Investigation of the reliability and validity of the Japanese Deliberate Self-Harm Inventory

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Abstract

The concept of self-harm behavior and the range of included behaviors are varied; therefore, a scale that can quantitatively ascertain specific behaviors is necessary to accumulate empirical data on self-harm behavior. The objectives of this study were to create a Japanese version of the Deliberate Self-Harm Inventory (DSHI), a self-administered scale on intentional self-harm behavior, and to evaluate its reliability and validity. Although there were minor issues with its internal

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consistency, test-retest reliability was sufficiently high, suggesting that the translated scale has test-retest reliability similar to that of the original version. Correlation analysis with existing scales showed that the Japanese version of the DSHI also had convergent and discriminant validity similar to that of the original version.

**Key words:** self-harm, self-injury, prevalence, reliability, validity

**Introduction**

Some reports suggest that the rate of self-harm is steadily increasing, and interest concerning self-harm behavior in young people is growing.

According to a systematic review by Owens et al., self-harm behavior and attempted suicide between the ages 10–19 increase the incidence of suicide 10 years later by several hundred-fold.

The treatment and management of self-harm behavior in adolescents and young adults are therefore urgent from the standpoint of diminishing the risk factors of suicide. Self-harm behavior is not rare by any means, and it poses significant challenges to the mental health of adolescents and young adults. Although previous studies have commonly reported mechanisms of self-harm behavior, especially in case studies in Japan, very few investigations of self-harm behavior have been supported by empirical data.

A U.S. study involving 439 randomly-selected adults demonstrated that the lifetime prevalence of non-suicidal self-injury (NSSI) was 5.9% with a 12-month prevalence of 0.9%. In Japanese studies conducted in nonclinical groups, it has been reported
that the lifetime self-injury rate is 9.85%,
while it is 3.3% in junior high school
students, 4.3% and 9.9% in both junior
high and high school students, and
6.9% in university students. Ae et
al. analyzed data from a nationwide
epidemiological survey and reported that
7.1% of individuals (3.9% of men and
9.5% of women) have engaged in
self-harm behavior at least once. As
shown here, there is significant
variability in the rate of self-harm
behavior depending on the study.

There are several reasons for such
discrepancies in the results. First, no
common scale is widely used in studies
related to the rate of self-harm behaviors,
indicating that a standardized
assessment method has yet to be
established. Although several scales
evaluate self-harm behaviors, none has
been designated as the standard.

Moreover, standardization of the scales
has been conducted in a variety of
individuals from university students to
patients receiving psychiatric
consultations. The format also varies
from questionnaires to interviews.

Furthermore, the method of surveying
the presence/absence and content of
self-harm behaviors are diverse. For
instance, some may use a questionnaire
created independently and specifically
for a study, while others may use
information collected from medical visits.

The items included in these different
scales and survey methods are also
varied. This is because of the diverse
nature of the concept of self-harm
behavior, which has been changing over
the years. As a clinical concept that
focuses on self-harm behavior limited to
the wrist, Rosenthal et al. described “wrist-cutting syndrome.” Morgan et al. developed the concept of “deliberate self-harm” to be more extensive by including behaviors that not only directly harm the body, but also involve alcohol and substance abuse, drug overdose, and even suicide attempts that do not result in life-threatening injuries. The current concept of self-harm in the U.S. is based on the definition by Favazza, who defined self-harm as “the deliberate, direct destruction or alteration of body tissue of a non-life-threatening nature without conscious suicidal intent that is frequently and habitually repeated.” Similarly, Walsh defined self-injury as “intentional, non-life-threatening, self-effected bodily-harm of a socially unacceptable nature, performed to reduce psychological distress.” For the publication of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), Section III, which emphasizes disorders that require further investigations and are not sufficiently established to become a part of the official diagnostic classification for mental disorders, was newly added, and NSSI was newly implemented as one of the categories.

