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Beliefs About the Values of Happiness and Depressive Feelings in an Acute Psychiatric Treatment Sample

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People hold diverse beliefs about the feeling and value of emotions; for instance, some people believe they should only feel happy and never feel depressed. Interestingly, previous studies have demonstrated that these beliefs are associated with increased depression. This raises questions about how such beliefs operate in a clinical setting; however, little research has been conducted on treatment-seeking individuals. We examined beliefs about the values of happiness and depressive feelings and their relationship to treatment outcomes in 289 adult patients admitted in an intensive cognitive-behavioral therapy-based psychiatric partial hospital program in the U. S. Beliefs related to happiness and depressive feelings were significantly reduced after treatment, suggesting that they are amenable to change. Moreover, a decrease in the belief that depression should never be experienced was uniquely associated with decreased depressive symptoms after treatment, even after accounting for demographic and treatment-related variables. Our findings support the idea that beliefs about the values of emotions, especially about feeling depressed, are potential targets for depression treatment.

Keywords: depression, belief, emotion

Introduction

Beliefs about goodness/badness of emotions—i.e., whether an emotion should be valued or desired—are fundamental to a person's general beliefs about emotions (Ford and Gross, 2019). Previous studies examining various community samples have shown that beliefs about the values of experiencing happiness (believing that feeling happy is extremely important) are paradoxically associated with greater depression (e.g., Gentzler et al., 2019; Mahmoodi Kahriz et al., 2020). Elevated depressive symptoms are also associated with the devaluation of negative emotions (Bastian et al., 2012). In addition, emotion beliefs have been addressed in various treatments. For instance, acceptance and commitment therapy (ACT) and mindfulness approaches both involve accepting one's own uncomfortable experiences as a key to coping with struggles (Hayes et al., 2011). Dialectical behavioral therapy (DBT) focuses on functions and myths of emotions (Linehan, 2018).

Althoughthere has been substantial research into emotion beliefs as a significant depression correlate and clinical attention to those beliefs in treatments, no study has examined whether these beliefs can be modulated by clinical intervention or are associated with depression improvement. Here, we examined this topic in treatment-seeking adult patients admitted to a partial hospitalization program (PHP) in the U. S. Furthermore, we evaluated beliefs about the values of both happiness and depressive feelings. Previous studies found that beliefs about emotions are domain-specific (Schroder et al., 2016) and that a meta-analysis (Yoon et al., 2018) found that negative thoughts/feelings towards depressive feelings

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have a stronger relationship with depressive symptoms than attitudes towards positive feelings, while both relationships were significant. Thus, examining treatment-seeking patients' beliefs about their feelings of depression seems particularly relevant.

Based on previous research, we hypothesized that (1) beliefs about the values of happiness (valuing happiness; hereinafter happiness belief) and depressive feelings (devaluing feeling depressed; hereinafter depression belief) would decrease via cognitive behavioral therapy (CBT)-based treatments. (2) Greater pre-and-post treatment changes in these beliefs would predict greater changes in depressive symptoms. Additionally, we explored whether happiness and depression beliefs change differently via treatment (i.e., depression improvement).

Methods

Participantsand Treatment

Data were collected from patients admitted to a PHP at a psychiatric hospital in New England, between September 2019 to March 2020. A total of 289 patients agreed to participate in the assessments, and their data were used in the current study. The PHP, an intensive day treatment for adults, is designed to teach patients adaptive skills through CBT-based groups (e.g., CBT, DBT, ACT, and mindfulness) and individual therapies as well as case-management and medication management. Most patients stay in the treatment for about two weeks. In our sample, the average length of stay was 12.3 days, including weekends and holidays. See Forgeard et al. (2018) for detailed information about the PHP. Data were collected via Research Electronic Data Capture (REDCap), a secure web application for research databases. This study was approved by the Institutional Review Board of the hospital (#2010P001047).

Measures

Supplementary Material A presents the internal consistencies of each measure.

Emotion beliefs measures

Valuing Depression Scale (VDS)

To measure beliefs aboutthe values of depressive feelings, we developed a single-factor and five-item self-report scale based on previous research (Yoon et al., 2018).

Modified Valuing Happiness Scale (mVHS)[1)]

We measured beliefs about happiness value using four items extracted fromthe VHS (Mauss et al., 2011). For both VDS and mVHS, participants were asked to rate the extent to which they agree with each item on a six-point Likert-type scale (1 = strongly disagree, 6 = strongly agree). Higher scores indicate stronger endorsement of "devaluation" of depressive feelings and "valuation" of happiness. Based on exploratory factor analysis with the items of VDS and mVHS, we removed one item of mVHS with low factor loading, and thus the three-item-mVHS was used for the analyses. Supplementary Material B details the information about VDS and mVHS, as well as the exploratory factor analysis results.

