



Perfectionism and Suicidal Ideation in Outpatient Depressed Adults: The Moderating Role of Self-Esteem, Loneliness and Rumination

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Abstract

Introduction Identifying factors that contribute to the development of suicidal ideation (SI) is crucial for prevention and treatment. Perfectionistic Concerns (PC) represent the experience of external pressure to be perfect and have been consistently linked to SI, but it is unclear how PC and SI are associated in depressed adults. This study examined the association between PC and SI and whether self-esteem, loneliness and rumination (brooding, reflection and depression-related rumination) moderated this association in a clinical sample.

Methods This cross-sectional study used a psychiatric outpatient sample of depressed adults, selected for the presence of SI. In total 110 adults (mean age 33.54 ($SD = 12.03$) and 60% female) participated in this study. Associations were estimated by regression analyses.

Results PC was not associated with SI in the sample ($r = .16$, $p = .087$). However, high levels of PC in combination with low self-esteem ($\beta = -.29$, $p = .007$) or with high levels of depression-related rumination ($\beta = .22$, $p = .017$) were positively associated with SI. Loneliness, brooding and reflection did not moderate the PC-SI relationship.

Discussion These findings underline the importance of taking into account the individual characteristics in depressed, perfectionistic individuals when estimating SI severity and selecting the focus of intervention. Due to the cross-sectional design no causal inferences can be made.

Keywords Perfectionism · Suicidal ideation · Self-esteem · Loneliness · Rumination

Introduction

Worldwide, over 700,000 people die by suicide every year (WHO, 2019). Research indicates that suicide is best predicted by a history of suicidal ideation (SI) and suicide attempts (Chan et al., 2016; Riera-Serra et al., 2023). SI encompasses non-physical actions such as thinking about, considering or planning suicide (Kessler et al., 2005). Suicidality develops along a continuum: passive thoughts may evolve into active suicidal thoughts, which, in turn, often precede suicide attempts (Svetitic et al., 2012). The processes underlying SI are not fully understood (O'Connor & Nock, 2014). Identifying and understanding these complex processes is crucial for developing interventions to prevent the onset of SI or to address SI, before it progresses to suicidal behavior (O'Connor & Nock, 2014). One personality trait consistently linked to SI is perfectionism (Katzenmayer-Pump et al., 2021; Shahnaz et al., 2018; Smith et al., 2018). This study will examine the association between perfectionism and SI and the moderating role of self-esteem, loneliness and, rumination.

Perfectionistic Concerns

Perfectionism is defined as the setting of extremely high standards for performance for oneself as well as for others (Hassan et al., 2014), accompanied by overly critical self-evaluation (Shafran et al., 2002). Perfectionism can be divided into two dimensions: perfectionistic strivings (PS) and perfectionistic concerns (PC; Frost et al., 1993; Stöber & Otto, 2006). PS represent setting high personal standards and is considered adaptive, because PS are related to higher levels of conscientiousness, motivation and active coping styles (Stöber & Otto, 2006). PC involve socially prescribed perfectionism. Individuals scoring high on PC believe that exceedingly high standards are imposed on them by others (Stöber & Otto, 2006; Frost et al., 1990) and that failing to meet these expectations may lead to criticism (Hewitt & Flett, 2004). This dimension has been labeled as maladaptive, because it is associated with excessive self-criticism, maladaptive coping styles and various psychological disorders, including depression and anxiety (Limburg et al., 2017; Sommerfeld & Malek, 2019). PC have been identified as a predictor of SI (Flett et al., 2014; Shanaz et al., 2018; Smith et al., 2018), even after controlling for powerful suicide predictors as depression and hopelessness (Flett, et al., 2014; Smith et al., 2017). There are several potential reasons why PC are associated with SI and suicidal acts. First, individuals high in PC hide behind a self-representation of apparent invulnerability and exhibit low levels of self-disclosure (Flett et al., 2014; Kawamura & Frost, 2004), which is known to be a risk factor for SI (Friedlander et al., 2012). Second, there is a strong association between PC and hopelessness (Flett et al., 2022; O'Connor et al., 2007); another important psychological risk factor for SI (Qiu et al., 2017; Ribeiro et al., 2018). Finally, PC are associated with a rigid cognitive style including overgeneralization, dichotomous (Jahromi et al., 2012) and striving for the absolute (Flett et al., 2014). This style may lead individuals scoring high on PC to interpret failures as catastrophes and to perceive the world as rejecting (Stöber & Otto, 2006;

Moscardini et al., 2022), making them prone to feelings of entrapment when experiencing interpersonal stressors (O'Connor & Kirtley, 2018; Smith et al., 2018). Entrapment occurs when a person feels distressed or defeated, without any prospect of escape or rescue (O'Connor & Nock, 2014), and is central to the formation of SI and the amplification of existing suicidal thoughts (O'Connor & Kirtley, 2018).