As described above, the concept of self-harm behavior is diverse, as is the extent of self-destructive behavior encompassed within each concept. Various definitions are used in studies that investigate self-harm behavior, and researchers from each study may in fact be measuring different behaviors while studying the rate of self-harm behavior. Moreover, when using extensive questions regarding the
presence/absence of self-harm behavior, some elements of the questions are left up to each respondent's interpretation. Thus, the decision on whether the same behavior is applicable as a self-harm behavior may differ depending on the respondent. According to a systematic review by Muehlenkamp et al. 13, an evaluation using single-item questions resulted in a lower rate of self-harm than an evaluation with specific behavior checklists.

To accumulate empirical data, a scale that can quantitatively ascertain self-harm behavior is necessary. Few standardized questionnaires in Japan can be used to assess such behaviors, so it is first necessary to create a questionnaire with reliability and validity in order to advance empirical research on self-harm behavior. In a systematic review (Borschmann et al.14) that summarized scales that measure self-harm behavior, seven self-harm behavior scales were described. The criteria for a survey in the present study were as follows: it is a self-administered questionnaire, its reliability and validity has been tested, it contains few questionnaire items, its items are behavior-based questions according to the conceptual definition of deliberate self-harm involving direct destruction or alteration, it does not contain items considered culturally unsuitable for Japanese people (for example, items related to religion), and it is referenced frequently by other articles. We ultimately selected the Deliberate Self-Harm Inventory (DSHI) (Gratz15), a questionnaire designed to quantitatively ascertain deliberate self-harm behavior
without suicidal intent, from the above seven self-harm scales. In the present study, we investigated the internal consistency, test-retest reliability, convergent validity, and discriminant validity of a translated Japanese version of the DSHI. The study population used previously in reliability and validity assessments to create a self-harm behavior scales varied by study (i.e., clinical sample, university students, university students who have previously engaged in self-harm behavior). In the present study, we targeted adolescents and young adults and conducted the survey in general university students and workers.

Methods

Procedure

To evaluate the reliability and validity of the Japanese version of the DSHI, we conducted a survey with a questionnaire package containing the following five scales: 1) the Japanese version of the DSHI; 2) the Questionnaire Survey regarding the Frequency of Self-injurious Behavior (QSFSB), a self-harm behavior scale created in Japan; 3) the Millon Clinical Multiaxial Inventory-II (MCMI-II) Borderline Scale Japanese Short Version to measure borderline depression and emotion regulation, which have been shown to be associated with self-harm behavior; 4) the Beck Depression Inventory-Second Edition (BDI-II); and 5) the Japanese version of the Emotion Regulation Questionnaire (ERQ-J). The study was conducted between August 2013 and February 2014. For university students, the survey was distributed during class
time. For workers, participants were recruited through the hospital department and the survey was subsequently distributed. For both university students and workers, a return envelope was attached to the survey, and the completed surveys were collected by mail. Test-retest reliability was assessed 3–4 weeks after again conducting the questionnaire package by administering the Japanese DSHI alone in available university students.

**Study population**

The study investigated adolescents and young adults ranging in age from 18–29 years. The questionnaire was distributed to a total of 504 individuals comprising 477 university students from two universities in the Hokuriku region of Japan and 27 medical professionals working at a hospital (such as nurses).

Of the 153 questionnaires collected, 149 were analyzed after excluding those with missing responses and those that were answered by individuals who were not within the age limit or whose age was unknown. The 149 analyzed individuals comprised 131 university students and 18 workers. There were 58 men and 91 women with a mean age of 20.5 years (age range: 18–29, standard deviation [SD]=2.3).

Test-retest reliability was assessed in 45 individuals who returned both the questionnaire package and the second test. All 45 individuals were university students. There were nine men and 36 women with a mean age of 21.1 years (SD=0.5).

**Survey materials**

*Japanese version of the Deliberate Self-Harm Inventory (DSHI)*
The DSHI15, created by Gratz (2001), is a self-administered scale composed of 17 items related to intentional self-harm behavior. The Japanese version of the DSHI is also composed of 17 yes/no questions on self-harm behavior.