Depression

Depression symptom severitywas measured using the patient Health Questionnaire-9 (PHQ-9; see Kroenke et al., 2001), a nine-item self-report questionnaire designed to measure 9 symptoms of major depressive episode on a four-point Likert scale (i.e., 0 = not at all, 3 = nearly every day). Higher scores indicate higher levels of depression.

Statistical analyses

IBM SPSS Statistics (version 26. 0) was used for statistical analyses. List-wise deletions were used for missing values.

First, to test whether patients'happiness and depression beliefs changed after an intensive treatment (H1), a repeated-measures Analysis of Variance (ANOVA) was conducted with endorsement scores as a dependent variable (DV), Time (pre-treatment, post-treatment) and Beliefs (happiness belief, depression belief) as within-subject factors.

Second, we performed a multivariate regression analysis to examine whether changes in each extreme emotion evaluation uniquely predicted pre-and-post treatment depression changes (H2). To examine pre-and-post treatment changes, we computed residualized change scores for each measure. Residualized gain scores are

1) Given that the PHP patients were to complete a large set of questionnaires, four items were selected to minimize the number of questions and, thus, the participant's burden.

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recommended when variables at Time 1 likely influence variables in Time 2, as these orthogonalized gain scores account for the influence of early scores on later ones (Cohen et al., 2013). To make interpretation easier, we multiplied these scores by -1 so that larger and positive scores indicate greater changes in post-treatment. A multi-variate regression model was run with depression change scores as an outcome variable and changes in the VDS and mVHS as predictors. To further control for demographic variables, treatment days, and primary diagnosis, a hierarchical regression analysis was performed. In the regression models with depression change scores as an outcome variable, we first entered demographic variables and treatment days as predictors, and then entered the change scores ofthe VDS and mVHS in the second step.

Results[2)]

The average age of the patients was 34. 2 (55. 7% female). Most patients identified themselves as white and heterosexual. Detailed demographic and clinical characteristics of patients are presented in Table 1. Results from correlational analysis (see Supplementary Material C) showed that both depression and happiness beliefs were significantly associated with depression symptom severity at discharge ($r = .157$ for happiness belief, $r = .247$ for depression belief), but not at admission ($ps > .05$).

Did extreme emotion beliefs change after treatment?

The results of repeated measures ANOVA showed a significant main effects of Time, $F(1,217) = 22.64$, $p < .001$, $\eta p^2 = .094$ and Beliefs, $F(1,217) = 427.48$, $p < .001$, $\eta p^2 = .663$. Patients reported significantly lower scores across beliefs after treatment than admission, 3.05 (1.0; pre-treatment *mean* and *SD*) vs. 2.73 (.89; post-treatment), $p < .001$. Across time, the extent to which patients valued happiness was greater than they devalued depressive feelings, 3.48 (.99, happiness) vs. 2.25 (.93, depressive feelings).

To further examine the potential moderating role of clinical diagnosis in changes in emotion beliefs after treatment, we added diagnosis (major depressive disorder group (F32.X or F33.X), bipolar disorder group (F30.9 or F31.X), and other diagnosis) as a be-

Table 1. *Demographic and Clinical Characteristics of the Sample*

Characteristic	Frequency	Percentage (%)
Age (yr)/Mean (*SD*)	34.26 (14.38)	
Biological sex		
Female	161	55.7
Male	128	44.3
Race		
American Indian or Alaskan Native	2	0.7
Asian	9	3.1
Black or African American	8	2.8
White	260	90.0
Native Hawaiian or Pacific Islander	2	0.7
Other	9	3.1
Do not know	5	1.7
Sexual orientation		
Bisexual	34	11.8
Gay/Lesbian	17	5.9
Heterosexual	207	71.6
Queer	13	4.5
Other	7	2.4
Employment		
No	139	48.1
Part-time	40	13.8
Full-time	105	36.3
Clinical Diagnosis		
[F33.X] Major depressive disorder, recurrent	149	51.5
[F32.X] Major depressive disorder, single	26	9.0
[F31.X] Bipolar disorder	63	21.8
[F41.X] Other anxiety disorders	17	5.8
[F42.X] Obsessive-compulsive disorder	8	2.8
[F29] Unspecified psychosis	6	2.1
[F43.1] Post-traumatic stress disorder	5	1.7
Other	15	5.3
Pre-treatment measures/Mean (*SD*)		
Depression*	13.94 (6.42)	
Depression Belief	2.50 (1.14)	
Happiness Belief	3.54 (1.09)	
Post-treatment measures/Mean (*SD*)		
Depression*	7.25 (5.51)	
Depression Belief	2.12 (1.01)	
Happiness Belief	3.26 (0.94)	