Of course, PC are not a sole predictor of SI. There is a broader biopsychosocial context that contributes to vulnerability for and development of SI. In this context, factors interact to either increase or decrease the vulnerability for the development of SI. Self-esteem, loneliness and rumination are frequently proposed as potential factors in theoretical frameworks of suicidality (O'Connor & Kirtley, 2018; O'Connor & Nock, 2014; O'Connor et al., 2012).

Perfectionistic Concerns and Self-Esteem

Self-esteem is regarded as a stable personality characteristic and refers to a person's global evaluation of one's own worth (Rosenberg, 1965). Existing research has reported strong correlations between self-esteem and SI (Bhar et al., 2008; Wild et al., 2004). Individuals with low self-esteem report more negative affective, cognitive and behavioral reactions to failure or criticism, anticipating social disapproval and rejection (Dunkley et al., 2012), which may reinforce negative self-perceptions and thoughts that life is not being worth living (Sommerfield & Malek, 2019).

The self-critical evaluations associated with perfectionism (e.g. "I have disappointed others", "I'm not satisfied with myself"; Dunkley et al., 2006; Fearn et al., 2021) maintain the perceived gap between an individual's ideal self and the actual self, resulting in experiences of low self-esteem. Low self-esteem, in turn, may amplify the critical self-evaluative tendencies of perfectionistic individuals and their tendency to expect disapproval or rejection when performance expectations are not met (Dunkley et al., 2012). According to Baumeister (1990) a strong desire to escape aversive self-awareness is an important motivation for suicide. Furthermore, Blankstein et al. (2007) reported that low self-esteem led to a stronger positive association between PC and SI in men, and a stronger positive association between PC and hopelessness in women. We therefore expect that PC are more strongly associated with SI in individuals who have lower levels of self-esteem.

Perfectionistic Concerns and Loneliness

Loneliness represents a distressing psychological experience resulting from a perceived discrepancy between an individual's desired and actual interpersonal relationships (Peplau & Perlman, 1982). It is a primary indicator of thwarted belongingness: a low sense of social belonging (Joiner, 2008). Thwarted belongingness serves both as a vulnerability factor for the emergence of SI (Arango et al., 2016) and a stress factor that can exacerbate SI (O'Connor & Kirtley, 2018). Existing research indicates that individuals high in PC experience more interpersonal problems and distress and tend to feel socially isolated (Harper et al., 2020; Roxborough et al., 2012; Stöber et al., 2021), as they fear other's conditional acceptance based

on achievements (Hewitt et al., 2017). Moreover, many individuals scoring high on PC seek to avoid potential public criticism and the appearance of defect (Blatt, 1995), leading to high self-concealment (Besser et al., 2010; DiBartolo et al., 2008; Kawamura & Frost, 2004), which contributes to feelings of alienation, isolation and loneliness, and may also increase the risks of SI (Flett et al., 2014). A recent meta-analysis showed that PC have a large positive relationship with social disconnection ($r=0.30$; Smith et al., 2020). Moreover, loneliness moderates the association between PC and depressive symptoms (Chang et al., 2008), which can amplify existing SI (Hewitt et al., 2006). We therefore expect that perfectionistic individuals who report high levels of loneliness will report more SI.

Perfectionistic Concerns and Rumination

Rumination is defined as repetitive thoughts about oneself and one's own condition when facing a problematic situation, generating a negative mood (Nolen-Hoeksema, 1991). Treynor and colleagues (2003) identified three components of rumination. The first component is depression-related rumination, which involves the repetitive cognitions about the depressive symptoms. The second is brooding, referring to the passive comparison of one's current situation with some unachieved standard. The third component is reflection, involving cognitive problem-solving. Rumination is known to intensify negative affect and increase the risk of engaging in maladaptive behaviors, such as self-injury, as a means to regulate intense emotions (Selby et al., 2008). A meta-analysis of Rogers and Joiner (2017) reported that global rumination (including the three components of rumination), brooding and reflection are positively associated with SI, with moderate to large effect sizes (respectively Hedge's $g=0.74$, Hedge's $g=.63$ and Hedge's $g=0.38$).

