Attentional Biases and Nonsuicidal Self-Injury Urges in Adolescents

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Abstract

**IMPORTANCE** Nonsuicidal self-injury (NSSI) is a significant clinical concern among adolescents. Exposure to NSSI-related content on social media platforms has been suspected to potentially act as a trigger for NSSI.

**OBJECTIVE** To use free-viewing eye-tracking and dot-probe paradigms to examine attentional bias and psychophysiological responses to NSSI-related pictorial and textual stimuli in adolescents with and without a history of NSSI.

**DESIGN, SETTING, AND PARTICIPANTS** From June 2022 to April 2023, adolescent participants in Vienna, Austria with and without a history of NSSI were exposed to NSSI-related stimuli in this nonrandomized controlled trial. Data were analyzed from December 2023 to January 2024.

**EXPOSURE** Exposure to NSSI-related stimuli.

**MAIN OUTCOMES AND MEASURES** During both tasks, subjective arousal, NSSI urges, and autonomic nervous system activity were assessed.

**RESULTS** A total of 50 adolescents in 2 groups, 25 who engaged in NSSI (mean [SD] age 15.86 [1.14] years; 19 female participants [76%]) and 25 who did not (mean [SD] age 16.40 [1.71] years; 19 female participants [76%]) were included. Adolescents with a history of NSSI—but not those without a history of NSSI—showed a clear attentional bias toward NSSI-related images during eye-tracking, as indicated by increased initial fixations (500 ms stimulus presentation mean difference, 28.64%; 95% CI, 18.31%-38.98%; P < .001; 1000 ms stimulus presentation mean difference, 18.50%; 95% CI, 9.05%-27.95%; P < .001) and longer fixation durations (500 ms mean difference, 29.51 ms; 95% CI, 4.3-54.72 ms; P < .001; 1000 ms mean difference, 39.83 ms; 95% CI, 6.90-72.76 ms; P < .001), regardless of stimulus duration. This bias was associated with a heightened urge to engage in NSSI (d = 1.22; 95% CI, 0.69-1.73; P < .001), a trend not seen in adolescents without a history of NSSI. Similarly, in the dot-probe task, only the NSSI group showed an attentional bias toward NSSI images but not toward trauma images, emphasizing the specificity of their attentional bias. Physiological measures revealed no significant differences, suggesting that viewing NSSI images is not associated with increased autonomic arousal. Textual NSSI content did not provoke an attentional bias or heighten NSSI urges in either group.

**CONCLUSIONS AND RELEVANCE** In this nonrandomized controlled trial of 50 adolescents, results highlighted a specific attentional bias toward NSSI-related pictorial stimuli in adolescents with a history of NSSI, particularly a difficulty in disengaging from NSSI images. These findings contribute to understanding maladaptive information processing in NSSI and suggest implications for clinical management and cognitive models addressing NSSI triggers.

(continued)
Introduction

Nonsuicidal self-injury (NSSI) is the deliberate, repetitive infliction of bodily harm without suicidal intent.\(^1\) NSSI frequently co-occurs with various mental disorders, such as depressive disorder, posttraumatic stress disorder (PTSD), and borderline personality disorder.\(^2\) Recognized as a transdiagnostic entity, NSSI has been proposed as a potential disorder warranting additional research in the Diagnostic and Statistical Manual of Mental Disorders (Fifth Edition) (DSM-5).\(^3\) Global prevalence estimates of NSSI among adolescents are approximately 16 to 17%.\(^4,5\) NSSI behaviors include cutting, scratching, burning, and striking or punching objects to cause bruising or bleeding.\(^6\) Notably, NSSI is a significant predictor of subsequent suicide attempts.\(^7\) Among other functions, NSSI serves to regulate emotions or manage stress.\(^8,9\) While progression has been made in elucidating the biological\(^10,11\) and social\(^12\) predictors of NSSI, alongside functions of NSSI,\(^13,14\) research on its psychophysiological mechanisms of onset and triggers is lacking.

