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The Non-Suicidal Self-Injury Expectancy Questionnaire: Factor structure and initial validation

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Key words
non-suicidal self-injury, outcome expectancies, scale development, self-injury.

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Abstract

Background: Models of non-suicidal self-injury (NSSI) typically focus on the role of emotion regulation in NSSI, yet recent work supports a role for NSSI-related cognitions. NSSI outcome expectancies may offer important clues about who is at risk of NSSI, who is able to cease the behaviour, and who is at risk of relapse. Yet, so far, there is no reliable and valid means of assessing these cognitions. We developed, and reported on initial validation, of an NSSI Expectancy Questionnaire.
Methods: A total of 49 statements reflecting possible outcomes of NSSI were administered to 496 undergraduate students.
Results: Principal axis factoring revealed five factors (Affect Regulation, Negative Social Outcomes, Communication, Pain, Negative Self-Beliefs), which differentiated people with a history of NSSI from people with no NSSI history. Correlations with measures of self-efficacy, emotion regulation, and NSSI functions offer convergent and discriminant validity.
Conclusions: The questionnaire appears to be a reliable and valid measure of NSSI outcome expectancies that could be a useful addition to the measurement toolkit when investigating cognitive variables related to NSSI.

Key Points

1 We develop a measure of non-suicidal self-injury (NSSI) outcome expectancies (Non-Suicidal Self-Injury Expectancy Questionnaire (NEQ)).
2 We establish the factor structure, internal consistency, and validity of the NEQ.
3 NSSI outcome expectancies differentiate individuals with/without history of NSSI.

Non-suicidal self-injury (NSSI), the deliberate destruction or alteration of body tissue without conscious suicidal intent, and for purposes not socially sanctioned (Nock, 2009), is associated with significant psychological morbidity, and subsequent suicidal thoughts and behaviours (Whitlock et al., 2013). In non-clinical samples, approximately 18% of adolescents, 13% of young adults, and 5% of adults report a history of the behaviour, with rates in university students approximately 20% (Swannell, Martin, Scott, Gibbons, & Gifford, 2008; Whitlock et al., 2011). Given the associated distress for people who engage in the behaviour, and those who care for them, significant efforts have been made to better understand risk and protective factors that may underlie the initiation, maintenance, and cessation of the behaviour (Fox et al., 2015).

In proposing his social cognitive theory, Bandura (1977) argued that the anticipated consequences of behaviour are pivotal in determining whether we engage in that behaviour; favourable outcome expectancies facilitate behaviour, whereas negative outcome expectancies deter action. This relationship has been firmly supported for behaviours considered indirect forms of self-harm, including high alcohol consumption (Hasking, Boyes, & Mullan, 2015), poor diet (Lubans et al., 2012), and cigarette smoking (Van Zundert, Nijhof, & Engels,

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2009). However, the role of outcome expectancies has been largely neglected in accounts of NSSI.

Functional accounts (e.g., Bentley, Nock, & Barlow, 2014; Klonsky, 2007; Nock, 2009; Nock & Prinstein, 2004) assume NSSI serves a function for individuals who engage in the behaviour, and there is an inherent assumption that this function might be anticipated (e.g., if NSSI serves an Affect Regulatory function, one might assume that an individual could expect NSSI to regulate affect). However, functional accounts fail to consider that people who do not self-injure may also hold cognitions and beliefs regarding the anticipated outcomes of NSSI. Consideration of outcome expectancies held, both by people who self-injure and by people who do not, may identify patterns of cognition that increase risk of NSSI, or protect against NSSI for people who do not engage in the behaviour (Hasking, Whitlock, Voon, & Rose, in press). Similarly, expectancies held by people who have ceased their self-injury may hold clues about which cognitions can be targets of intervention, and which might be related to risk of relapse. As has been done in the field of alcohol abuse (Labbe & Maisto, 2011), expectancy challenge interventions might fruitfully target expectancies that are not borne out by the actual consequences of NSSI (e.g., that NSSI reduces distress), opening up new avenues for treatment.

Current measures that assess functions of NSSI (e.g., the Inventory of Statements about Self-Injury (ISAS); Klonsky & Glenn, 2009; Klonsky & Olino, 2008) are designed to capture only the experience of people who self-injure, framing the statements in terms of: "When I self-injure I am…" These measures assess the reasons someone might self-injure—not what they expect the outcome of the behaviour to be. Further, anticipated outcomes of a behaviour can be both positive and negative; functional measures focus only on factors that reinforce the behaviour, with no consideration given to whether the factors that maintain behaviour are valued positively. Consequently, a reliable and valid measure of NSSI expectancies is needed, which can capture the anticipated outcomes of NSSI, both positive and negative, for people who self-injure and those who do not.