Rumination is also associated with perfectionism (DiBartolo et al., 2001; Flett et al., 2002) particularly with PC (Frost et al., 1997; Xie et al., 2019). Perfectionistic individuals are characterized by an excessive tendency toward evaluation and criticism (Di Schiena et al., 2012; Patterson et al., 2021) and by low decision-making skills (Frost & Shows, 1993). They easily engage in repetitive negative thinking, which may enhance the risk of experiencing defeat and hopelessness (Flett et al., 2014) and may increase vulnerability to SI. We therefore expect that perfectionistic individuals reporting high levels of depression-related rumination, brooding and reflection will report more SI.

Aim and Hypotheses

In this study, we focus on the association between PC and SI, and the potential moderating role of self-esteem, loneliness and rumination (depression-related rumination, brooding and reflection) in a psychiatric outpatient sample of adults reporting depressive mood and SI. To our knowledge, there are few existing studies on the relationship between PC and SI in adults (Flett et al., 2014; Robinson et al., 2022; Smith et al., 2018; Shanaz et al., 2018). Most existing studies have focused on adolescents and in many studies a community or college samples was used (Smith

et al., 2018). It is unclear whether the association between PC and SI observed in these populations is generalizable to a clinical population and warrants attention in treatment.

Based on previous research, we expected that adults with depressive symptoms reporting higher levels of PC would also report higher levels of SI. Furthermore, we expected that the relationship between PC and SI would be stronger in individuals with lower self-esteem and higher levels of loneliness, brooding, reflection and depressive-related rumination.

Methods

Participants

The study used data collected as part of a randomized controlled trial (RCT) testing the effectiveness of an Eye Movement Dual Task treatment to decrease suicidal intrusions in adults with elevated levels of depression (see study protocol Van Benthum et al., 2019). The sample consisted of 110 adults, aged 18–70 years, ($M = 33.54$, $SD = 12.03$). Characteristics and psychiatric diagnoses of the subjects can be found in Tables 1 and 2. Individuals could participate in this project when they satisfied the following inclusion criteria: (a) age ≥ 18 ; (b) reporting moderate to high levels of depressive symptoms (not necessary a depressive disorder) measured by a score of 20 or higher on the Beck Depression Inventory Scale (BDI-II; Beck et al., 1996) and a score of 1 or higher on the Suicidal Ideation Attribution Scale (SIDAS; Van

Table 1 Characteristics of the sample

	%	<i>N</i>
<i>Gender</i>		
Man	40	44
Woman	60	66
<i>Marital status</i>		
Married	17	19
Divorced	5	6
Living Together	19	21
Single	58	64
<i>Education level</i>		
No or primary school	2	2
Vocational/technical school	47	52
High college	10	11
(Under)graduate degrees	41	45
<i>Country of birth</i>		
The Netherlands	78	86
Another country	7	8
Missing	15	16

Table 2 DSM-IV diagnoses based on M.I.N.I. Interview

DSM-IV diagnoses ^a (<i>N</i> = 103)	%	<i>N</i>
Major depressive disorder	78	86
Dysthymia	7	8
Posttraumatic stress disorder	15	17
Panic disorder	36.4	40
Generalized anxiety disorder	21.8	24
Social phobia	25.5	28
Agoraphobia	20	22
Obsessive–compulsive disorder	9.1	10
Alcohol dependence	7.3	8
Drug dependence	5.5	6
Number of comorbidities ^b		2.08 (SD = 1.2)

BDI-II = Beck Depression Inventory second edition. BHS = Beck Hopelessness Scale. RRS = Ruminative Response Scale. SIDAS = Suicidal Ideation Attributes Scale. SINAS = Suicidal Intrusions Attributes Scale

^aThere were 7 participants with missing data

^bComorbid Axis I disorders were established with the use of the Mini-International Neuropsychiatric Interview

Spijker et al., 2014); (c) adequate proficiency in the Dutch language; (d) currently receiving treatment as usual (TAU) at a mental health institution.

Patients were excluded when they (a) were diagnosed with at least one of the following disorders: DSM-IV (American Psychiatric Association, 2000) psychotic disorder, bipolar disorder, depressive disorder with psychotic symptoms; (b) they currently received treatment for Posttraumatic Stress Disorder (PTSD) (since the RCT focused on evaluating a treatment that may resemble eye movement desensitization and reprocessing, an evidence-based PTSD treatment).

Sample Size and Power

The sample size is 110. For the regression of SI on PC the power will be 0.91 according to G*Power (Faul et al., 2009). The power calculation is based on an effect size of $r = 0.28$ (as reported in the meta-analysis study of Smith et al. (2018) and a Type I error of 0.05.