While pictures of NSSI are displayed on social media,\(^15\) concerns have been raised that exposure to NSSI-related stimuli (e.g., depictions of wounds or scars or text concerning NSSI) may have detrimental effects and may even trigger NSSI behaviors.\(^16\) Evidence\(^17\) suggests that viewing NSSI content—especially images and videos—on social media can precipitate urges and actual acts of NSSI, although these studies often rely on retrospective self-reports. Individuals with a history of NSSI often report experiencing distressing emotions and unpleasant physiological responses upon viewing NSSI content online, potentially instigating or exacerbating NSSI behaviors.\(^18\) Confirming this notion, a study\(^19\) found that NSSI-related pictures were more arousing to female adolescents with a history of NSSI than to those without a history of NSSI.

Few studies have differentiated the type of content that triggers NSSI urges, focusing on images vs. text. Most participants identified images, not text, as driving online NSSI content pursuit\(^18\) and triggering urges.\(^20\) Nevertheless, the qualitative findings of the latter study suggest that a minority of participants perceived textual representations as more vivid and, consequently, more likely to trigger urges. Comments accompanying NSSI images on social media platforms have also been suggested to act as a form of social contagion through reinforcement mechanisms.\(^15\)

An additional line of research explores whether individuals who engage in NSSI allocate special attention to NSSI stimuli. In various psychopathologies, people tend to focus on disorder-related stimuli over neutral ones. For example, anxiety disorders are characterized by biases toward threat-related stimuli (e.g., angry faces), and depressive disorders toward negative stimuli (e.g., sad facial expressions).\(^21,22\) This attentional bias has also been observed in adolescent samples with mood disorders.\(^23\) Individuals with NSSI may similarly show a bias toward NSSI-related depictions, measurable using dot-probe tasks,\(^24\) which compare reaction times to probes replacing neutral or emotionally charged stimuli, suggesting attentional preference or avoidance. Two studies using a dot-probe paradigm showed that adults with NSSI exhibit an attentional bias toward negative\(^25\) and NSSI-related stimuli.\(^26\)

Manual reaction time measures such as the Stroop task\(^27,28\) are useful for studying attentional biases, but eye-tracking technology provides additional insights into overt and covert components.\(^29\) Eye-tracking differentiates between automatic vigilance\(^30\) and more strategic avoidance. Automatic vigilance is defined as initial fixations on certain stimuli, while strategic disengagement is measured by fixation durations. The vigilance-avoidance model posits initial orientation toward threatening stimuli, followed by arousal and subsequent avoidance to mitigate arousal.\(^31\) Although preliminary evidence of attentional bias exists,\(^26\) a comprehensive investigation into autonomic arousal in those with NSSI, particularly regarding NSSI and threat words, is needed. Hypervigilance toward threat
stimuli increases psychological responses like stress and tension, as well as physiological arousal. Since arousal and NSSI urges may be triggered by NSSI-related stimuli but not negatively valenced stimuli, it would be insightful to see if threat or trauma-related words also trigger these urges.

Accordingly, this study aimed to elucidate mechanisms of NSSI engagement and maintenance in adolescents with a history of NSSI using eye-tracking (with word and text stimuli) and a dot-probe task with NSSI-related, threat, and neutral stimuli. We assessed subjective arousal (perceived stress and tension), NSSI urges, and autonomic nervous system (ANS) activity (heart rate and skin conductance). Adolescents with a history NSSI were compared with a control group with no history of NSSI to investigate attentional bias to NSSI words and pictures. We hypothesized that (1) adolescents who engaged in NSSI would exhibit more first fixations, extended fixation duration times, and more skin conductance responses to NSSI words and pictures compared with neutral words and pictures in an eye-tracking free-viewing task relative to those with no history of NSSI; (2) adolescents who engaged in NSSI would demonstrate elevated levels of stress, tension, and NSSI urge, as well as higher skin conductance level and heart rate in response to exposure to NSSI stimuli in comparison with those with no history of NSSI; (3) adolescents who engaged in NSSI would exhibit pronounced attentional bias toward NSSI stimuli in the dot-probe task relative to those with no history of NSSI.