Note. Clinical diagnosis by psychiatrists based ontheInternational Classification of Diseases (ICD-10); Depression, Patient Health Questionnaire-9; Depression belief, valuing depression scale; Happiness belief, modified valuing happiness scale. *Using a paired *t*-test, we found that patient's depression symptoms significantly improved after treatment, $t(228) = 18.54$, $p < .001$, $d = 1.22$.

2) Results from additional analyses are presented in Supplementary material D.

Table 2. *Hierarchical regression analysis of predictors of treatment outcomes*

Predictors	*B*	*SE*	*β*	*t*	*p*	R^2	ΔR^2	ΔF	*p*
Model 1						.012	.012	.357	.926
Treatment days	-.067	.094	-.051	-.721	.471				
Age	.017	.022	.057	.786	.433				
Biological sex	-.418	.582	-.051	-.717	.474				
Sexual orientation	-.487	.631	-.055	-.772	.441				
Race	-.688	1.058	-.046	-.651	.516				
Employment	-.035	.311	-.008	-.112	.911				
Diagnosis	-.034	.350	-.007	-.097	.923				
Model 2						.094	.082	9.135	< .001
Treatment days	-.044	.090	-.033	-.485	.628				
Age	.021	.022	.067	.950	.343				
Biological sex	-.527	.562	-.064	-.938	.349				
Sexual orientation	-.510	.614	-.058	-.830	.408				
Race	-.731	1.021	-.049	-.716	.475				
Employment	.028	.300	.006	.093	.926				
Diagnosis	-.061	.337	-.012	-.182	.856				
Depression belief*	1.036	.369	.206	2.811	.005				
Happiness belief*	.683	.359	.139	1.903	.058				

Note. *Variables are residualized change scores; treatment days, the number of treatment days; biological sex (0 = female, 1 = male), race (0 = other, 1 = White); sexual orientation (0 = other, 1 = heterosexual); employment (-1 = not employed, 0 = part-time, 1 = full-time); diagnosis (-1 = bipolar disorders, 0 = other, 1 = depressive disorders).

tween-subject factor to the model. The main results remained significant, $F(1, 215) = 13.45$, $p < .001$, $\eta p^2 = .059$ for Time and $F(1,215) = 297.05$, $p < .001$, $\eta p^2 = .580$ for Beliefs. The Time*Diagnosis interaction was marginally significant, $F(2, 215) = 3.02$, $p = .051$, $\eta p^2 = .027$. Bonferroni-corrected comparison analyses ($\alpha = .008$) showed that emotion beliefs across emotion decreased after treatment in patients with major depressive disorders and bipolar disorders ($ps < .001$), but not in patients with other diagnosis ($p = .994$).

Did changes in extreme emotion beliefs predictgreater changes in depression?

As predicted, we found that changes in each extreme beliefs uniquely predicted changes in depressive symptoms after controlling foreach other's impacton the treatment outcomes, $B = .95$, $SE = 35$, 95% CI [.24, 1.65], $t = 2.65$, $p = .009$ for depression beliefs and $B = .74$, $SE = .34$, 95% CI [.05, 1.43], $t = 2.13$, $p = .034$ for happiness beliefs. While controlling for the impacts of demographic information, treatment days, and primary diagnosis, beliefs about the values of depressive feelings remained as a significant predictor (Table 2).

Discussion[3)]

This study investigated the relationship between beliefs about the values of depressive feelings and happiness in treatment-seeking patients. We found that both happiness and depression beliefs were significantly reduced via intensive CBT treatment. Changes in emotion beliefs were significant only in patients with mood disorders and not in patients with other mental disorder. This may indicate that emotion beliefs are more relevant to mood-related disorders than other psychopathologies.

In addition, we found that greater changes in emotion beliefs predicted greater changes in depression after treatment. Particularly, beliefs about the values of depressive feelings remained a significant predictor of depression symptom reduction after accounting for the impact of demographic variables, treatment days, and primary diagnosis on depression improvement. These results are consistent with a previous meta-analysis showing that attitude towards depression-related emotions have a stronger relationship with depression symptoms than attitudes towards positive emo-

3) Further discussion is presented in Supplementary Material E.