Procedure and Design

This study used a quantitative cross-sectional research design: The trial was registered at the ISRCTN registry (ISRCTN17404612) and was carried out with permission of the medical Ethical committee of the Amsterdam UMC, location VUmc (protocol number 2017.237) in the Netherlands. Adult patients were recruited from 8 specialized mental health institutes. Patients received verbal and written information

from their therapists about the study. When they were interested in participating, a research assistant invited them for an appointment. After reading the information letter and signing for informed consent, they were screened by the research assistants on psychiatric diagnoses (MINI; Sheehan et al., 1998; Dutch version; van Vliet & de Beurs, 2007), SI (Suicidal Attribution Scale (SIDAS); Van Spijker et al., 2014) and depressive symptoms (Beck Depression Inventory (BDI-II); Beck, et al., 1996; Dutch version; Van der Does, 2002). When they met the criteria, they were included in the study and filled out the questionnaires of the base line assessment. All research assistants were academically educated and received training in administering the interviews and questionnaires.

Instruments

Depressive symptoms were measured with Dutch version the *Beck Depression Inventory (BDI-II-NL-R)* Beck et al., 1996; Van der Does, 2002). The BDI-II consists of 21 items, each comprising a list of four statements about a particular symptom of depression. Scores on the items range from 0 to 3 (e.g. "I do not feel sad" to "I am so sad and unhappy that I can't stand it"). The level of depressive symptoms was calculated as the sum score across all items. A sum score of 29 or above is indicative of severe depressive symptoms. Reliability of the BDI-II has been supported ($\alpha=0.92$; Evers et al., 2005). Cronbach's alpha was 0.85 in this study.

Perfectionistic Concerns was measured with the Dutch version of the *Frost Multi-dimensional perfectionism scale (FMPS)*; Boone et al., 2014; Frost et al., 1990). The FMPS consists of 35 items measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). This questionnaire consists of six subscales: Personal Standards, Concern over Mistakes, Organization, Doubts about Actions, Parental Expectations and Parental Criticism. For the purpose of this study we only focused on the dimension PC (13 items), which consists of the mean scores of the items of the subscales Concern over Mistakes (9 items; e.g. 'I hate being less than the best at things') and Doubt about Actions (4 items; e.g. "I usually have doubts about the simple everyday things I do"). Higher scores indicate higher levels of PC. The dimension PC of the Dutch version of the FMPS has demonstrated good internal consistency ($\alpha=.85$; Schoofs et al., 2010). Cronbach's alpha was 0.90 in this study.

Self-Esteem was measured with the Dutch version of the Rosenberg Self-Esteem scale (RSES; Rosenberg, 1965). The RSES is designed to measure global self-worth and consists of 10-items (e.g. 'On the whole I'm satisfied with myself') measured on a 4-point Likert scale ranging from 0 (strongly disagree) to 3 (strongly agree). After reversed-coding of the negative items, self-esteem was calculated as the mean score across all items. Higher scores indicate higher levels of self-esteem. The Dutch version of the RSES has demonstrated good internal consistency ($\alpha=0.86$; Franck et al., 2008). Cronbach's alpha was 0.86 for the present sample.

Loneliness was measured with the Dutch translation of a short version (RULS-8; Roberts et al., 1993) of the Revised UCLA Loneliness Scale (R-ULS; Russell et al., 1980). This scale consists of 8-items (e.g. "I feel left out") measured on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Loneliness

scores were calculated as the mean score across all items. Higher scores indicate higher levels of loneliness. RULS-8 has demonstrated good internal consistency ($\alpha = .82$; Goossens, et al., 2014). Cronbach's alpha was 0.82 in the present sample.

Rumination was measured with the Dutch version (RRS-NL, Raes et al., 2003) of the Ruminative Response Scale. This scale measures ruminative thoughts concerning depressive and sad feelings. The 22-item version we used is the first Dutch version based on the original RRS constructed by Treynor et al. (2003). Each item contains a statement about thoughts and acts when feeling down, sad or depressed. Participants report on a 4-point scale from 0 (almost never) to 3 (almost always) the frequency of these thoughts and acts when they feel sad or depressed. The Reflection Subscale consists of five items of the RRS (e.g. "I Analyze recent events to try to understand why I am depressed"). The internal consistency reliability of the reflection subscale of the Dutch version has been demonstrated acceptable ($\alpha = 0.75$; Raes et al., 2009) and was also acceptable in this study ($\alpha = 0.73$). The brooding scale consists of five items (e.g. "I think: "why do I always react this way?"). The internal consistency of this five-item brooding scale of the Dutch version has been demonstrated acceptable ($\alpha = 0.78$; Raes & Bijttebier, 2012). However not all five brooding items are part of the widely circulated first Dutch version of the RRS we used in this study (Raes et al., 2003). Accidentally, in this version of the RRS only three of the five items of the brooding scale were included (Raes et al., 2009). In the current sample the internal consistency of the three items has demonstrated poor ($\alpha = 0.56$). The other 14 items represent the depression-related rumination subscale (Treynor et al., 2003; "I think about how alone I feel"). Cronbach's alpha for this subscale was 0.88 in the current sample. Scale scores were calculated as the mean across the items of a scale. Higher scores indicate higher levels of rumination.