Methods

This nonrandomized controlled trial was approved by the ethics committee of the Medical University of Vienna. Written informed consent was obtained from participants and their legal guardians before participation. The trial protocol is presented in Supplement 1. This study was conducted according to the Transparent Reporting of Evaluations With Nonrandomized Designs (TREND) reporting guideline.

Participants

Participants (aged 14-18 years) were recruited from various sources to form 2 groups: individuals who engaged in NSSI and individuals who did not. Participants with a history of NSSI or who were currently engaged in NSSI were predominantly inpatients and outpatients at the Department of Child and Adolescent Psychiatry, Medical University of Vienna, Austria. Participants with no history of NSSI were recruited from the general public and schools in Vienna and nearby areas. Recruitment spanned from July 2022 to May 2023. Details on recruitment strategy, inclusion criteria, participant flow, and power analysis are in eMethods 1 in Supplement 2, and the TREND flowchart is in eFigure 1 in Supplement 2.

Procedure

The study was conducted at the Department of Child and Adolescent Psychiatry, Medical University of Vienna, Austria. After attaching heart rate and skin conductance devices, participants sat quietly for 5 minutes to obtain baseline levels (eFigure 2 in Supplement 2 for the study procedure). Participants received instructions and sat 60 cm from the eye-tracking monitor (Tobii TX Display, Tobii Instruments). The dot-probe task followed the free-viewing tasks. Afterward, clinical interviews and self-report questionnaires on NSSI, PTSD, stress, and depressive symptoms were completed. Momentary stress, tension, and NSSI urges were assessed using 5-point Likert scales (ranging from 1, not at all, to 5, extremely) at 9 time points (eFigure 2 in Supplement 2). Participants were then debriefed, thanked, and given a €25 voucher.

Measures

Participant race and gender were assessed by verbally inquiring about their self-identification for the purposes of sample description only. We used the German Version of the revised Self-Injurious Thoughts and Behaviors Interview to assess NSSI presence, frequency, and characteristics. For
PTSD symptoms, we used the German versions of the Child and Adolescent Trauma Screen (CAST) and the Clinician-Administered PTSD Scale for DSM-5 in Children and Adolescents (CAPS-5), given the inclusion of PTSD-related stimuli in the dot-probe task. The German version of the Perceived Stress Scale indicated perceived stress over the last month, and the German version of the Beck Depression Inventory (BDI) evaluated depressive symptoms over the past 2 weeks (see eMethods 2 in Supplement 2 for detailed instrument descriptions).

**Free-Viewing Task**

The free-viewing task consisted of 2 parts: in the first part, 4 words were presented on the eye-tracking monitor across 64 trials. Thirty-two trials featured 3 neutral words (eg, bread or coating) and 1 NSSI-related word (eg, cutting or blood), while the remaining 32 trials contained 4 neutral words. In the second part, the free-viewing picture task, 4 pictures were presented across 64 trials. Similarly, 32 trials featured 3 neutral pictures along with 1 NSSI-related picture, and the other 32 trials consisted of 4 neutral pictures. All stimuli were displayed for 500 ms and 1000 ms after a 2-second black screen interval, followed by a 2-second fixation cross (eFigure 2 and eMethods 3 in Supplement 2).

**Dot-Probe Task**

For the dot-probe task, we used 60 picture pairs: 20 NSSI-related paired with neutral (NSSI condition), 20 trauma-related paired with neutral (trauma condition), and 20 combining NSSI and trauma-related (NSSI plus trauma condition). Each pair was presented twice, once for 200 ms (block 1) and once for 500 ms (block 2). See eMethods 4 in Supplement 2 for a detailed paradigm description. All stimuli from the free-viewing and dot-probe tasks are available on the Open Science Framework.