After obtaining permission from the original authors, the DSHI was translated into Japanese. First, the English version was translated into Japanese with ensured quality by two forward-translators. The authors of this study confirmed the consistency of the content with the original DSHI, and discussed and decided on the Japanese translation to create a forward-translated version. A preliminary investigation was conducted in 31 university students (nine men and 22 women; mean age, 21.4 years; SD=0.6) to ensure that there were no issues understanding the created questions. The Japanese expressions were refined and the frequency of responding “yes” for each item was verified such that it was not considerably different from the original English version. This resulted in a 17-item questionnaire, similar to the original English DSHI. Subsequently, the Japanese DSHI (forward-translated version) was translated back into English by a translator who was completely unfamiliar with the original English version, and the original authors verified the content consistency of the final version.

Similar to the original English version, the Japanese DSHI was scored such that one point was given for “yes” and zero points were given for “no”, and then the total score (DSHI frequency
score) was calculated. The DSHI frequency score ranges from 0 to 17. For Dichotomous DSHI, the engagement in self-harm behavior was classified into two choices: yes or no.

**Questionnaire Survey regarding the Frequency of Self-injurious Behavior (QSFSB)**

The QSFSB is a self-administered scale on self-harm behavior created in Japan. In this scale, items are selected with consideration for ascertaining a wide range of self-harm as much as possible. Serious behaviors such as “strangulation” are not included, while everyday activities such as “smoking cigarettes” and “drinking alcohol” are.

There are 29 items and the frequency of each behavior from the previous 2–3 years is rated on an 8-point scale, from “1: never” to “8: multiple times a day.” The reliability and validity of this scale have been tested through a study in university students. Twenty-five out of 29 items are used for calculating the score, which ranges from 25–200. The subscales are: Factor 1 “violence” (7 items), Factor 2 “eating” (6 items), Factor 3 “blood” (5 items), Factor 4 “face” (4 items), Factor 5 “limbs” (3 items), and Factor 6 “skin” (3 items).

Factors 1 and 2 are related to the type of behavior, and the other four factors are related to the body part.

In the present study, the correlations between the Japanese DSHI and the QSFSB were determined to assess convergent validity.

**Millon Clinical Multiaxial Inventory-II (MCMI-II) Borderline Scale - Japanese Short Version**

This is the abridged Japanese
version of the Millon Clinical Multiaxial Inventory (MCMI-II) Borderline Scale (62 items, created by Millon) by Izawa et al., which focuses on items with high convergent and discriminant characteristics. This version contains 17 items, and the responses are either “applicable” or “not applicable.” The number of positive (“applicable”) items is designated as the borderline score, which ranges from 0–17. According to Izawa et al.17, when the cutoff point is set at a score of 10, the sensitivity and specificity both become 1.00. Factor analysis resulted in the extraction of the following six factors: “instability in interpersonal relations and emotions,” “antisocial–sense of guilt,” “impulsivity,” “parents’ conflict and escape/factors of reckless tendency,” “aggression towards self and others,” and “insomnia and nervousness.”

In the present study, the correlation between the Japanese DSHI and the MCMI-II was determined to assess convergent validity.

**Beck Depression Inventory-Second Edition (BDI-II)**

The Beck Depression Inventory-Second Edition (BDI-II), a self-administered survey composed of 21 items to determine the severity of depressive symptoms, was developed by Beck et al. to evaluate symptoms in accordance with the diagnostic criteria for major depression defined by the American Psychiatric Association in DSM-IV. The score ranges from 0–63, and the cutoff scores for each severity are as follows: 0–13 for minimal, 14–19 for mild, 20–28 for moderate, and 29–63 for severe. This survey is useful not only
for determining severity in depressive patients, but also for screening depression in the general population, and is the most widely-used self-administered depression assessment questionnaire in the world. Kojima et al. 18 developed the Japanese version and tested its reliability and validity.