Suicidal ideation was measured using with the Suicidal Ideation Attributes Scale (SIDAS; Van Spijker et al., 2014). This questionnaire is designed to screen individuals for presence of suicidal thoughts and to assess the severity of those thoughts. It consists of 5 items, each targeting an aspect of suicidal thoughts: frequency (e.g. "In the past month, how often have you had thoughts about suicide?"), controllability (e.g. "In the past month, how much control have you had over these thoughts?"), closeness to attempt (e.g. "In the past month how close have you come to making a suicide attempt?"), level of distress associated with the thoughts (e.g. "In the past month, to what extent have you felt tormented by thoughts about suicide?") and impact on daily functioning (e.g. "In the past month, how much have thoughts about suicide interfered with your ability to carry out daily activities, such as work, household tasks or social activities?").

Responses on these 5 items are measured with 10-point scales varying from 0 to 10 (e.g. frequency of suicidal varied from 0 (never) to 10 (always)). All participants in our sample scored above 0 on the first item. SI was calculated as the mean score across all items. A mean score of 4.2 or above (or a sum score of 21 or above) indicates high risk of suicidal behavior. The SIDAS has demonstrated excellent internal consistency ($\alpha = 0.91$, Van Spijker et al., 2014). Cronbach's alpha was 0.80 in this study.

Statistical Analysis

First, means, standard deviations and correlations between the research variables were computed. Hierarchical moderated regression analysis was used to test moderation effects, loneliness and rumination (brooding, reflection and depression related rumination) in three steps. An analysis was conducted for each of the five moderators separately. In the first step of the analysis, the control variables gender, age and education were included as predictors of SI. In the second step PC and a moderator variable were included and in the third step the interaction term of PC x moderator. Because our first hypothesis was about the relationship between PC and SI, we first tested the effects of PC (Step 2A, Table 5) before including the moderator variable (step 2) in the moderation analysis of self-esteem. PC and the five moderator variables were centered (raw scores minus the mean of the variable) to facilitate the interpretation of the regression outcomes and to prevent multicollinearity problems. Interaction terms are the product of centered predictors. For the analyses we used IBM Statistical Package for the Social Sciences (SPSS) version 27 (IBM Corp., Armonk, NY USA).

Results

Correlations, Means and Standard Deviations

The mean BDI-II sum-score in this sample was 37.2 (range 10–57, $SD=9.76$). A score of ≥ 29 indicates severe depressive symptoms. The mean SIDAS sum-score was 29.44 (range 3–45, $SD=10.39$). Most individuals (80,9%) reported a SIDAS sum-score above the cut-off of 21, indicating a high risk of suicidal behavior. Table 3 displays the descriptive statistics of the research variables. The mean score on the SIDAS ($M=5.89$) is also high and lies far above the cut off score of 4.2.

Table 3 Descriptive statistics for Measures of Perfectionistic Concerns, Self-Esteem, Loneliness, Brooding, Reflection, Depression-related Rumination and Suicidal Ideation

	Mean	<i>SD</i>	Range	Min	Max
Perfectionistic concerns (F-MPS)	3.36	0.88	1–5	1.15	4.92
Self-esteem (RSES)	1.00	0.62	0–3	0.00	3.00
Loneliness (RULS-8)	3.14	0.82	1–5	1.10	3.90
Brooding (RRS)	1.65	0.72	0–3	0.00	3.00
Reflection (RRS)	1.29	0.66	0–3	0.00	3.00
Depression-related rumination (RRS)	1.69	0.58	0–3	0.23	2.92
Suicidal ideation (SIDAS)	5.89	2.08	0–10	0.60	9.60

F-MPS = Frost Multidimensional Perfectionism Scale; RSES = Rosenberg Self-Esteem Scale; RULS-8 = Revised UCLA Loneliness Scale; RRS = Ruminative Response Scale; SIDAS = Suicidal Ideation Attributes Scale

Table 4 includes intercorrelations among all study measures. PC have a strong negative significant correlation with self-esteem ($r = -0.64$) but a positive significant correlation with loneliness ($r = 0.43$) and the three rumination variables (brooding $r = 0.40$; reflection $r = 0.22$; depression-related rumination $r = 0.51$). Self-esteem is negatively correlated with loneliness brooding and depression-related rumination, loneliness is positively related with the rumination variables and the rumination variables are significantly positively correlated with each other. SI has only a significant correlation with depression-related rumination.