**Initial Fixation and Fixation Durations**

In the free-viewing tasks, fixations were defined as periods of constant gaze within a neutral or NSSI word or picture, lasting at least 100 ms. Initial fixations referred to the first stimulus fixated upon trial onset. The percentage of initial fixations to NSSI stimuli was calculated for each participant by dividing the number of initial fixations on NSSI stimuli by the total number of trials. A higher percentage suggested an early attentional bias toward NSSI stimuli.

**Electrophysiological Measures**

Heart rate was measured using a finger clip sensor on the nondominant hand’s index finger, recording blood volume pulse at 256 Hz. Skin conductance was recorded with 2 silver/silver chloride electrodes on the index and middle fingers of the same hand, sampled at 32 Hz. Both sensors were connected to a Nexus MK-II device (Nexus Sensors, MindMedia) linked to a notebook with BioTrace+ software version 2009a (Mind Media). The Nexus device was synchronized with the Tobii TX Display via a light sensor. Skin conductance data were exported and analyzed with Ledalab version 3.4.941 for Matlab (MathWorks). For preprocessing details, see eMethods 5 in Supplement 2.

**Statistical Analysis**

All analyses were conducted using R version 4.1.3 (R Project for Statistical Computing), using the packages lme4 and ggplot2 for analyses and plotting, respectively. T tests were conducted to compare baseline and mental health variables (eg, age and PTSD symptoms) between groups. Mixed-effects analyses of variance (ANOVA) were conducted to analyze physiological, subjective, eye-tracking, and dot-probe outcomes across the experiment (eMethods 6 in Supplement 2). We considered 2-sided P values less than .05 as significant, corresponding to an α level of 5%. Data were analyzed from December 2023 to January 2024.
Results

The final sample consisted of 50 participants, 25 of whom engaged in NSSI (mean [SD] age, 15.86 [1.14] years; 19 female participants [76%]) and 25 of whom did not (mean [SD] age, 16.40 [1.71]; 19 female participants [76%]), all identified as White. On average, NSSI participants engaged in NSSI once in the last week, 5 times in the last month, and 71 times in the last year. The most common NSSI methods were cutting (25 participants [100%]), hitting objects (13 participants [52%]), burning (12 participants [48%]), scratching (11 participants [44%]), biting (10 participants [40%]), and inserting objects under the skin (4 participants [16%]).

Scores on the Child and Adolescent Trauma Screen 2 were significantly higher in the NSSI group (mean [SD], 21.12 [9.33]) than in the control group (mean [SD], 5.64 [7.24]) ($t_{48} = 6.55; P < .001$). Twelve NSSI participants screened positive for possible PTSD and were assessed with the Clinician-Administered PTSD Scale for DSM-5-Child/Adolescent Version interview; 9 met PTSD criteria (DSM-5). The NSSI group reported higher perceived stress ($t_{48} = 5.42; P < .001$) and more depressive symptoms ($t_{48} = 7.62; P < .001$) than the control group. In the NSSI group, 15 [60%] had a preexisting mood disorder, 10 [40%] had personality disorders, and 15 [60%] were on psychiatric medication (Table).

Free-Viewing Task: Words

In the word tasks, the NSSI group reported higher stress, tension, NSSI urges, and heart rate than the control group. However, none of these values differed from baseline during the free-viewing word tasks, suggesting no elicited stress in either group (see Figure 1).

Figure 2 depicts initial fixations, fixation durations, and skin conductance responses to word stimuli. Mixed-effects ANOVAs showed no significant differences in initial fixations between individuals with NSSI and controls for NSSI-related words at 500 ms or 1000 ms. In 20% to 25% of cases (500 ms: 19% of NSSI group and 22% of control group; 1000 ms: 26% of NSSI group and 26% of control group), NSSI-related words were fixated first, suggesting random fixations. Fixation durations on NSSI-related words did not differ significantly between groups (500 ms: $P = .80$; Table).