In the present study, the correlation between the Japanese DSHI and the BDI-II was determined to assess discriminant validity.

**Japanese version of the Emotion Regulation Questionnaire (ERQ-J)**

The Emotion Regulation Questionnaire (ERQ) was created by Gross & John 19 to assess individual differences in the habitual use of cognitive reappraisal strategy and expressive suppression strategy. Cognitive reappraisal is an emotion regulation strategy to adjust emotional response by reinterpreting the events that caused such an emotion, while expressive suppression is a strategy to suppress emotional expression after an emotional response 20. The questionnaire is composed of two factors and includes 10 items: six for reappraisal strategy and four for suppression strategy. The questions are rated on a 7-point scale (from 1: not applicable at all, to 7: highly applicable), and the score ranges from 7–42 for reappraisal strategy and from 4–28 for suppression strategy. Yoshizu et al. 21 created the Japanese ERQ and tested its reliability and validity.

In the present study, the correlation between the Japanese DSHI and the ERQ-J was determined to assess
discriminant validity.

**Ethical considerations**

This study was approved by the Kanazawa University Medical Ethics Committee and the Toyama University of International Studies Ethics Committee. Verbal and written explanations were provided regarding the study purpose and methods, the protection of personal information, the freedom to participate or refuse to participate in the study, and the possibility to withdraw intent to participate. Only individuals who provided consent were asked to respond to the questionnaire.

**Results**

**Data screening**

Because a considerable skew was observed for the distribution of the frequency of self-harm on the DSHI scores, logarithmic transformation was performed. Prior to logarithmic transformation, 0.5 was added to the scores because there were many items with a score of 0 (Yamamura22).

**Rate of self-harm**

**Dichotomous DSHI**

In the responses to the Japanese DSHI, 25 (16.8%) out of 149 respondents reported that they had engaged in self-harm behavior. Specifically, 20 (15.3%) out of 131 university students and 5 (27.8%) out of 18 medical professionals reported that they had engaged in self-harm behavior. Analysis by sex showed that women (20/71, 22.0%) had a slightly greater rate of self-harm than men (5/58, 8.6%), but this difference was not significant ($\chi^2=3.6$, n.s.). Analysis by population sample showed that the rate of self-harm was 5/58 (8.6%) in men and
15/73 (20.5%) in women for university students, and 5/18 (27.8%) for medical professionals, all 18 of whom were women.

**DSHI frequency score**

Figure 1 shows the distribution of DSHI frequency scores. The scores ranged from 0–5. The most frequent score was 0 and the mean score was 0.29 (SD=0.78).

**Assessment by item**

Of the DSHI items on self-harm behavior, the most common item receiving the answer of “yes” was “1. Cutting (8.9%)” followed by “6. Severe scratching (6.6%),” “11. Sticking pins, needles, or staples into the skin (4.4%),” and “17. Other forms of self-harm (4.4%).” The same items in order were observed in men, with a 3.4% frequency for the most common item.

**Evaluation of reliability**

**Internal consistency**

Cronbach’s α coefficient was 0.57. None of the respondents answered “yes” to five of the 17 items on the scale; however, Cronbach’s α coefficient only changed negligibly, even with the removal of these five items from the scale (Cronbach’s α=0.59).


**Evaluation of validity**

**Assessment of test-retest reliability**

A second questionnaire was administered 3-4 weeks later in some of the respondents who were available. The correlation between the first and second scores was calculated in 45 individuals who were analyzed for test-retest reliability. For Dichotomous DSHI, which classifies the engagement in self-harm behavior into yes or no, the four-fold point correlation coefficient was calculated. A significant correlation was observed between the first and second scores ($\Phi=0.734$, $p<.001$). Pearson’s correlation coefficient was calculated for the total score of 17 items, which is the DSHI frequency score, and a significant correlation was observed between the first and second scores ($r=0.839$, $p<.001$).