4.2 Moderation Effects of Self-Esteem, Loneliness and Rumination on the Relationship Between PC and SI. Table 5 summarizes the results of the hierarchical moderated regression analyses. Two significant interactions were found: PC x self-esteem and PC x depression-related rumination. In addition, education level appeared to have a significant negative effect on SI. PC are not significantly associated with SI (see step 2a of model 1 and the non-significant correlation in Table 2).

The two significant interaction effects are visualized in Figs. 1 and 2.

The relation between PC and SI differs under condition of high or low self-esteem, see Fig. 1. Under condition of low self-esteem SI increases if PC are increasing. Under condition of high self-esteem SI decreases if PC are increasing.

Discussion

The aim of this study was to examine the relationship between PC and SI and to test whether this relationship was moderated by self-esteem, loneliness, and rumination (depression-related rumination, brooding and reflection) in a psychiatric outpatient sample of adults with depressive mood and SI. We hypothesized that PC would be positively correlated to SI. Moreover, we expected that the association between PC and SI would be stronger in individuals reporting lower levels of self-esteem, or higher levels of rumination or loneliness.

However, PC were not associated with SI in this sample. The association between PC and SI was significant only in depressed adults with a specific combination of psychological factors. Both self-esteem and depression-related rumination were

Table 4 Correlations among measures of Perfectionistic Concerns, Self-Esteem, Loneliness, Brooding, Reflection, Depression-related Rumination and Suicidal Ideation

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Perfectionistic concerns						
Self-Esteem	-0.64***					
Loneliness	0.43***	-0.41***				
Brooding	0.40***	-0.36***	0.33***			
Reflection	0.22*	-0.02	0.26**	0.37***		
Depression-related Rumin	0.51***	-0.43***	0.41***	0.50***	0.47***	
Suicidal Ideation	0.16	-0.17	0.04	0.13	0.19	0.28**

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 5 Moderation of Self-Esteem, Loneliness, Brooding, Reflection and Depression-related Rumination on the relation between Perfectionistic Concerns and Suicidal Ideation

		$\beta^*)$	<i>t</i>	<i>p</i>	ΔR^2	<i>p</i>
<i>Model 1 moderation of self-esteem</i>						
step 1	Gender	-0.16	-1.70	0.091		
	Age	0.16	1.76	0.082		
	Education level	-0.23	-2.53	0.013	0.103	0.009
step 2a	Perfectionistic concerns	0.16	1.73	0.087		
step 2	Perfectionistic concerns	0.13	1.10	0.276		
	Self-Esteem	-0.05	-0.41	0.684	0.026	0.214
	Perfectionistic concerns × self-esteem	-0.29	-2.76	0.007	0.060	0.007
<i>Model 2 moderation of loneliness</i>						
step 2	Perfectionistic Concerns	0.20	1.92	0.057		
	Loneliness	-0.09	-0.85	0.398	0.031	0.163
step 3	Perfectionistic concerns × loneliness	0.15	1.51	0.134	0.019	0.134
<i>Model 3 moderation of brooding</i>						
step 2	Perfectionistic concerns	0.14	1.38	0.170		
	Brooding	0.05	0.48	0.629	0.027	0.207
step 3	Perfectionistic concerns × Brooding	0.03	0.33	0.745	0.001	0.745
<i>Model 4 moderation of reflection</i>						
step 2	Perfectionistic concerns	0.14	1.42	0.157		
	Reflection	0.18	1.89	0.062	0.054	0.040
step 3	Perfectionistic concerns × reflection	0.11	1.20	0.232	0.012	0.232
<i>Model 5 moderation of depression-related Rumination</i>						
step 2	Perfectionistic Concerns	0.04	0.36	0.723		
	Depression-related Rumination	0.26	2.45	0.016	0.072	0.013
step 3	Perfectionistic Concerns x Depression-related Rumination	0.22	2.42	0.017	0.044	0.017

^{*)} β is standardized regression coefficient

Bold values indicate $p \leq 0.05$

moderators in the association between PC and SI. Depressed individuals scoring high on PC and reporting lower levels of self-esteem, reported higher levels of SI. Similar findings were observed for the effect of depression-related rumination: SI was higher in depressed individuals scoring high on PC and reporting higher levels of depression-related rumination. Brooding, reflection and loneliness were not identified as moderators of the relationship between PC and SI in depressed adults.