Table. Participant Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mean (SD)</th>
<th>NSSI</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y</td>
<td>15.86 (1.14)</td>
<td>16.40 (1.71)</td>
<td>16.40 (1.71)</td>
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<tr>
<td>NSSI 1-week prevalence (STIBI-R)</td>
<td>1.16 (1.82)</td>
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<td>0</td>
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<tr>
<td>NSSI 4-week prevalence (STIBI-R)</td>
<td>5.28 (7.10)</td>
<td>0</td>
<td>0</td>
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<tr>
<td>NSSI 1-y prevalence (STIBI-R)</td>
<td>71.36 (61.21)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Child and Adolescent Trauma Screen-2</td>
<td>21.12 (9.33)</td>
<td>5.64 (7.24)</td>
<td>5.64 (7.24)</td>
</tr>
<tr>
<td>CAPS-CA-5*$a$</td>
<td>35.00 (12.91)</td>
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<td>NA</td>
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<tr>
<td>Perceived Stress Scale-10</td>
<td>27.00 (6.67)</td>
<td>16.36 (7.20)</td>
<td>16.36 (7.20)</td>
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<tr>
<td>Beck Depression Inventory II</td>
<td>32.32 (13.45)</td>
<td>8.52 (7.94)</td>
<td>8.52 (7.94)</td>
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<td>Gender, No. (%)</td>
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<td></td>
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<td>Female</td>
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<td>19 (76)</td>
<td>19 (76)</td>
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<td>1 (4)</td>
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<tr>
<td>Diverse</td>
<td>5 (20)</td>
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<td>Previous ICD-10 diagnoses, No. (%)</td>
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<td>F3x Mood [affective] disorders</td>
<td>15 (60)</td>
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<td>F4x Neurotic, stress-related and somatoform disorders</td>
<td>9 (36)</td>
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<tr>
<td>F5x Behavioral syndromes associated with physiological disturbances and physical factors</td>
<td>2 (8)</td>
<td>0</td>
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<td>F6x Disorders of personality and behavior</td>
<td>10 (40)</td>
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<tr>
<td>F8x Pervasive and specific developmental disorders</td>
<td>1 (4)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>F9x Behavioral and emotional disorders</td>
<td>5 (20)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Current psychiatric medication, No. (%)</td>
<td>15 (60)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>


$a$ CAPS was conducted with 12 participants in the NSSI group only. Of those 12, 9 qualified for PTSD according to CAPS-CA-5.

*b Gender is based on participants’ self-classification.
Figure 1. Trajectories of Perceived Stress, Perceived Tension, Urge to Engage in NSSI, and Heart Rate Over the Course of the Study

A. Perceived stress: main effect of group (P < .001) and time (P < .001), interaction group × time (P = .84) not significant. B. Perceived tension: group (P < .001), time (P < .001), group × time (P = .39). C. NSSI urge group (P < .001), time (P < .001), group × time (P = .10). D. Heart rate: group (P < .001), time (P = .94), group × time (P = .10).
1000 ms: $P = .17$ (Figure 2C). Skin conductance responses to initial fixations on NSSI-related words showed no significant group differences ($500\text{ ms: } P = .19; 1000\text{ ms: } P = .83$) (Figure 2D). Thirty-seven participants (18 in NSSI group; 19 in control group) were excluded due to nonresponse, consistent with other studies. There were no baseline skin conductance differences before the task ($t$ test: $P = .33$, Figure 2B).

**Free-Viewing Task: Pictures**

In the free-viewing picture tasks, subjective stress, tension, and heart rate were higher in the NSSI group than in the control group, but none differed from baseline. However, a significant interaction ($F = 3.50; P < .001$) indicated a higher NSSI urge in the NSSI group after the 1000 ms and 500 ms tasks (Figure 1C). Post hoc tests showed this urge was significantly higher compared with the NSSI group's baseline ($d = 1.22; 95\% CI, 0.69-1.73; P < .001$) and the control group's values after the 1000 ms ($d = 2.62; 95\% CI, 1.85-3.37; P < .001$) and 500 ms tasks ($d = 2.47; 95\% CI, 1.72-3.20; P < .001$).