In the only study to empirically assess NSSI expectancies, Hasking and Rose (2016) identified three (Positive Expectancies, Negative Expectancies and Social Expectancies) that could differentiate people who self-injured from those who did not. However, their factor analysis suggested additional outcome expectancies might be extracted with a more comprehensive measure, and validity was not assessed. In this study, we adapted Hasking and Rose's (2016) measure to provide a more comprehensive assessment of NSSI outcome expectancies. In the current study, we (1) establish the factor structure of this measure, (2) present preliminary criterion-related validity—comparing outcome expectancies held by people with no history of NSSI, people who had ceased their self-injury, and people reporting recent self-injury, and (3) correlate scores on the NSSI Expectancy Questionnaire (NEQ) with measures of self-efficacy, emotion regulation, and, among people who self-injure, reported functions of NSSI to establish convergent and discriminant validity.

Method

Participants

The sample comprised 496 undergraduate university students (26.6% male; 72.4% female; <1.0% transgender), aged 18–85 years (M = 22.33, SD = 6.62). Of the sample, 304 (62.0%) reported no history of NSSI, 97 (19.8%) reported a history, but no NSSI in the last year, and 89 (18.2%) reported at least once instance of NSSI in the preceding 12 months. Mean age of NSSI onset was 14.99 years (SD = 3.90) and was not significantly different from past and current self-injurers (p = .23). Cutting was reported as the primary form of self-injury by 48.3% (n = 87), followed by severe scratching (15.6%, n = 28), and self-battery (12.8%, n = 23). History of NSSI was not related to age, $F(2\ 485) = 1.74$, p = .18, or gender, $\chi^2(2) = 5.09$, p = .08[1].

Measures

NEQ. The measure administered to participants in this study was based on that developed by Hasking and Rose (2016). They administered 42 items to participants, which they based on the NSSI literature, and existing measures of alcohol outcome expectancies. Principal axis factoring (PAF) reduced the number of items to 23, underlying three factors: Positive Expectancies (e.g., I would feel better about myself), Negative Social Expectancies (e.g., My friends would be disgusted), and Negative Expectancies (e.g., I would feel ashamed). Through the factor extraction process the authors noted that three, five, six, or eight factors could be extracted, but the three-factor solution was most stable. In the current study, we added an additional seven items, thought to reflect factors that were initially excluded, to better capture outcome expectancies which might relate to NSSI.

[1]The transgender participant was excluded from this analysis, but did not report NSSI.

Consequently we administered a 49-item version of the questionnaire. All statements reflected possible outcomes of NSSI, and were presented with the stem: "How likely is it that after self-injuring: …". Reponses were made on a 4-point Likert scale reflecting how likely participants thought the outcome to be (1: *not at all likely*; 4: *extremely likely*). Participants were instructed to either think about the consequences of their own self-injury, or if they did not self-injure, to consider what the likely consequence might be if they did.

ISAS (Klonsky & Glenn, 2009; Klonsky & Olino, 2008). All participants were asked if they had ever engaged in NSSI, defined as hurting themselves intentionally, and without suicidal intent. Participants reporting a history of NSSI then reported frequency of 12 self-injurious behaviours (e.g., cutting, burning, self-battery), age of onset, and frequency of NSSI in the last 12 months. Participants with a history of NSSI also completed Section II of the ISAS, which assesses 13 functions of NSSI. Participants respond on a 3-point scale how relevant each statement is for them (e.g., "When I self-injure I am… calming myself down"). These 13 functions represent both intrapersonal (affect regulation, anti-dissociation, anti-suicide, marking distress, self-punishment), and interpersonal (autonomy, interpersonal boundaries, interpersonal influence, peer bonding, revenge, self-care, sensation seeking, toughness) functions of NSSI. The ISAS has established test–retest reliability (r = .85; Klonsky & Olino, 2008) in samples of young adults. In the current study, Cronbach's alpha for individual functions ranged from .70 (marking distress) to .89 (anti-suicide). Intrapersonal total: α = .84; interpersonal total: α = .91.