The absence of a significant relationship between PC and SI in this study is not in line with most previous studies indicating that PC are a predictor of SI in adolescents and adults (Flett et al., 2014; Shahnaz et al., 2018; Smith et al., 2018). This

Fig. 1 The interaction of Perfectionistic Concerns and Self-Esteem on Suicidal Ideation

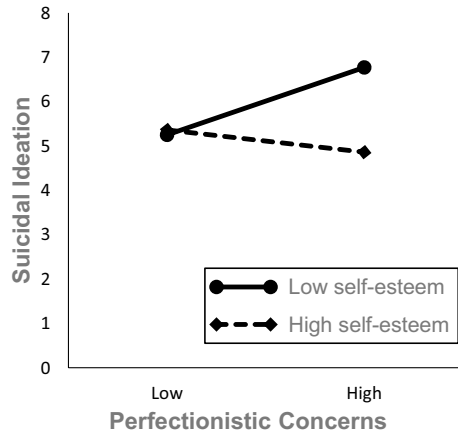
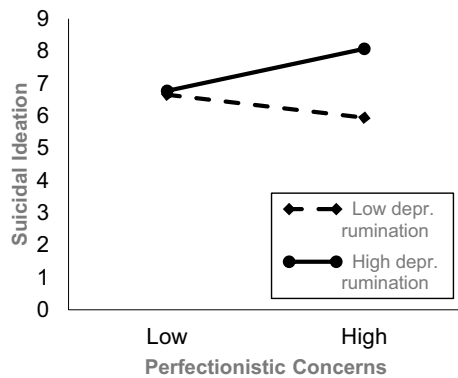


Fig. 2 The interaction of Perfectionistic Concerns and Depression-related Rumination on Suicidal Ideation



discrepancy may be explained by the fact that in this study a homogeneous, clinical sample was used comprising individuals selected based on the presence of SI. Existing research has reported PC as a strong predictor of SI in general or subclinical populations. However existing studies using clinical samples have often found weak significant correlations between PC and SI (i.e. $r=0.32$, $r=0.38$; Shahnaz et al., 2018; Beevers & Miller, 2004). The fact that all participants in our study were receiving treatment may have influenced our results. Hopelessness has been reported a mediator in the association between PC and SI (Robinson et al., 2022). Treatment may have instilled hope and thereby reduced the strength of the association between PC and SI. Nevertheless, the findings in this study underscore the importance of considering individual characteristics in depressed, perfectionistic individuals when assessing the severity of SI. The results indicate that PC alone is not related to SI in depressed individuals. However, PC are associated with SI in depressed individuals reporting low self-esteem and high levels of depression-related rumination.

The moderating effect of self-esteem, and depression-related rumination on the association between PC and SI were consistent with findings from previous studies

(Blankstein et al., 2007; Roger & Joiner, 2017; O' Connor & Kirtley, 2018; Flett et al., 2014). Our results indicate that self-esteem acts as a buffer between PC and SI. Lower levels of self-esteem are related to increased SI in adults with high levels of PC, whereas higher self-esteem was associated with decreased SI. Furthermore, findings in this study suggest that PC are positively associated with SI when depression-related rumination is high, but negatively associated with SI when depression-related rumination is low.

Contrary to our expectations, we did not find a moderating effect of loneliness, brooding, or reflection on the association between PC and SI. One possible explanation for the lack of a moderating effect of loneliness could be the characteristics of our study sample. According to a meta-analysis by McClelland and colleagues (2020), significant associations between loneliness and SI are more likely to be found in studies primarily involving female participants within specific age groups (e.g. ages 16–20 or over 58), whereas our study sample was more diverse in terms of gender and age.

The absence of a moderating effect of brooding may be explained by the fact that all individuals in our study chose to participate in this study investigating a new promising intervention for SI. Miranda and Nolen-Hoeksema (2007) have suggested that reflection is associated with SI only when an individual's problem-solving attempts fail to generate a solution. Moreover, brooding is characterized by passive comparison of one's actual situation to some unachieved standards (Treyner et al., 2003). The decision to take part in this study may have instilled hope and influenced the nature of the participants' brooding and reflection. We speculate that choosing to participate had less impact on depression-related rumination, as the intervention was not specifically aimed at reducing depressive symptoms. Education level showed a negative relation with SI: As education level increases, SI will decrease. This result is consistent with existing research (Trivedi et al., 2013).