**Evaluation of convergent validity**

To assess the convergent validity of the Japanese DSHI, its correlations with the QSFSB and the MCMI-II Japanese Short Version were determined (Table 4). Polyserial correlations were used to examine the associations between Dichotomous DSHI and each scale, and Pearson’s correlation coefficient was used to examine the correlation between DSHI frequency scores and each scale. A moderate positive correlation with the Japanese DSHI indicates the convergent validity of the Japanese DSHI.
Dichotomous DSHI showed significant moderate positive correlations with QSFSB’s “violence (r=.563, p<.01), “blood (r=.470, p<.01)” and “25-item scores (r=.440, p<.001)” and significant weak positive correlations with QSFSB subscales “skin (r=.354, p<.01),” “limbs (r=.280, p<.01)” and “face (r=.263, p<.05).” DSHI frequency scores showed a significant moderate positive correlation with QSFSB’s “violence (r=.452, p<.001)” and “blood (r=.408, p<.001)” and significant weak positive correlations with QSFSB’s “25-item score (r=.385, p<.001),” “skin (r=.286, p<.001),” “face (r=.230, p<.05),” “eating (r=.215, p<.01),” and “limbs (r=.208, p<.05).”

For the correlation between the Japanese DSHI and the MCMI-II Japanese Short Version, both Dichotomous DSHI (r=.488, p<.01) and DSHI frequency score (r=.401, p<.001) showed significant moderate positive correlations. Evaluation of discriminant validity

To assess the discriminant validity of the Japanese DSHI, its correlations with BDI-II and ERQ-J were determined (Table 4). Polyserial correlations were used for Dichotomous DSHI, and Pearson’s correlation coefficient was used for the DSHI frequency score to determine the correlation between each of the other scales. If the Japanese DSHI has weaker correlations with BDI-II and ERQ-J than with QSFSB and MCMI-II, then the Japanese DSHI is considered to have discriminant validity.

The results showed that the BDI-II had significant moderate positive correlations with both Dichotomous
DSHI \( (r = 0.412, \ p < 0.01) \) and DSHI frequency score \( (r = 0.345, \ p < 0.001) \). ERQ-J subscales had no significant correlations with Dichotomous DSHI and DSHI frequency.

**Discussion**

The present study investigated the reliability and validity of the Japanese DSHI in young people aged 18–29 years.

The reliability of the Japanese DSHI was assessed by determining the internal consistency and test-retest reliability. Cronbach’s \( \alpha \) coefficient for the Japanese DSHI was 0.57, indicating low internal consistency. The internal consistency of a scale is considered to be high when the \( \alpha \) coefficient is greater than a certain level, although no clear criteria have been established; this is because factors such as the measured concept or number of items also play a role. The \( \alpha \) coefficient becomes greater if there are many similar questions; however, since DSHI is a scale that includes a variety of self-harm behaviors, it is postulated that Cronbach’s \( \alpha \) coefficient would not be very high. Indeed, the result was even lower than the original version (\( \alpha = 0.82 \)), and this is thought to be because the rate of self-harm behavior was markedly lower in the Japanese DSHI (16.8%) than in the original version (35.3%). Even when examining each item, the Japanese version resulted in a much lower prevalence rate than the original version for all 17 items. In other words, in the present study, which investigated the reliability and validity of the Japanese DSHI, vastly fewer respondents answered that they had engaged in
self-harm behavior compared with the original version. Moreover, most respondents had only one applicable item, so the α coefficient was lower than that of the original version, even if they had in fact engaged in self-harm behavior. Corrected item-total correlation is the correlation coefficient between the item score and the total score of all other items, and is generally considered to be useful in the range of 0.2 to 0.6. In the present study, corrected item-total correlations could not be calculated in five out of 17 items because none of the respondents answered “yes.” In the other 12 items, significant correlations were observed in nine items, with the correlation coefficient within the range of 0.2 to 0.6. Excluding the five items from the scale for which none of the respondents answered “yes” did not significantly change the internal consistency; therefore, we utilized all 17 items without excluding any items.