General self-efficacy (GSE; Schwarzer & Jerusalem, 1995). The GSE is a 10-item measure designed to assess optimistic self-beliefs to cope with demands in life. Respondents indicate on a 4-point scale (1: *not at all true*; 4: *exactly true*) how true each statement is of them (e.g., "I can always manage to solve difficult problems if I try hard enough"). The scale has been translated into 32 languages, evidencing consistent reliability and validity across countries, and various domains of human functioning (Luszczynska, Gutiérrez-Dona, & Schwarzer, 2005). In the current sample, Cronbach's alpha = .88.

Self-efficacy to avoid suicidal action (SEASA; Czyz et al., 2014). The SEASA was developed to assess a person's belief in their ability to resist suicidal behaviour (e.g., "How certain are you that you will not attempt suicide in the future?"). For this study we changed the wording to reflect belief in the ability to resist NSSI. We have previously adapted the SEASA in this way with reliable results (Hasking & Rose, 2016). Participants respond on a 6-point scale (1: *very uncertain*; 6: *very certain*) regarding their ability to resist NSSI. Initial validation of the scale supported a single-factor structure, strong internal consistency (Cronbach's α = .96), and convergent validity (Czyz et al., 2014). Internal consistency was also strong in the current study (Cronbach's α = .93).

Emotion Regulation Questionnaire (ERQ; Gross & John, 2003). The ERQ is a 10-item questionnaire designed to assess the emotion regulation strategies of cognitive reappraisal and expressive suppression. Cognitive reappraisal is an antecedent-focused emotion regulation strategy, which aims to alter the emotional salience of situations and events, and is typically associated with psychological wellbeing. Conversely, expressive suppression involves inhibiting the behavioural expression of emotion, which can exacerbate negative emotional states (John & Gross, 2004). Participants respond on a 7-point Likert scale (1: *strongly disagree*; 7: *strongly agree*) how much they agree with each statement (e.g., "I control my emotions by changing the way I think about the situation I'm in"; "I control my emotions by not expressing them"). Validation of the scale revealed adequate internal consistency (α = .79 for cognitive reappraisal and α = .73 for expressive suppression) and good test–retest reliability (r = .69; Gross & John, 2003). In this sample: cognitive reappraisal α = .89; expressive suppression α = .79.

Procedure

Participants completed the measures of interest as part of a larger study on emotion regulation and NSSI. After obtaining approval from the Human Research Ethics Committee of the host university, participants self-selected into the study in response to an advertisement placed on an online notice board for students interested in participating in research for course credit. The advertisement called for participants interested in a study about emotion regulation, self-control, and NSSI. Interested participants were directed to the online questionnaire, where they were informed, through an information sheet, about the study aims, participation requirements, data management procedures, and right to withdraw. Participants completed the questionnaire at a time and place of their choosing. All participants were provided with links and downloadable material regarding local counselling services, strategies for dealing with stress, and information about NSSI.

Data Analysis

Given the desire to extract factors thought to reflect latent theoretical constructs, and consistent with initial

scale development, PAF, with oblique rotation was used as the means of factor extraction. Eigenvalues ≥ 1.0, examination of the scree plot, and Horn's (1965) parallel analysis with 1 000 samples were used to determine the number of factors to extract (O'Connor, 2000). Items were included on a factor if they loaded unambiguously (factor loadings > .4), without cross-loadings, and were conceptually coherent (communalities > .30).

Criterion-related validity was assessed by comparing factor scores across participants with no history of NSSI, participants who had a history of NSSI but had not injured in the last 12 months, and participants who self-injured in the last 12 months, with appropriate post-hoc tests. Convergent and discriminant validity were assessed with bivariate correlations between factor scores on the NEQ, and measures of theoretically related constructs. Given theoretical links between outcome expectancies and self-efficacy, factor scores were correlated with GSE, and self-efficacy to resist NSSI. Given the emotion regulatory function of NSSI, scores were also correlated with cognitive reappraisal and expressive suppression. Finally, bivariate correlations between functions of NSSI and scores on the NEQ were examined.

Results

Data Screening

No item contained more than 2% missing data. Although data were not missing completely at random, Little's $\chi^2(1\ 842) = 2\ 116.809$, $p < .001$, given the sensitivity of χ^2 analyses to sample size, and the small amount of missing data, expectation maximisation was used to impute data. As expected, some items were positively skewed (e.g., "I would feel better about myself"), others were negatively skewed (e.g., "I would feel ashamed"), and others were normally distributed (e.g., "my friends would not approve of me"; skew Z range: −10.34 to 16.58; kurtosis Z range: −5.59 to 14.43). Given the distributions reflect what we expect to be the "true" distribution of the population, and that PAF is recommended when violations of normality are present (Costello & Osborne, 2005), and to maintain interpretability, we chose not to transform these items.

