

ORIGINAL**Effect of guided, structured, writing program on self-harm ideations and emotion regulation**Takaki Fukumori¹, Hiromi Kuroda², Masaya Ito³, and Masami Kashimura⁴¹Graduate School of Integrated Arts and Sciences, Tokushima University, Tokushima, Japan, ²Hiratani Child Developmental Clinic, Fukui, Japan, ³National Center for Cognitive Behavior Therapy and Research, National Center of Neurology and Psychiatry, Tokyo, Japan, ⁴Department of Medical Psychology, Nippon Medical School, Tokyo, Japan

Abstract : **Aims :** This study investigated the efficacy of structured writing on reducing self-harm ideations and enhancing emotion regulation. **Methods :** Japanese university students (N=22) participated in the study. Participants were randomly assigned to the structured writing group (n=10 ; 70% female), or an assessment only control group (n=12 ; 67% female). For three consecutive days, participants in the intervention group performed structured writing that included psycho-education and self-reflection about emotions. The Self-Harm Ideation Scale, the Generalized Expectancy for Negative Mood Regulation Scale, and the Acceptance and Action Questionnaire-II were used to assess outcomes. **Results :** Structured writing had a short-term effect on expectancies for self-regulation of negative moods and acceptance of negative emotions, but had a limited effect on self-harm ideations. **Conclusion :** This study presents preliminary evidence that increasing awareness, learning, and reflection about emotions resulting from using a structured writing program is particularly useful for regulating emotions. *J. Med. Invest.* 64 : 74-78, February, 2017

Keywords : structured writing, self-harm, emotion regulation

INTRODUCTION

Self-harm, which is defined as deliberate and voluntary physical self-injury without any conscious suicidal intent (1, 2), has gained increased attention (3-5). Self-harm behavior is clinically significant and requires immediate intervention. It has been conceptualized as serving an emotion-regulating function (6, 7) such that it may facilitate avoidance of uncomfortable and distressing internal experiences (6, 8). Burks & Harrison (8) and Gratz (6) provide the rationale for targeting avoidant strategies in self-injurious people, as a clinical intervention for this condition. Other studies have suggested that to treat self-harm behavior, the person's behavior pattern must be changed from an avoidance stance to acceptance, or mindfulness (9, 10).

Recent studies have suggested that writing plays a significant role in processing a person's emotions and in reducing chronic avoidance patterns (11, 12). It is known that writing promotes confrontation of a problem during the same treatment period (13), more than conversation. Furthermore, face-to-face intervention is hard for people that are acting out because they might use the discussion to manipulate others (14). Also, writing is more economically and readily available for many people with emotional difficulties.

On the other hand, it is known that individuals tending to avoid their emotions do not receive many benefits from highly flexible writing techniques such as Pennebaker's expressive writing paradigm (15) because avoidant people have difficulties in apprehending or processing their emotional experiences. It is hard for avoidant individuals to freely write about their experiences, therefore, they need a more structured and a less ambiguous writing method.

However, to date, there are mostly no investigations on the effects of structured writing on such people.

This study took the functionality of emotions and deficiencies in the capacity of self-injurious people to experience the full range of emotions into consideration in explaining emotion regulation of such people (16, 17). This perspective is essential to dialectical behavior therapy (DBT ; 7, 18). DBT is an empirically supported treatment for borderline personality disorder and self-harm behavior (19), on the other hand, this treatment is time intensive and costly, and is not available in many communities (20). Thus, there is a need for substitute interventions that are less intensive and more accessible.

The elements of structured writing used in this study consisted of (a) promoting awareness of the person's emotions, (b) understanding the function of emotions, and (c) learning the distinction between primary and secondary emotions (21, 22). Acceptance skills, which are central components of DBT (7) were not directly treated in this study. However, writing about emotions and experiences according to the elements described above was considered as being identical to observing emotions and experiences of the self from a metacognitive perspective, which would lead to distancing the self from emotions.

The present study was designed to provide preliminary data on the effects of structured writing on self-harm behavior and emotion regulation among university students. The study was conceived as an analog study, which targeted non-clinical groups, and therefore, self-harm ideations were investigated instead of self-harm behaviors. We expected that the findings of this study result in evidence-based interventions for people at high risk for engaging in self-harm behaviors.