The test-retest reliability of the Japanese DSHI was evaluated, and a strong correlation was observed between the first and second scores for Dichotomous DSHI ($\Phi=.734$, $p<.001$), indicating a sufficiently high test-retest reliability of approximately the same level as the original version ($\Phi=.68$, $p<.001$). A strong correlation was also observed between the first and second DSHI frequency scores ($r=.839$, $p<.001$), indicating a sufficiently high test-retest reliability at approximately the same level as the original version ($r=.92$, $p<.001$). Based on the above results, while minor issues remain in terms of internal consistency, the Japanese DSHI
has sufficiently high test-retest reliability and test-retest reliably similar to the original version. The Japanese DSHI possesses sufficient test-retest reliability after a 3- to 4-week interval, suggesting that it can reliably classify the presence/absence of engagement in self-harm behaviors.

The validity of the Japanese DSHI was measured by verifying the convergent and discriminant validity on how appropriately it reflects the structural concept to be measured.

To measure convergent validity, the correlations between the Japanese DSHI and the QSFSB, and between the Japanese DSHI and MCMI-II were assessed. The Japanese version of the Dichotomous DSHI showed a moderate positive correlation with the QSFSB 25-item score and two items of the QSFB subscale and a weak positive correlation with three items of the QSFSB subscale. The Japanese DSHI frequency score showed a positive correlation with the QSFSB 25-item score and the all subscales. The QSFSB was designed to exclude serious behaviors and include items with common everyday behaviors such as smoking and drinking, with considerations for ascertaining a wider range of behaviors. It is considerably different from the DSHI, which measures behaviors that directly harm one’s own body, in terms of the type of behaviors that are included for measurement. For this reason, even though both are questionnaires on self-harm behavior, only a weak level of correlation was shown with the QSFSB 25-item score. However, the QSFSB subscales
“violence” and “blood” tended to have a strong correlation, signifying that a stronger correlation was observed with subscales that contain content related to direct, physical self-harming behaviors, similar to the question items on the DSHI. Therefore, the Japanese DSHI is especially closely associated with self-harm behavior that directly injures the body, as shown with QSFSB factors such as violence and blood. In addition, regarding the correlation between the Japanese DSHI and the MCMI-II, moderate correlations were observed both with Dichotomous DSHI and DSHI frequency scores. The MCMI-II includes items that are greatly associated with self-harm behavior such as impulsivity and reckless tendencies. The original version of both the Dichotomous DSHI and the DSHI frequency score also showed a moderate correlation with BPO, indicating that both the Japanese and original versions had similar correlations. It can therefore be concluded that the Japanese DSHI has convergent validity similar to the original version.

For discriminant validity, we investigated the correlation with depressive symptoms and emotion regulation, which are considered to have a milder correlation with the DSHI than with the QSFSB or MCMI-II. The BDI-II had a moderate positive correlation with Dichotomous DSHI and DSHI frequency scores. The correlation coefficient between the Japanese DSHI and other scales was smaller for the BDI-II and ERQ-J compared with the QSFSB and MCMI-II, indicating that the Japanese DSHI had a weaker correlation with the
BDI-II and ERQ-J than with the QSFSB and MCMI-II. These results generally support the discriminant validity of the Japanese DSHI. The original versions of both Dichotomous DSHI and DSHI frequency scores were shown to display weak negative correlations with the Marlowe-Crowne Social Desirability Scale, which was used to evaluate discriminant validity.

Based on the above, while some issues remain regarding the internal consistency and reliability, the validity of the Japanese DSHI was shown to be clearly similar to that of the original version. The Japanese DSHI can be expected to be used in studies on self-harm behavior as well as in clinical applications in Japan. Moreover, because the same items as the original version are used, it is possible to conduct cultural comparison studies on self-harm behavior, which could potentially lead to an investigation of the characteristics of self-harm behavior in Japan from a cultural perspective.

