
Family status		0.098
Income		0.116
Parental status		–0.247*
Step 2	0.064***	
Attachment avoidance		0.047
Depression		0.264***
Step 3	0.037**	
Attachment avoidance		0.001
Depression		0.205*
Attachment avoidance $\times$ Depression		0.210**
Total $R^2$	0.153	
<i>n</i>	199	

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

harm, Step 2 (containing main effects of depression and attachment avoidance) accounted for 6.4% of the variance over that accounted by Step 1 ( $\Delta R^2 = 0.064$ ,  $p = 0.001$ ) while Step 3 (containing the interaction) additionally accounted for 3.7% of the variance ( $\Delta R^2 = 0.037$ ,  $p = 0.005$ ). A summary of these results appears in Tables 3 and 4. Power analysis for the interaction effects, conducted by G\*Power 3.1.9.4, revealed statistical power of 0.98 for the interaction of depressive symptoms and attachment anxiety, and 0.79 for the interaction of depressive symptoms and attachment avoidance.

In order to examine the interaction effects more closely, simple slopes analysis (Aiken & West, 1991) was performed





**Figure 1.** The moderating effect of attachment avoidance (a) and attachment anxiety (b) on the relationship between depressive symptoms and self-harm in Z scores.

using PROCESS for SPSS (Hayes, 2013). As can be seen in Figure 1, depressive symptoms positively predicted self-harm when attachment anxiety scores were high; +1SD ( $\beta = 0.35$ ,  $p < 0.001$ ), and in high; +1SD ( $\beta = 0.36$ ,  $p < 0.001$ ) or average ( $\beta = 0.19$ ,  $p = 0.012$ ) levels of attachment avoidance scores. No significant correlations between depressive symptoms and self-harm were found when attachment anxiety was low; -1SD ( $\beta = -0.09$ ,  $p = 0.39$ ) or average ( $\beta = 0.13$ ,  $p = 0.09$ ), and when attachment avoidance was low; -1SD ( $\beta = 0.02$ ,  $p = 0.86$ ).

## Discussion

The current study revalidated the association between depressive symptoms and self-harm ideation and behaviors in an adult outpatient population. Additionally, and in line

with our hypotheses, both attachment anxiety and avoidance moderated the association between depressive symptoms and self-harm, such that an association between depressive symptoms and self-harm was only evident when attachment anxiety was high (+1SD) and when attachment avoidance was average or high (+1SD).

The association between depressive symptoms and self-harm is in line with results of a meta-analysis on self-harm conducted by Skegg (2005), which concluded that depression is one of the strongest predictors for self-harm and that 90% of self-harmers who arrived to hospitals after a self-harming behavior, had at least one psychiatric disorder, most commonly depression.

Similarly to previous studies, our finding also supports the association between depression and insecure attachment orientation (Garrison et al., 2012; Hankin, Kassel, & Abela,

2005; Liu, Nagata, Shono, & Kitamura, 2009), providing another validation to the role of primary relations on psychological distress in adulthood.

Furthermore, and in line with our moderation hypothesis, the findings showed that the association between depressive symptoms and self-harm was evident only when attachment anxiety was high and when attachment avoidance was average or high. These findings are in line with the study of Gormley and McNiel (2010) that showed an association between both insecure attachment orientations (anxious and avoidant) and self-injurious behavior among psychiatric inpatient with depressive symptoms. Our findings further expand this literature to offer a model that highlights the moderating role of attachment orientation in the association between depressive symptoms and self-harm among outpatients in a naturalistic setting. The understanding that attachment orientation contributes significantly to the association between depressive symptoms and self-harm at early stages of treatment, can guide the interventions offered for these patients.

Our findings differ from those of Grunenbaum et al. (2010), who showed that anxious attachment was not related to major depressive episodes nor to suicide attempts, whereas avoidant attachment predicted increased risk of suicide attempts. These differences may be explained by findings indicating that an avoidant orientation may be important in more severely depressed persons or to self-critical and self-punitive dimensions of depression (Mikulincer & Shaver, 2007). Moreover, Grunenbaum et al. (2010) studied self-harm with suicidal intent while this study explored unintentional self-harm. It is possible that different types of intentional self-harm have diverse associations with the various insecure attachment orientations, associations that are important to examine in future studies.

### **Clinical implications, strengths and limitations**

The findings presented in this study have some important clinical implications. They provide important information regarding the prediction of self-harm among outpatients in clinical settings, and can assist therapists in planning the course of therapy by choosing the most suitable interventions, depending on the personal attachment orientation. This is in line with attachment based psychotherapy (e.g., Marmarosh, 2015), which several studies have demonstrated that is an effective treatment for depressive symptoms and suicidal ideation among adolescents (Diamond, Diamond, & Levy, 2014; Diamond, Wintersteen, Brown, Diamond, Gallop, Shelef, & Levy, 2010; Fonagy et al., 1996), and should also be tested for implementation to reduce self-harm for adults.

Alongside these strengths, this study also has several limitations. First, study variables were measured with self-report questionnaires thus may be subject to response bias. Second, the measures presented in this study were selected for the clinics' general research needs and not solely for this study. Therefore, some of the questionnaires used in this study were not the most desirable ones for measuring the

specific variables of depressive symptoms and self-harm. Similarly, while the current study used the ECR to assess attachment orientation, other measures, such as the adult attachment interview, could have yielded different results. In addition, the correlational design of this study did not allow us to infer causality.

Future studies should examine the effect that different self-harm intentions (with and without suicidal intentions) have on the model examined, as the varying intentions have been shown to have different base rates, courses, correlates, and responsiveness to treatment (Nock, 2012). Also, future studies can address self-harm ideation and behaviors separately, with longer measures. Additionally, as self-harm was found to increase significantly from the age of 12 years and decline from the mid-20s onwards, with around 65% of self-harm occurring before the age of 35 (Geulayov et al., 2016; Saunders & Smith, 2016), more studies should be done with larger samples, more targeted and specific age groups, and more diverse populations (Davis, Weiss, Tull, & Gratz, 2017). Also, as one of the purposes of this study was to improve clinicians' ability to predict self-harm and contribute to the course of therapy, it seems highly important to examine the impact of attachment-based interventions on the risk for self-harm and on the depressive symptoms–self-harm association in a longitudinal study.

To conclude, attachment anxiety and avoidance in the context of depressive symptoms are a potential therapeutic target for the prevention of self-harm motivations and behaviors. Continuing to study the variables that might ameliorate the vulnerability of patients who show depressive symptoms and self-harm is of great importance.

### **Disclosure statement**

No potential conflict of interest was reported by the authors.

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