Principal Axis Factoring

The Kaiser-Meyer-Olkin measure of sampling adequacy (.90), and Bartlett's test of sphericity, $\chi^2(1\ 176) = 9\ 951.67$, $p < .001$, both confirmed the factorability of the dataset. Initial factor analysis with all 49 items revealed nine factors with eigenvalues greater than 1.0. Five of these had eigenvalues greater than two, which together accounted for 45.18% of the variance. Examination of the scree plot, and parallel analysis also suggested a five-factor solution. Subsequent analyses thus stipulated a five-factor solution be extracted. A series of analyses were conducted in which items with low communalities (three items), items failing to load on a factor (one item), and items-cross loading on factors (six items), were removed from subsequent analysis. This resulted in a five-factor solution accounting for 46.66% of variance, with the number of items on each factor varying from 5 to 13 items. In an effort to shorten the questionnaire, we selected the five items with the strongest loadings on each factor and ran the PAF a final time. These 25-items explained 50.74% of the variance, and loaded on conceptually coherent, reliable factors (Table 1; Appendix I).

Factor 1 reflected positive outcomes associated with self-injury, primarily focused on relieving negative feelings (labelled Affect Regulation). Factor 2 contained items which reflected anticipated negative social consequences, such as disapproval from friends (labelled Negative Social Outcomes). Factor 3 was thought to reflect expecting NSSI to serve a communicative function, though either influencing others, or eliciting care from others (labelled Communication). Factor 4 contained items related to the expectation of pain (labelled Pain). Finally, Factor 5 reflected anticipated negative feelings as a result of NSSI, including feeling like a failure, and self-hatred (labelled Negative Self-Beliefs). Expectancies of Negative Self-beliefs were negatively correlated with Affect Regulation, and positively correlated with all other factors (Table 2). Expectations of pain were inversely related to Affect Regulation and positively correlated with expectations of Negative Social Outcomes.

Preliminary Validation of the NEQ

Criterion-related validity

To simultaneously assess group differences, and whether individuals within groups differed in their relative endorsement of expectancies, a 3 × 5 mixed model multivariate analysis of variance was conducted, with group as the between-group factor and expectancy scores as the within-group factor.

Group differences were observed on the linear combination of expectancy factors ($\lambda = .35$, $F(4\ 459) = 217.49$, $p < .001$, $\eta^2 = .66$) and an interaction between group and expectancies was also evident ($\lambda = .61$, $F(8\ 920) = 27.70$, $p < .001$, $\eta^2 = .22$). Examination of univariate analyses indicated group differences on all subscales, with the exception of Negative Social

Table 1 Results of principal axis factoring

Item[a]	Communalities	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
I would feel less frustrated with the world	.69	.86				
I would feel better about myself	.60	.77				
I would feel calm	.63	.72				
The future would seem more optimistic	.54	.66				
I would feel relieved	.54	.62				
My friends would be disgusted	.54		.70			
My friends would not approve of me	.52		.70			
My family would be disgusted	.46		.67			
My parents would be angry	.42		.62			
Other people would notice and think I was a freak	.39		.46			
I could make other people do things for me	.67			.81		
It would be easier to get what I want from others	.51			.71		
Other people would notice and offer sympathy	.35			.49		
I would feel that it would be easier to open up and express my feelings	.32			.48		
I would get care from others	.38			.48		
I would feel physical pain	.63				.81	
It would hurt	.64				.74	
I would not be aware of any physical pain (R)	.60				.60	
I would not feel any pain (R)	.49				.59	
The pain would be intense	.37				.56	
I would feel like a failure	.58					.69
I would feel ashamed	.59					.60
I would feel numb	.36					.55
I would feel emotionally drained	.47					.54
I would hate myself	.43					.52
% Variance		20.08	14.28	7.47	4.82	4.10
Cronbach's alpha		.86	.78	.71	.80	.78

[a] Items were randomised in presentation in the questionnaire.