Strengths and Limitations

This study has several strengths. First, there are few existing studies examining the relationship between PC and SI in clinical populations of adults (Smith et al., 2018). Our study focused on psychiatric outpatient adults characterized by higher levels of depressive mood and SI. Moreover, to the best of our knowledge this study is among the first to examine how self-esteem moderates the relationship between PC and SI (Blankstein et al., 2007), as well as the first to explore how loneliness and rumination moderate this relationship. By exploring these factors, this study provides valuable insights to the profiles of individuals at risk for SI.

However several limitations of this study should be acknowledged. First, the use of a cross-sectional design precludes establishing causal relationships between PC, self-esteem, rumination, loneliness and SI. Second, despite strong evidence linking hopelessness with SI and PC (Qiu et al., 2017; Ribeiro et al., 2018; Flett et al., 2022; O'Connor et al., 2007), hopelessness is not included as a control variable in this study. Third, the study did not account for the participant's treatment phases, or subgroups of participants based on symptom severity or diagnosis. Including this

information could have provided an opportunity to examine the PC-SI association in greater detail across various subgroups. Fourth, a repeatedly suggested concern with the depression-related rumination scale is its overlap with items assessing depression severity, as indicated by its high correlation with the BDI-II (Treyner et al., 2003). Post-hoc analysis revealed a moderate correlation between depression related rumination and depressive symptoms (BDI-II) in our study ($r=0.44$, $p=0.00$), suggesting that depression-related rumination may be partly redundant with the depressive symptoms in terms of predicting SI. Fourth, we employed an outdated version of the RRS in our study, that included only three of the five brooding items (Raes et al., 2009), resulting in poor reliability of the brooding items in our study. Finally, we used a sample with individuals reporting high levels of both SI and PC. The mean score on PC ($M=3,36$) in this sample was much higher than the mean scores in other studies with clinical samples examining the relationship between PC and SI with the F-MPS ($M=1,8-2,6$; Portzky et al., 2014; Adkins & Parker, 1996). Therefore our results may have limited generalizability to the general psychiatric population.

Future Directions

Future research should replicate and extend these findings using longitudinal designs across non-clinical, subclinical, and clinical populations to elucidate and establish causal relationships between PC and SI. Additionally, exploring the moderating effects of other well-established predictors of SI such as coping, social support and resilience, in the relationship between PC and SI, could further identify and clarify the risk factors for SI development in depressed adults and inform prevention and treatment strategies.

Clinical Implications

First, our findings suggest that therapists should screen for SI in depressive patients who report high levels of PC, low-levels of self-esteem, and high levels of rumination. Second, this study identifies a specific psychological profile for individuals high in PC and SI. Including self-esteem and rumination in the initial case conceptualization at the start of the treatment may be beneficial allowing treatment to be tailored accordingly.

Our findings indicate that techniques aimed at reducing PC may benefit depressed adults, reporting SI and low self-esteem or high levels of depressive rumination. Cognitive restructuring techniques, that broaden patients' self-evaluation schemes and enhance self-compassion have been effective in reducing perfectionistic cognitions and associated emotions (Patterson et al., 2021). Furthermore, integrating depression-related rumination (repetitive thinking about depressive symptoms) into treatment could be advantageous. Rumination-focused behavior therapies such as metacognitive therapy and mindfulness based cognitive therapy have shown promise in altering depressive rumination patterns and reducing SI in depressed adults (Normann & Marina, 2018; Watkins, 2016; Schmelefske et al., 2020; Jelinek et al., 2021;

Hashemi, 2020). Lastly, interventions aimed at enhancing self-esteem could be beneficial for perfectionistic individuals. For instance, COMET, an intervention utilizing counterconditioning, has demonstrated effectiveness in addressing self-esteem issues and reducing rumination (Korrelboom et al., 2012).

In sum, our study highlights that depressive adults reporting high levels of PC, coupled with low self-esteem or high levels of depression-related rumination are more likely to report SI. Clinicians should be vigilant for this specific profile in the treatment of depressive adults and interventions targeting PC, self-esteem or depression-related rumination may be instrumental in reducing SI. Replicating and extending these findings using longitudinal designs could further clarify the causal relationship between PC and SI.

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Declarations

Conflict of interest The authors declare no conflict of interest.

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