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tions (Yoon et al., 2018). However, research on beliefs about the values of emotions has centered on happiness valuation and rarely examined depressive feelings. Our study demonstrated the importance of examining beliefs about depressive feelings to better understand depression predictors. Further, our results suggest that helping individuals with mood-related difficulties devalue their depressive feelings less might be particularly important in their recovery from depression, even more than their beliefs about happiness.

This naturalistic study has several limitations. First, it did not include a control clinical group that did not receive treatment. This limited our ability to test whether changes in extreme beliefs were indeed caused by treatment. Second, the psychometric properties of our emotion beliefs scales were not thoroughly tested. We suggest future research to re-examine this topic with measurements that have been pre-tested in its validity and reliability in a psychiatric patient sample. Despite these limitations, this study significantly contributes to the literature by indicating that extreme emotion beliefs are important and amenable treatment targets.

Author contributions statement

Sunkyung Yoon, Assistant Professor at Sungkyunkwan University in South Korea, reviewed the literature, conducted data analysis, and wrote the first draft. Hans S. Schroder, Assistant Professor at the University of Michigan Medical School, reviewed the literature and provided feedback on the drafts. Thröstur Björgvinsson, Director of the Behavioral Health Partial Hospital Program at McLean Hospital and Associate Professor at Harvard Medical School, designed the data collection and provided feedback on drafts. All authors contributed equally to the manuscript.

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Mediating Effects of Self-criticism on the Rela-tionship Between Perceived Burdensomeness and Suicidal Ideation

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Suicide among young adults is global social issue. Suicidal ideation is recognized to be a key predictor of suicide. According to the interpersonal theory of suicide (IPTS), suicidal ideation is associated with perceived burdensomeness. In interpersonal relationships, perceived burden-someness as a distorted evaluation of one's value leads to self-criticism. Suicide is described as "arrested flight" in an evolutionary context and is explained as a way to escape from self-criticism. Thus, self-criticism may be a necessary risk factor for suicidal ideation. This study verified whether self-criticism (self-criticizing and self-attacking) mediates the relationship be-tween perceived burdensomeness and suicidal ideation among young adults. The results showed that self-criticizing and self-attacking partially mediated the relationship between per-ceived burdensomeness and suicidal ideation, with self-attacking having a greater effect. Ther-apeutic interventions appropriate for the degree of self-criticism are required in clinical inter-ventions and suicide prevention programs for young adults.

Keywords: perceived burdensomeness, suicidal ideation, self-criticism, interpersonal theory of suicide

Introduction

Suicide is a comprehensive concept that includes suicidal ideation, suicide attempt, and actual suicide. Of these, suicidal ideation refers to thoughts related to death, suicide, and self-harm. This means believing that suicide is a clear and acceptable solution to an individual's perceived situation or problem (Reynolds, 1998). Suicidal ideation is considered a predictive indicator of suicide attempt and actual suicide. The Institute of Medicine (2002) also emphasized that suicid-al ideation should be considered a serious and dangerous problem that is equivalent to actual suicide behaviors.

Stress involving social factors can be fatal to individuals (Ferragud et al., 2010). Thus, it is im-portant to explore the association between psychosocial problems and suicide. The interpersonal theory of suicide (IPTS) explains the value of an individual's existence in interpersonal relationships and suggests that two factors —thwarted belongingness (TB) and perceived burdensome-ness (PB)—induce the desire to commit suicide (Joiner, 2009). In other words, the desire to commit suicide is triggered when people feel alienated and disconnected from social relationships and perceive themselves as incompetent, helpless, and burdensome to those around them.

With increasing empirical evidence for the IPTS, it has been verified that PB has a strong asso-ciation with suicidal desire. For instance, PB is a consistently powerful and reliable predictor of suicidal desire compared to TB (George et al., 2017; Hill & Pettit, 2019), and is more resistant to change than TB following treatment (King et al., 2018). Therefore, clinicians and researchers alike should consider PB important in understanding and treating people with suicidal thoughts.

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PB consists of two dimensions: burden on others and hatred for oneself (Van Orden et al., 2010). When an individual becomes frustrated by their desire to contribute meaningfully to others, they consider themselves helpless and incompetent and assume the blame themselves. By contrast, people who are frustrated with their belongingness also feel resentment toward those who isolate them, meaning the target of attack is divided toward themselves and others (Buckley et al., 2004; Dewall et al., 2009). In general, internal attribution in relation to negative events can lead to depression and suicidal ideation (Baumeister, 1990). Thus, PB results in self-assessment that identifies the self as inappropriate, as well as experiencing more negative self-directed emo-tions, which can lead to suicidal desire.