In the picture tasks, the NSSI group initially fixated on NSSI-related pictures significantly more often than the control group in both 500 ms (mean difference, 28.64%; 95\% CI, 18.31%-38.98%; $P < .001$) and 1000 ms conditions (18.50%; 95\% CI, 9.05%-27.95%; $P < .001$), exceeding 50% of trials (Figure 2A). The NSSI group also fixated on these pictures for longer durations—29.21 ms longer...
in the 500 ms condition (95% CI, 4.31-54.72 ms; \( P < .001 \)) and 39.83 ms longer in the 1000 ms condition (95% CI, 6.90-72.76 ms; \( P < .001 \)). However, there was no difference between groups in skin conductance responses associated with initial fixations, similar to the word tasks. Seventeen participants (5 in the NSSI group and 12 in the control group) were excluded due to nonresponse.

**Attentional Bias: Dot-Probe Task**

No significant increases in stress, tension, NSSI urge, or heart rate were observed during the dot-probe task (Figure 1). Response latencies deviating by more than 2 SDs and incorrect trials were excluded, removing 11.34% of trials (3.40% outliers and 78.94% incorrect).

Mixed-effects ANOVA for 200 ms response latencies showed a significant 3-way interaction (group × stimulus × probe, \( F = 5.36; P = .01 \)) (Figure 3A). Tukey post hoc tests revealed that NSSI participants responded faster to congruent than incongruent tasks. In controls, no significant differences were found. NSSI participants had longer response latencies for NSSI stimuli in congruent vs incongruent trials (mean difference, 7.94 ms; 95% CI, 46.87 to 111.02 ms; \( P < .001 \)), and for trauma and NSSI stimuli (mean difference, 51.20 ms; 95% CI, 18.94 to 83.46 ms; \( P < .001 \)), but not for trauma stimuli alone (mean difference, 16.30 ms; 95% CI, −14.90 to 47.50 ms; \( P = .87 \)). Thus, the NSSI group showed an attentional bias toward NSSI stimuli, unlike the control group.

For the 500 ms stimulus presentation block, mixed-ANOVA showed a significant group × stimulus × probe interaction (\( F = 3.987; P = .02 \)) (Figure 3B). NSSI participants—but not controls—had slower response times to incongruent stimuli, particularly for NSSI (mean difference, 44.98 ms; 95% CI, 6.24 to 83.72 ms; \( P = .001 \)) and trauma and NSSI stimuli (mean difference, 48.73 ms; 95% CI, 10.53 to 86.93 ms; \( P = .002 \)), but not for trauma stimuli (mean difference, 16.30 ms; 500 ms stimulus presentation).

**Figure 3. Response Times to Congruent and Incongruent Stimuli in the Dot-Probe Task**
95% CI, −39.71 to 11.59 ms; \( P = .10 \). Controls showed no differences between stimuli. Thus, NSSI participants exhibited an attentional bias toward NSSI-related stimuli at 500 ms.

**Discussion**

In the current study, we were able to show preliminary evidence that adolescents with a history of NSSI exhibit an attentional bias toward NSSI pictorial stimuli—though not toward NSSI textual content—and that exposure to images associated with NSSI intensifies the urge to engage in NSSI. Our study reveals that adolescents with a history of NSSI had more initial fixations and longer fixation durations on NSSI-related images than those with no history of NSSI indicating no avoidance of NSSI content. This attentional bias persisted regardless of stimulus onset duration. Additionally, the dot-probe task confirmed this bias as specific to NSSI-related stimuli, showing difficulties in disengaging from NSSI stimuli, consistent with higher fixation durations in the free-viewing task.

Images depicting wounds, scars, and emotionally charged texts are prolific on social media, leading to concerns about their potential to incite self-injurious behaviors in youth with a history of NSSI or even in those without such a history. Our study suggests an attentional bias toward NSSI-related content and subsequent increases in NSSI urges, aligning with Riquino et al. who employed a dot-probe paradigm among young adults with NSSI. Consequently, these laboratory-based insights appear to align with predominantly qualitative or retrospective findings surrounding social media usage, suggesting that engagement with image-based NSSI content on social media platforms may indeed heighten the propensity to engage in NSSI. However, adolescents with no history of NSSI in our sample did not exhibit increased urges when exposed to the same NSSI stimuli, suggesting that visual exposure alone does not necessarily trigger NSSI urges in those without a prior history of NSSI.