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METHOD*Participants*

The Self-Harm Ideation Scale was administered to students in a

national university in western Japan to screen and recruit participants. A total of 765 students responded and 138 expressed interest in the study. Of these, students that scored zero for self-harm ideations (N=81) and those that had received, or were undergoing mental health treatment (N=1) were excluded from the study, such that there were 56 possible candidates. They were stratified and randomly assigned to the intervention or the control group, based on their self-harm ideation score and were requested to participate in the study, after explaining the criteria of the group they were assigned. Of these, 33 students (18 in the intervention group and 15 in the control group) agreed to participate. One participant from each group did not show up on the appointed day and dropped out of the study. Furthermore, data of participants with baseline SHI scores of zero (intervention group : n=7, control group : n=2) were excluded from the analysis because these scores could not be compared. As a result, data of 10 participants in the intervention group (three men and seven women, 19.40±1.43 years, age range : 18-22 years) and 12 participants in the control group (six men and eight women, 19.08±1.00 years, age range : 18-21 years) were analyzed.

Intervention

A three-day individual intervention program of structured writing was developed. This intervention incorporated the emotion regulation group program (17) and the DBT workbook (19). Each participant in the intervention group performed psycho-educational structured writing for three consecutive days. Participants in the control group were not required to do the writing tasks, but only the baseline and follow-up assessments. The writing task was conducted for approximately 25 minutes a day in a soundproof chamber, by using a workbook. Table 1 provides an outline of the topics used on the three days.

The first activities on each day consisted of psycho-education, and the last activity consisted of self-reflection by writing. We used A4 sized workbooks with a cover sheet. The workbooks had pages with psycho-educational material and pages for writing self-reflections. In the self-reflection section for each day, participants were asked to recall an event that hurt their feelings, made them confused, and still torments them today. Then, they were requested to reflect about themselves and write down their reflections, based on the content of the psycho-education section for that day. Participants were asked to recall and write about the same event during every session.

Procedure

Before commencing the experiment, each participant’s oral and written informed consent was obtained. The researchers informed the participants that their participation in the study was entirely voluntary and that they could decide to terminate their participation at any time without suffering any negative consequences. Moreover, participants were informed that their personal information would be treated with strict confidentiality. The Ethics Committee

of the Faculty of integrated arts and sciences, Tokushima University, approved this study.

We explained the schedule and the time limits for performing the tasks. Participants were also given information on how to contact a counselor if they experienced emotional pain during or after participating in the experiment. Participants in the intervention and control groups first completed a battery of self-report questionnaires described below as the baseline assessment. After enrollment, only the participants in the intervention group performed the writing tasks for three consecutive days. Following the writing tasks on each day, manipulation check indices were administered. Follow-up assessments were conducted two weeks and one month after the intervention in the intervention group, whereas these assessments were performed two weeks and one month after the baseline evaluation in the control group.

Measures

The Self-Harm Ideation Scale (SHI). The SHI is a 10-item measure that was specially developed for this study. This scale assesses the frequency of self-harm ideations during a 2 to 3-week period. Seven items of the scale (Table 2) are based on past studies that had investigated the incidence of self-harm behavior among college students (4, 23). It was considered that items of this scale might cause some participants to be shocked ; and therefore, three neutral, dummy items were also included in the scale to alleviate the possible shock of reading the scale, but these items were not used in the calculation of the total score. Participants are asked to indicate how often they have ideations about each item on a scale that consisted of 0 (never), 1 (seldom), 2 (occasionally), 3 (sometimes), 4 (frequently), and 5 (always). Higher scores indicated a greater frequency of self-harm ideations. This measure was administered at screening, baseline, and follow-up assessments.

The Japanese version of the Generalized Expectancy for Negative Mood Regulation Scale (NMR). The NMR (24) is a 25-item measure that assesses expectancies for negative mood regulation.

Table 2 Items of the SHI

1) Go traveling somewhere where there are no people*
2) Scratch myself
3) Bang my head against something
4) Shout loudly*
5) Hurt parts of my body with a sharp tool
6) Punch myself in the face or body
7) Strongly bite parts of my body
8) Burn myself with something
9) Bang any part of the body into something
10) Watch a sad movie and cry until I am satisfied*

Note. –SHI, Self-Harm Ideation Scale. *dummy item.