Self-criticism may be related to the process by which PB induces suicidal desire. Self-criticism is representative of dysfunctional beliefs, which are the result of a negative evaluation of oneself (Choi et al., 2013). Findings from a study with a large community sample show that PB is strongly related to self-criticism (Turnell et al., 2019). In addition, increased PB levels predict increased depression, negative self-perception, and decreased self-efficacy (Kowal et al., 2012). Increased levels of PB can also cause self-aggression and self-criticism, because PB is a distorted self-evaluation that damages closed people due to a lack of perceived ability of the self (Joiner, 2009; Van Orden et al., 2010).

Multiple previous studies have verified the association between self-criticism and suicidal de-sire (Falgares et al., 2017; O'Connor & Noyce, 2008). Gilbert and Allan (1998) described suicide as "arrested flight" in an evolutionary context and suggested that it was influenced by negative evaluation of oneself and difficulty in solving problems. Furthermore, Baumeister (1990) ex-plained that suicide is a way to escape from self-hatred induced by the internalization of failure. In this context, self-criticism can act as a persistent stressor, and for some people, ruthless self-attacks can lead to suicidal desires. Indeed, self-critical individuals showed more suicidal inten-tions to escape from either their perceived failure to achieve or thwarted needs. Moreover, they attempted suicide with a higher probability, and finally committed suicide (Fazaa & Page, 2003).

Self-criticism consists of two concepts: self-criticizing (SC) and self-attacking (SA) (Gilbert et al., 2004), where SC refers to self-inadequacy, which is related to incompetence and inferiority based on mistakes or inadequacies. SA refers to self-harm, which is related to feeling resentment and disgust at oneself and wanting to destroy oneself. The two factors of self-criticism are fun-damentally associated with maladaptation, although SC is also responsible for self-correcting functions by reflecting on one's mistakes or inadequacies and correcting future errors (Driscoll, 1989). By contrast, SA functions to persecute and abuse the self, which can lead to helplessness, hopelessness, and defeat (Sloman, 2008).

Castilho et al. (2016) suggested that SC and SA have different patterns of influence on the psychopathological symptoms. Specifically, SA predicted all psychopathological variables such as depression, anxiety, and stress, but SC only predicted stress. This may be explained by the effects of the self-monitoring and self-correcting functions of SC, suggesting that SC and SA have distinct influence. The current study thus assumes that SC and SA are related to suicidal desire as sub-factors of self-criticism, although SA is closer to suicidal desire and suicide than SC.

Taken together, PB causes individuals to make distorted evaluations of their own values. Sub-sequently, the process of self-criticism based on distorted self-evaluations gives rise to a suicidal desire. Since self-criticism has distinct functions in this process, it is suggested that the process should be verified according to the subdivisions of SC and SA. Therefore, the current study aims to test a mediational model where self-criticism is a mediator between the predictor variable PB and the outcome variable suicidal ideation, and determine whether there are different indirect effects of SC and SA.

Methods

Procedure

All Participants were recruited online. Participants completed an online survey via Google Forms and were rewarded with compensation. Through the online survey, all participants were given basic information, including instructions and an overview of the study. After providing informed consent, participants were able to continue with the survey, and were informed that they could withdraw at any time. The entire procedure was approved by the Institutional Review Board (Approval No. 1041078-202208-HR-171) and adhered to the Declaration of Helsinki.

Participants

A total of 344 participants were recruited from Korea: 32.0% were men ($n = 110$) and 68.0% were women ($n = 234$). The participants' ages ranged from 18 to 29 years, and the mean age was 22.42 years ($SD = 3.28$). More than half of the participants resided in Seoul Metropolitan Area.

Measures

The Korean Version of the Interpersonal Needs Questionnaire–Revised (K–INQ–R), Perceived Burdensomeness Subscale

The INQ-R is a self-report scale modified by Van Orden (2009) on the INQ based on the IPTS. The current study used the perceived burdensomeness subscale consisting of 16 items rated on a 7-point Likert scale, with a total score ranging from 16 to 112. The Korean version was translated by Cho (2010). The perceived burdensomeness subscale showed good internal consistency in the original studies by Van Orden (2009) and Cho (2010), with values of $\alpha = .89$ and $\alpha = .95$, respec-tively. The internal consistency indicated in the current study was .89.