Outcomes (Table 3). Participants who never engaged in NSSI reported weaker Affect Regulation expectancies than both past ($t = 8.78$, $p < .001$, $d = .96$) and recent ($t = 11.13$, $p < .001$, $d = 1.48$) self-injurers, whereas people who self-injured more recently reported stronger Affect Regulation expectancies than those who had not self-injured in the last year ($t = 2.61$, $p = .03$, $d = .39$). No difference in expectations of Negative Social Outcomes was observed across groups (all $p > .05$). Participants with no history of NSSI anticipated greater Communicative outcomes from NSSI, than both participants who had not self-injured in the last year ($t = 4.91$, $p < .001$, $d = .58$) and those who had ($t = 6.44$, $p < .001$, $d = .81$); there was no difference between the two groups with a history of NSSI ($p = .37$). Similarly, participants with no history of NSSI anticipated greater Pain than participants who self-injured in the past ($t = 4.82$, $p < .001$, $d = .56$) and more recently ($t = 6.66$, $p < .001$, $d = .87$), but no differences were noted between participants with a history of NSSI ($p = .22$). Finally, the same pattern was evident for Negative Self-Beliefs; people with no history of NSSI reported stronger expectancies of Negative Self-Beliefs than both past ($t = 3.08$, $p = .007$, $d = .37$) and recent ($t = 2.43$, $p = .047$, $d = .28$) self-injurers, but there was no difference between the two self-injuring groups ($p = 1.00$).

Individuals who had never self-injured were least likely to endorse Affect Regulation expectancies, followed by Communication, Negative Social Outcomes, Negative Self-Beliefs, and most likely to endorse

Table 2 Factor correlations

Factor	Mean (*SD*)	Negative Social Outcomes	Communication	Pain	Negative Self-Beliefs
Affect regulation	9.55 (3.70)	.08	.02	−.44***	−.13**
Negative social outcomes	12.98 (3.39)	–	.05	.10*	.41***
Communication	9.89 (2.85)		–	.06	.19***
Pain	16.02 (3.10)			–	.31***
Negative self-beliefs	14.72 (3.38)				–

Table 3 Group differences on Non-Suicidal Self-Injury (NSSI) Expectancy Questionnaire

Factor	No NSSI, mean (*SE*); *n* = 304	Past NSSI, mean (*SE*); *n* = 97	Recent NSSI, mean (*SE*); *n* = 89	*F*	*p*
Affect regulation	8.11 (.19)	11.32 (.33)	12.58 (.36)	80.65	<.001
Negative social outcomes	12.84 (.20)	13.22 (.35)	13.30 (.38)	.83	.44
Communication	10.60 (.16)	9.03 (.28)	8.40 (.30)	26.99	<.001
Pain	16.85 (.17)	15.21 (.39)	14.43 (.32)	27.87	<.001
Negative self-beliefs	15.16 (.20)	13.95 (.34)	14.14 (.37)	6.29	.002

anticipated Pain ($p < .001$ between all factor scores; Fig. 1). A similar pattern was observed for people who had ceased NSSI, although the difference between Affect Regulation scores and Negative Social Outcomes was not as large ($p = .002$, $d = .39$), and there was no difference between strength of Affect Regulation expectancies and Negative Self-Beliefs ($p = .58$). Participants who had self-injured in the preceding 12 months reported no difference in the strength of their Affect Regulation expectancies and Negative Self-Beliefs, or between Negative Social Outcomes, Pain, and expectations of Negative Self-Beliefs. These participants reported stronger Affect Regulation expectancies than expectations of Communication ($p < .001$, $d = 1.02$), and Pain ($p = .004$, $d = .47$). Expectations of Communication were weaker than all other expectancies (all $p < .001$).

Convergent/discriminant validity

Affect Regulation expectancies were negatively related to self-efficacy and use of cognitive reappraisal, but positively related to use of expressive suppression (Table 4). Similarly, expectations of Negative Social Outcomes were inversely related to self-efficacy to resist NSSI, and positively related to expressive suppression. Conversely, Pain was positively related to self-efficacy and reappraisal, but inversely related to suppression. Negative Self-Beliefs and Negative Social Outcomes were not related to any of the variables examined.

Affect Regulation expectancies were related to all intrapersonal functions, except marking distress (Table 5). Expectations of Negative Social Outcomes were related to all intrapersonal functions, except Affect Regulation, and also related to establishing interpersonal boundaries and influence. Expectations of Communication were related to the anti-suicide function, marking distress, and the majority of interpersonal functions. Anticipated Pain was not related to any reported functions of NSSI. Finally, Negative Self-Beliefs were related to the majority of intrapersonal functions.