Table 1 Outline of the topics for structured writing

	Topic	Content
Day 1	What are emotions	a. Variety of emotions b. Emotional awareness c. Self-reflection
Day 2	Function of emotions	a. Function 1 : Preparation for appropriate actions b. Function 2 : Understanding what is going on c. Self-reflection
Day 3	Distinction between primary and secondary emotions	a. Primary and secondary emotions b. Focus on your primary and secondary emotions c. Self-reflection

This scale was translated from the original NMR (25) to Japanese. Then, several phrases that were difficult to understand in Japanese compared to the original meaning were revised. Although it has been pointed out that this scale places excessive stress on the control of negative emotions (26), it is the most commonly used measure of emotion regulation designed to assess perceived effectiveness of altering negative moods (26). Expectancies for negative mood regulation are considered an index of non-adoptive emotion regulation, such as self-harm because non-adoptive emotion regulation is a consequence of the lack of confidence in regulating negative moods and alleviating overwhelming emotions (4). Items of this scale are rated on a five-point scale, ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating greater expectancies for the self-regulation of negative moods. This scale has high internal consistency ($\alpha = .83-.90$), adequate criterion-related and predictive validity, and adequate test-retest reliability (24). The NMR was administered at baseline and follow-up assessments.

The Japanese version of the Acceptance and Action Questionnaire-II (AAQ-II). The AAQ-II (27) is a 10-item measure that was translated from the original AAQ-II (28). This scale assesses acceptance and experiential avoidance, or the tendency to accept/avoid unwanted internal experiences. This scale is considered an index for assessing one dimension of emotion regulation because many items focus on the acceptance/avoidance of negative emotions. Items in the scale are rated on a seven-point scale, ranging from 1 (never true) to 7 (always true). Higher scores indicate greater acceptance of negative emotions. This scale has high internal consistency ($\alpha = .86$), adequate criterion-related validity, and appropriate test-retest reliability (27). The AAQ-II was administered at baseline and follow-up assessments.

Manipulation check. In addition to the above scales, the following subjective assessments were conducted for manipulation checks: (a) The degree to which the content was understood, (b) Clarity in recalling the event, (c) The degree of reflection about emotions, (d) The effort in performing the tasks. These manipulation check indices were scored on a subjective scale of 0-10.

Statistical Analysis

Mann-Whitney U tests and independent sample t-tests were used to evaluate differences in baseline between intervention and control groups. The median was used as the central tendency measure of the SHI because a normal distribution was not assumed for this measure. Effects of structured writing were also evaluated

using one of two statistical analyses: The Friedman test (baseline vs. 2-week follow-up vs. 1-month follow-up) was conducted with SHI scores of each group, and a repeated measures Analyses of Variance (rANOVA) was conducted with the scores of emotion regulation indices (NMR and AAQ-II) as the between participant factor (intervention vs. control) and time (baseline vs. 2-week follow-up vs. 1-month follow-up) as the repeated measure. A two-tailed p-value of less than .05 was considered statistically significant. All statistical analyses were performed using SPSS version 19.0.

RESULTS

Baseline Differences in Outcome Measures

Descriptive statistics for each group are shown in Table 3. The score for each scale was calculated by dividing the total score by the number of items in a scale. There were no statistically significant differences in SHI scores between the intervention and control groups at baseline ($U = 30.50$, $p = .05$, $r = .35$). Nor were any significant differences found between the groups on any of the emotion regulation indices at baseline (NMR: $t_{18,42} = -1.58$, $p = .13$, Cohen's $d = .65$; AAQ-II: $t_{18,56} = -1.82$, $p = .08$, Cohen's $d = .75$).

Validity of the Experimental Manipulation

The range of mean scores of all manipulation check variables in the intervention group was 5.60-9.00, especially, the degree of effort made in performing the tasks on all three days was above 8.5. Therefore, it was concluded that the experimental manipulation was valid.

Effectiveness of the Intervention on the Self-Harm Index

Results of Friedman tests indicated no significant between-time differences in either group (intervention: $\chi^2_2 = 5.24$, $p = .07$, Kendall's $W = .26$; control: $\chi^2_2 = 3.49$, $p = .18$, Kendall's $W = .15$). A test of the null hypothesis showed no significant differences in the intervention group, with the effect size in the intervention group being larger than that in the control group.