The Korean Version of the Beck Scale for Suicide Ideation (K–BSSI)

The Beck Scale for Suicide Ideation (BSSI) is a self-report scale developed by Beck et al. (1979) to measure the presence and intensity of suicide ideation. It is a 19-item scale, and each item is rated based on an ordinal scale from 0 to 2, with a total score ranging from 0 to 38. Individual responses to the first five items are excerpted. If an individual's response to the fifth item is posi-tive (score of 1 or 2), they answer the rest of the items, while if the fifth item is not positive the questionnaire is completed. The Korean version was translated and validated by Lee and Kwon (2009). The BSSI showed appropriate internal consistency in Lee and Kwon (2009) with a value of $\alpha = .74$. The internal consistency indicated in the current study was .89.

The Korean Version of the Form of Self–Criticizing/attacking and Self–reassuring Scale (K–FSCRS), Self–Criticizing/self–attacking Subscale

The FSCRS is a self-report scale developed by Gilbert et al. (2004) to measure levels of self-criticism and self-reassurance. The current study used the SC and SA subscales consisting of 6 items and 4 items, respectively. Each item is rated on a 5-point Likert scale with a total score ranging from 6 to 30 (SC) and from 4 to 20 (SA). The Korean version was translated and vali-dated by Cho (2011). The SC and SA subscales showed acceptable internal consistency in Cho (2011), with the values $\alpha = .86$ and $\alpha = .72$, respectively. Internal consistency indicated in the cur-rent study was .87 and .85, respectively.

Data Analysis

Data from 344 participants were used for the final analysis (with 2 insincere responses excluded). Data analysis was conducted using IBM SPSS (v.26.0). The internal consistency of each meas-urement was calculated using Cronbach's α coefficient. Pearson's correlations were calculated for PB, SC, SA, and suicidal ideation. Mediational analysis was conducted to investigate: (1) SC as a mediator between PB and suicidal ideation; (2) SA as a mediator between PB and suicidal ide-ation. The PROCESS Macro (v.4.1) Model 4 (Hayes, 2022) was used to examine a parallel medi-ation model with two potential mediators (SC and SA) in the relationship between PB and sui-cidal ideation. The indirect effect was tested using 95% confidence interval and 5000 bootstraps resamples for percentile bootstrapping.

Results

Descriptive Statistics

The descriptive statistics are presented in Table 1. Most participants were either single or not mar-ried (97.4%) and either attending or had attended university (82.6%). The mean scores were as follows: PB was 41.46 ($SD = 14.19$), SC was 20.39 ($SD = 5.85$), SA was 9.26 ($SD = 4.14$), and suicidal ideation was 7.33 ($SD = 5.97$). According to the suicidal ideation severity levels based on previous research (Shin, 1993), 105 individuals (30.52%) reported suicidal ideation requiring clinical attention. More specifically, 27 participants were classified as "moderate" (7.85%), 29 participants were "severe" (8.43%), and 49 participants were "extreme" (14.24%).

Correlations

The correlation results are presented in Table 2. All correlation coefficients between variables were significant. Specifically, PB was

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Table 1. *Descriptive Statistics of the Sample*

Variable	N (%)
Sex	
Male	110 (32.0)
Female	234 (68.0)
Age (yr)	
M	22.42
SD	3.28
Education	
High school graduate	36 (10.5)
College	9 (2.6)
University	284 (82.6)
Postgraduate	15 (4.4)
Marriage status	
Single or not married	335 (97.4)
Married	9 (2.6)
Separated or widowed	-
Suicidal ideation	
Nonexistent or mild	239 (69.48)
Moderate	27 (7.85)
Severe	29 (8.43)
Extreme	49 (14.24)

Table 2. *Means, Standard Deviations, and Correlations between Key Variables*

Variable	*M*	*SD*	1	2	3	4
1 PB	41.46	14.19				
2 SC	20.39	5.85	.532***			
3 SA	9.26	4.14	.729***	.665***		
4 Suicidal Ideation	7.33	5.97	.568***	.499***	.633***	

PB = Perceived Burdensomeness, SC = Self-Criticizing, SA = Self-Attacking.
***$p < .001$.

significantly positively correlated with suicidal ideation ($r = .568$, $p < .001$), SC ($r = .532$, $p < .001$), and SA ($r = .729$, $p < .001$). SC was significantly posi-tively correlated with SA ($r = .665$, $p < .001$), and suicidal ideation ($r = .499$, $p < .001$). SA was significantly positively correlated with suicidal ideation ($r = .633$, $p < .001$).