The study limitations and future directions are described as follows. In the present study, a questionnaire was conducted on healthy university students and workers to investigate adolescents and young adults. However, the study sample does not appropriately represent the entire Japanese adolescent and young adult population. First, this study did not include young people of applicable age who were not university students or workers. Neither study population of university students nor workers included those who were taking a leave of absence. Furthermore, while the study was explained and the
questionnaire was distributed during class time for university students, the questionnaire was distributed to workers after recruiting participants through their affiliated department, indicating that the method for participant recruitment was different between the two study populations. Additionally, the response rate was relatively low, at 30.0%, because the questionnaires were collected by post. For this reason, a bias among the respondents may have been introduced. For instance, those who had an interest in self-harm behavior may have responded to the questionnaire proactively.

To further discuss the rate of self-harm behavior in young people in Japan, it is necessary to increase the sample size and to minimize sampling bias as much as possible. In addition, although the present study included university students and workers, it would also be important to investigate data from clinical groups such as psychiatric patients. Furthermore, while the present study utilized the same items as the original version, future directions include the creation of an abridged version with fewer question items. In research settings where using multiple items may be difficult because of study constraints, it is common to necessitate convenient measurements that can ensure a certain level of reliability and validity (Gosling et al. 23). Moreover, from the perspective of reducing the burden of responding in clinical use, a scale that can efficiently make measurements with fewer items could become a useful tool in both the research and clinical settings.

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Figure 1 Score distribution of the Japanese version of the Deliberate Self-Harm Inventory
Table 1 Frequency of individuals endorsing the items on the Japanese version of the Deliberate Self-Harm Inventory (N=149)

<table>
<thead>
<tr>
<th>Self-harm behavior</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cutting</td>
<td>10</td>
<td>6.7</td>
</tr>
<tr>
<td>2. Burning with a cigarette</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>3. Burning with a lighter or match</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>4. Carving words into the skin</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>5. Carving pictures into the skin</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>6. Severe scratching</td>
<td>8</td>
<td>5.4</td>
</tr>
<tr>
<td>7. Biting</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>8. Rubbing sandpaper on the skin</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>9. Dripping acid on the skin</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>10. Using bleach or oven cleaner to scrub the skin</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>11. Sticking pins, needles, or staples into the skin</td>
<td>6</td>
<td>4.0</td>
</tr>
<tr>
<td>12. Rubbing glass into the skin</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>13. Breaking bones</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>14. Banging head</td>
<td>3</td>
<td>2.0</td>
</tr>
<tr>
<td>15. Punching self</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>16. Interference with wound healing</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>17. Other forms of self-harm</td>
<td>6</td>
<td>4.0</td>
</tr>
</tbody>
</table>
Table 2 Frequency of men and women endorsing the items on the Deliberate Self-Harm Inventory

<table>
<thead>
<tr>
<th>Self-harm behavior</th>
<th>Women (N=91)</th>
<th>Men (N=58)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>%</td>
</tr>
<tr>
<td>1. Cutting</td>
<td>8</td>
<td>8.9</td>
</tr>
<tr>
<td>2. Burning with a cigarette</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>3. Burning with a lighter or match</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>4. Carving words into the skin</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>5. Carving pictures into the skin</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>6. Severe scratching</td>
<td>6</td>
<td>6.6</td>
</tr>
<tr>
<td>7. Biting</td>
<td>2</td>
<td>2.2</td>
</tr>
<tr>
<td>8. Rubbing sandpaper on the skin</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>9. Dripping acid on the skin</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>10. Using bleach or oven cleaner to scrub the skin</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>11. Sticking pins, needles, or staples into the skin</td>
<td>4</td>
<td>4.4</td>
</tr>
<tr>
<td>12. Rubbing glass into the skin</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>13. Breaking bones</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>14. Banging head</td>
<td>3</td>
<td>3.3</td>
</tr>
<tr>
<td>15. Punching self</td>
<td>2</td>
<td>2.2</td>
</tr>
<tr>
<td>16. Interference with wound healing</td>
<td>2</td>
<td>2.2</td>
</tr>
<tr>
<td>17. Other forms of self-harm</td>
<td>4</td>
<td>4.4</td>
</tr>
</tbody>
</table>
Table 3 Corrected item-total correlations for the Deliberate Self-Harm Inventory (DSHI) scale items (N=149)