Effectiveness of the Intervention on emotion regulation Indices

Results of rANOVA indicated significant group \times time interactions in both NMR and AAQ-II scores ($F_2 = 3.74$, $p = .032$, $\eta_p^2 = .16$; $F^2 = 3.44$, $p = .042$, $\eta_p^2 = .15$, in order). The simple main effect of measurement time in the intervention group was significant for both

Table 3 Descriptive statistics and baseline differences for each group

	Intervention Group		Control Group		U/t	r/Cohen's d
	Me/Mean	QD/SD	Me/Mean	QD/SD		
Baseline						
SHI	1.21	0.68	0.29	0.43	30.50	.35
NMR	2.54	0.61	3.09	1.00	-1.58	.65
AAQ-II	3.81	0.51	4.33	0.82	-1.82	.75
2-week follow-up						
SHI	0.43	0.46	0.14	0.21	-	-
NMR	2.78	0.45	2.97	1.01	-	-
AAQ-II	4.17	0.62	4.23	0.66	-	-
1-month follow-up						
SHI	0.71	0.38	0.14	0.18	-	-
NMR	2.74	0.57	3.04	1.03	-	-
AAQ-II	4.07	0.65	4.17	0.77	-	-

Note. -SHI=Self-Harm Ideation Scale; NMR=Generalized Expectancy for Negative Mood Regulation Scale; AAQ-II=Acceptance and Action Questionnaire-II. Me (Median), QD (Quartile Deviation), U, and r were used only in SHI.

variables (NMR : $F_2=3.26$, $p=.049$; AAQ-II : $F_2=3.27$, $p=.048$). Bonferroni multiple comparison procedure indicated that both NMR and AAQ-II scores at 2-week follow-up assessment was higher than the scores at baseline assessment ($p<.05$). In the NMR, the effect sizes between baseline and 1-month follow-up indicated that Cohen's $d=.34$ in the intervention group, and Cohen's $d=-.05$ in the control group. In the AAQ-II, the effect sizes between baseline and 1-month follow-up indicated that Cohen's $d=.45$ in the intervention group and Cohen's $d=-.20$ in the control group.

DISCUSSION

This study was designed on the assumption that self-harm behaviors serve an emotion regulation function (6, 7). Therefore, an intervention to enhance the capacity for emotion regulation was expected to reduce the tendency for self-harm. Results indicated that the structured writing method developed in this study had positive effects, particularly on the regulation of emotions. This result suggest the possibility of applying this structured writing method as an intervention for the management, and for promoting and accepting negative emotions, which are known to significantly influence the mechanisms of self-harm behavior.

Unexpectedly, the effect of structured writing on self-harm ideations was not significant. This could be because the content of the structured writing program was focused on emotions, and did not directly address the issue of self-harm. This study was designed to verify the effects of an intervention program that focused on understanding and accepting one's emotions. As a result, problem-solving techniques that inhibit impulsive ideations and behaviors were not highly emphasized. The program should be modified to include elements of non-avoidant emotion regulation strategies and impulse control to increase the effects of the program on self-harm behavior, which are techniques used in emotion regulation group programs (17) and the DBT workbook (19). Moreover, it is also problematic that the effects of the program were more evident in the short-term (2-week) follow-up, rather than in the mid-term (1-month) follow-up. This could have resulted from the low frequency of practicing the intervention tasks. We propose that repetitive homework should be included in future designs of structured writing programs so that the effects of writing would be assimilated into the daily life of the participants.

This study provides preliminary evidence that psycho-education and reflection about emotions through writing are potentially useful for enhancing adaptive emotion regulation. However, the results must be evaluated with consideration to the following limitations of this study. The first limitation is the small sample size, which limited the validity of statistical conclusions of the study. The second limitation is that the control group did not engage in any alternative activity, although, as argued in the introduction, an expressive writing condition might have served as an adequate comparison group. The last limitation concerns the index of self-harm that was used, which was specially developed for this study. To date, there are no data on the reliability or the validity of this index. Furthermore, this index assessed ideations rather than actual behaviors. As a result of these limitations, the generalizability of these findings to clinical samples indulging in self-harm behavior should be evaluated carefully. It is suggested that further studies using clinical populations should also be undertaken to further validate the results of this study. The next step in developing this structured writing programs would be to investigate whether the effects observed in this study can be replicated with a larger clinical population. Also, the procedure and the content of the writing tasks should be revised to generate more sustained and reliable treatment effects by emphasizing homework, as well as by using writing modules that are directly targeted at preventing self-harm.

Moreover, the structured writing program developed in this study should not be limited to self-harm behaviors. In the future, we propose to investigate applications of the revised structured writing programs to populations suffering from other types of problems related to emotion regulation.

CONFLICT OF INTEREST

The authors declare no conflict of interest with the findings of this study.

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