Mediational Analysis

The results of the direct effect between variables in the mediation model are shown in Table 3. These results indicate that PB positively predicted SC ($B = .219$, $p < .001$), and SC positively predicted suicidal ideation ($B = .125$, $p < .05$). Likewise, PB positively predicted SA ($B = .213$, $p < .001$), and SA positively predicted suicidal ideation ($B = .569$, $p < .001$).

Table 3. *Results of Direct Effect between Variables in the Mediation Model*

Direct Effect		*B*	*S.E.*	*t*	Boot 95% CI	
Outcome Variables	Predictor Variables				*LLCI*	*ULCI*
SC	PB	.219	.019	11.626***	.182	.257
SA	PB	.213	.011	19.700***	.191	.234
Suicidal Ideation	PB	.091	.025	3.599***	.041	.140
	SC	.125	.056	2.233*	.015	.235
	SA	.569	.098	5.808***	.376	.762

PB = Perceived Burdensomeness, SC = Self-Criticizing, SA = Self-Attacking.
*$p < .05$, ***$p < .001$.

Table 4. *Results of Total Effect and Direct Effect of Perceived Burdensomeness on Suicidal Ideation*

	B	*S.E.*	*t*	Boot 95% CI	
				LLCI	*ULCI*
Total effect	.239	.019	12.772***	.202	.276
Direct effect	.091	.025	3.599***	.041	.140
Model summary	$R^2 = .323$, $F(1, 342) = 163.135$***				

***$p < .001$.

Table 5. *Results of Indirect Effect of Self-Criticizing and Self-Attacking*

Indirect Effect	Effect Size	Boot *S.E.*	Boot 95% CI	
			LLCI	*ULCI*
Total	.148	.024	.102	.199
SC	.027	.013	.001	.053
SA	.121	.029	.066	.180

SC = Self-Criticizing, SA = Self-Attacking.

The results of total effect and direct effect of PB on suicidal ideation are shown in Table 4. The total effect of the relationship between PB and suicidal ideation in the absence of the mediators was significant $B = .239$ (95% bootstrap CI = [.202, .276]). The direct effect of the relationship between PB and suicidal ideation, controlling for self-criticism (SC and SA) was still significant at .091 (95% bootstrap CI = [.041, .140]).

The results of the indirect effect of SC and SA are shown in Table 5. The indirect effects were significant, through SC .027 (95% bootstrap CI = [.001, .053]), and SA .121 (95% bootstrap CI = [.066, .180]). The difference of indirect effects (SC–SA) was significant ($B = -.094$, Boot *S.E.* = .038, 95% bootstrap CI = [-.171, -.020]). Thus, while both self-criticism dimensions par-tially mediate the

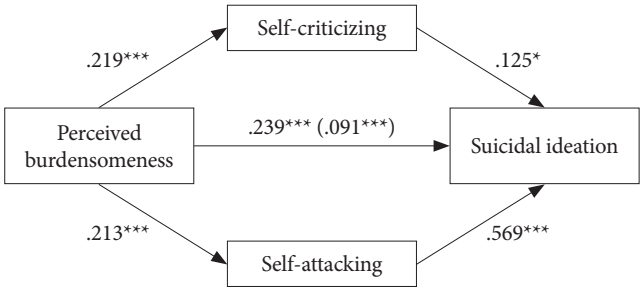

Figure 1. *Mediation of perceived burdensomeness and suicide ideation by self-criticizing and self-attacking. *p < .05, ***p < .001.*

relationship between PB and suicidal ideation, with SA exerting a greater effect, PB still independently influences suicidal ideation (Figure 1).

Discussion

The current study examined whether SC and SA mediated the effect of PB on suicidal idea-tion among 344 young adults in South Korea. As hypothesized, the mediating effects of SC and SA were significant. First, all correlation coefficients between PB, SC, SA, and suicidal ideation were significant, and all showed positive correlations with each other. This result is consistent with previous studies reporting the association between key variables (Fazaa & Page, 2003; George et al., 2017; Turnell et al., 2019).

Second, a major finding of the present study was that PB exerted its effect on suicidal idea-tion via SC and SA as mediators. Namely, we found that higher levels of PB were associated with higher levels of self-criticism, which may lead to higher suicidal ideation. This is in line with a previous study that shows how more individuals with high PB commit suicide when they blame themselves than when they understand and care for themselves during painful moments (Rabon et al., 2019). Furthermore, this finding is consistent with Joiner's argument that the perceived (distorted) thoughts of being a burden to others and having hatred of oneself can lead to self-criticism, which can cause suicidal ideation (Joiner, 2009). Therefore, this suggests that many people with high PB tend to distort and devalue their self-worth in interpersonal relationships, and such continuous self-criticism can eventually give rise to suicidal desire.