Furthermore, we demonstrated that NSSI-related textual stimuli did not lead to differential cognitive processing compared with neutral textual stimuli, nor did they provoke urges to engage in NSSI, regardless of a history of NSSI. Notably, cognitive research focusing on PTSD has identified cognitive biases (and physiological responses) triggered solely by trauma-related texts—a phenomenon we did not observe in our study of individuals engaging in NSSI. While further research is imperative, our findings suggest a minimal to nonexistent negative outcome of NSSI-related text.

Contrary to our hypothesis, exposure to NSSI imagery did not elevate physiological parameters such as skin conductance response or heart rate in individuals with NSSI. Skin conductance responses to NSSI-related stimuli were similar to neutral stimuli, suggesting attentional biases toward NSSI do not coincide with increased sympathetic arousal. This supports the idea that dysregulation in NSSI may occur through the parasympathetic branch, modulated by brainstem networks via vagal pathways. A recent meta-analysis found lower resting parasympathetic but comparable sympathetic activity in individuals with NSSI compared with controls. Without physiological or emotional arousal, urges triggered by NSSI depictions may not lead to NSSI behaviors. We also found no significant increase in stress and tension levels upon viewing NSSI images, although these levels were generally higher in participants with NSSI. Future research should explore how interpersonal stressors or other NSSI precursors affect attentional biases and physiological reactivity.

**Limitations and Strengths**

Our study is not without limitations. First, our sample size is relatively small, and multiple comparisons in statistical analyses were not accounted for. Therefore, our results should be regarded as preliminary and require replication. Additionally, the NSSI group consisted mainly of patients in treatment, which may limit the generalizability to nontreatment populations. This study focuses only on adolescents, so conclusions cannot be generalized to younger individuals or adults. Factors like medication use and comorbid mental disorders may have influenced our results, particularly regarding attentional processes. However, given that NSSI is a transdiagnostic entity, such factors are both prevalent and common. Future research should control for and stratify these clinical features.
to better represent the diversity within adolescents and the broader NSSI population. However, our study is strengthened by the inclusion of a comparison group of adolescents with no history of NSSI, a first in this area of research, to our knowledge.

**Conclusions**

In conclusion, our study suggests that adolescents who engage in NSSI exhibit an attentional bias toward NSSI-related pictures, with more initial fixations, longer durations, and difficulty disengaging. This bias was not observed with words or trauma-related images and was associated with increased NSSI urges. Importantly, attentional bias was associated with an increased urge to engage in NSSI. Given the role of NSSI depictions in potentially increasing urges, interventions that bolster emotion regulation skills, such as Dialectical Behavior Therapy—evidence-based in this clinical area—are crucial.48,49 For clinicians, it is essential to understand the potential for NSSI depictions to elicit urges. We encourage professionals working with individuals with a history of NSSI not only to inquire about their consumption of social media NSSI imagery but also to enhance stress management strategies as well as social media skills.
Additional Contributions: We thank all the adolescents who participated in the study.

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SUPPLEMENT 1.
Trial Protocol

SUPPLEMENT 2.
eMethods 1. Recruitment, Inclusion Criteria, Participant Flow, and Power Analysis
eMethods 2. Measures
eMethods 3. Free-Viewing Task Paradigm
eMethods 4. Dot-Probe Task Paradigm
eMethods 5. Preprocessing of Skin Conductance Level Responses
eMethods 6. Analysis Strategy
eFigure 1. TREND Flow Chart of Enrollment Details
eFigure 2. Overview of Study Procedure and Timeline and Overview of the 2 Free-Viewing Tasks and the Dot-Probe Task
eReferences

SUPPLEMENT 3.
Data Sharing Statement