<table>
<thead>
<tr>
<th>DSHI scale item</th>
<th>Corrected item-total correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cutting</td>
<td>.350 ***</td>
</tr>
<tr>
<td>2. Burning with a cigarette</td>
<td>.259 **</td>
</tr>
<tr>
<td>3. Burning with a lighter or match</td>
<td>.132 n.s.</td>
</tr>
<tr>
<td>4. Carving words into the skin</td>
<td>-.034 n.s.</td>
</tr>
<tr>
<td>5. Carving pictures into the skin</td>
<td>-</td>
</tr>
<tr>
<td>6. Severe scratching</td>
<td>.347 ***</td>
</tr>
<tr>
<td>7. Biting</td>
<td>.399 ***</td>
</tr>
<tr>
<td>8. Rubbing sandpaper on the skin</td>
<td>-</td>
</tr>
<tr>
<td>9. Dripping acid on the skin</td>
<td>-</td>
</tr>
<tr>
<td>10. Using bleach or oven cleaner to scrub the skin</td>
<td>-</td>
</tr>
<tr>
<td>11. Sticking pins, needles, or staples into the skin</td>
<td>.210 *</td>
</tr>
<tr>
<td>12. Rubbing glass into the skin</td>
<td>.297 ***</td>
</tr>
<tr>
<td>13. Breaking bones</td>
<td>-</td>
</tr>
<tr>
<td>14. Banging head</td>
<td>.214 **</td>
</tr>
<tr>
<td>15. Punching self</td>
<td>.190 *</td>
</tr>
<tr>
<td>16. Interference with wound healing</td>
<td>.282 ***</td>
</tr>
<tr>
<td>17. Other forms of self-harm</td>
<td>.340 ***</td>
</tr>
</tbody>
</table>

n.s. not significant, *p<.05, **p<.01, ***p<.001

Pearson correlation coefficient of log-transformed data

*–* Correlation was unable to be calculated due to a lack of participants who answer yes to the item.
Table 4 Correlations between the Deliberate Self-Harm Inventory (DSHI) and other measures

<table>
<thead>
<tr>
<th></th>
<th>Dichotomous DSHI</th>
<th>DSHI Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>QSFSB 25-item</td>
<td>.440 ***</td>
<td>.385 ***</td>
</tr>
<tr>
<td>Violence</td>
<td>.563 ***</td>
<td>.452 ***</td>
</tr>
<tr>
<td>Eating</td>
<td>.198 n.s.</td>
<td>.215 **</td>
</tr>
<tr>
<td>Blood</td>
<td>.470 ***</td>
<td>.408 ***</td>
</tr>
<tr>
<td>Face</td>
<td>.263 *</td>
<td>.230 **</td>
</tr>
<tr>
<td>Limbs</td>
<td>.280 **</td>
<td>.208 *</td>
</tr>
<tr>
<td>Skin</td>
<td>.354 ***</td>
<td>.286 ***</td>
</tr>
<tr>
<td>MCMII Japanese Short Version</td>
<td>.488 ***</td>
<td>.401 ***</td>
</tr>
<tr>
<td>BDI-II</td>
<td>.412 ***</td>
<td>.345 ***</td>
</tr>
<tr>
<td>ERQ-J Reappraisal</td>
<td>.045 n.s.</td>
<td>-.020 n.s.</td>
</tr>
<tr>
<td>Suppression</td>
<td>.107 n.s.</td>
<td>.085 n.s.</td>
</tr>
</tbody>
</table>

n.s. not significant, *p<.05, **p<.01, ***p<.001

Dichotomous DSHI  Polyserial correlation

DSHI Frequency  Log-transformed DSHI Frequency, Pearson correlation coefficient