Third, SA exerted a greater effect than SC on the association between PB and suicidal idea-tion. Although SC and SA are the two sub-factors of self-criticism, SA may be more important in terms of the effect of PB on suicidal ideation because it only functions as persecution and self-abuse (Sloman, 2008), while SC also functions as self-correction (Driscoll, 1989). Similar to our result, a study by Castilho et al. (2016) found that both variables (SC and SA) had different pat-terns of influence on psychopathological symptoms, and SA acted as a more mortal factor for mental health than SC did.

The implications of the current study are as follows. First, this study provides specific infor-mation on the association between PB and suicidal desire by comprehensively verifying PB, sui-cidal ideation, and self-criticism. Most studies on PB have focused on "responsibility," while few have explored self-hatred (e.g., self-blame, self-criticism, or self-attack) as an indicator of suicide, so there is a lack of discussion about the process of PB leading to suicide. The current study ex-plains the mechanism by which PB leads to suicidal desire in the context of self-criticism by veri-fying the mediating effects of SC and SA on the relationship between PB and suicidal ideation. This provides specific evidence that PB experienced in relationships with others can affect sui-cidal desire under the influence of SC and SA at the personal level.

Second, the results of the present study strengthen the explanation that although there is a close relationship between SC and SA, self-correcting functions are dominant in SC and self-abuse functions are dominant in SA (Gilbert et al., 2004). In other words, there are many parts that are shared between SC and SA, but there are parts that are independent of each other, and it is those independent parts that are related to suicidal ideation. These results suggest that there is a need for therapeutic intervention appropriate to the level of self-criticism by classifying those exhibiting self-criticism into two independent groups in clinical intervention. For example, for with have strong SC, treating cognitive corrections to their distorted values in interpersonal rela-tionships as a therapeutic focus, and for those with strong SA, helping them fully experience and strengthen self-compassion, such as compassion focused therapy (CFT). This will contribute to the reduction of suicidal desire.

Third, the current study verified the mechanism between PB and suicidal desire among young adults. In early adulthood, they are pressured to break out of adolescence, modify patterns of social interaction, and experience extended interpersonal relationships.

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Since these burdens and stresses may lead to fatal psychological problems such as suicide (Cerbone & Larison, 2000), clinical attention is needed on the effects of stress caused by interpersonal relationships in young adults. Thus, the current study provides a theoretical basis for interventions that can contribute to the reduction of suicidal desire in early adulthood by identifying the process by which suicidal desire is triggered when young adults experience frustration in interpersonal relationships as well as verifying changeable variables that can affect the process.

The interpretation of our results is limited in that the current study was not conducted on a clinical group and the results were derived using cross-sectional data. In future studies, it is nec-essary to classify the suicide risk group and to apply various methodologies such as longitudinal and experimental designs to identify inferences of the causal relationships between variables. Another limitation is that the present study focused only on suicidal ideation. As PB and self-criticism have been found to be factors that significantly affect suicidal ideation, studies consid-ering other suicide-related behaviors should be conducted. This will expand on the results of this study by identifying in-depth the effect of PB and self-criticism on suicide. Finally, the effect of stress, which includes social factors, is likely to vary by gender. In this study, the possibility of these differences was not considered; however, in future studies, it will be necessary to conduct an analysis by classifying samples by gender. Since gender differences have been reported in the patterns or results of suicidal ideation and suicidal behavior, the results of this study will be con-cretized through future studies that consider gender differences.

In conclusion, the current study investigated whether SC and SA indirectly affect the associa-tion between PB and suicidal ideation. Consequently, it was found that SC and SA partially me-diated the relationship, and SC in particular was found to be a more significant variable. These findings provide a theoretical explanation for suicide among young adults, which is a serious social issue today. Furthermore, it provides empirical evidence for effective suicide prevention programs.

Author contributions statement

SIK, a graduate student at Chung-Ang University, conceptualized the research, collected and analyzed the data, and wrote the original draft of the manuscript. MHH, a professor at Chung-Ang University, served as the principal investigator for the research grant, supervised the research process, and reviewed and edited the manuscript. All the authors provided critical feedback, participated in the revision of the manuscript, and approved the final submission.

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