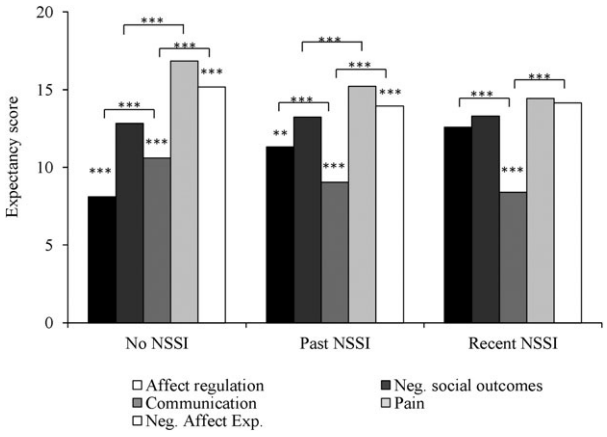

Figure 1 Differences in strength of expectancies within groups. *Note*: Unless otherwise indicated, significance is tested between adjacent columns.

Discussion

Recent theoretical and empirical work supports a role for NSSI-related cognitions, including outcome expectancies, in the initiation, maintenance and cessation of NSSI (Hasking et al., in press; Hasking & Rose, 2016). In this study we aimed to develop and validate a measure of NSSI outcome expectancies that could be used in future empirical work that seeks to better understand how outcome expectancies relate to emotional experience, emotion regulation, and NSSI. We present a 25-item measure that encompasses five NSSI outcome expectancies, reflecting both positive and negative anticipated consequences of the behaviour. These expectancies differentiate people who self-injure and those who do not, with more subtle differences between people who have ceased the behaviour and those who self-injured in the last 12 months. Finally, differential relationships with measures of self-efficacy, emotion regulation, and functions of NSSI provide evidence of convergent/discriminant validity.

The factors extracted here mirror those identified by Hasking and Rose (2016), with two additional expectancies extracted. The resulting factors Affect Regulation, Negative Social Outcomes, Communication, Pain, and Negative Self-Beliefs appear to tap common beliefs about self-injury as reported in previous literature (Bentley et al., 2014; Swannell et al., 2008). The positive expectancies in our questionnaire largely tap beliefs about the affect regulatory function of NSSI; not surprisingly scores

Table 4 Correlations between scores on the Non-Suicidal Self-Injury Expectancy Questionnaire and related constructs

Variable	Mean (*SD*)	Affect Regulation	Negative Social Outcomes	Communication	Pain	Negative Self-Beliefs
General self-efficacy	29.79 (4.36)	−.17***	−.10	.03	.14**	.02
Self-efficacy to resist non-suicidal self-injury	26.42 (8.20)	−.35***	−.15**	.09	.23***	−.04
Cognitive reappraisal	28.01 (6.52)	−.13**	.01	.04	.17***	.09
Expressive suppression	15.41 (4.95)	.20***	.15***	−.03	−.13**	.07

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

on this factor correlated with intrapersonal functions of NSSI. Consistent with social cognitive theory (Bandura, 1977, 1986), that these beliefs were stronger in people reporting recent NSSI, compared to both people who had ceased NSSI and those with no history of NSSI, highlights the salience of these beliefs, not only in increasing risk of NSSI, but in maintaining the behaviour. Negative associations with self-efficacy and cognitive reappraisal, and positive associations with expressive suppression, support the notion that people holding Affect Regulation expectancies may be more likely to self-injure, in the absence of alternative emotion regulatory strategies. Indeed, this was the only expectancy factor which differentiated the two groups of self-injurers, suggesting that rather than the anticipated consequences of NSSI becoming more negative among people who have ceased, the anticipated positive consequences are weakened. This might have implications for expectancy challenge interventions, with the focus being on challenging whether NSSI really does produce positive outcomes (i.e., NSSI might result in calm in the short term, but exacerbate distress in the longer term; Muehlenkamp et al., 2009; Whitlock et al., 2013).

Expectations of Negative Social Outcomes concern the anticipated reaction from others as a result of NSSI. These were overwhelmingly negative, and the strength of these beliefs did not differ across the three groups. Interestingly, scores on this factor were not only inversely related to self-efficacy to resist NSSI, but were positively related to expressive suppression. Arguably, someone who expects a negative reaction from others may well suppress their emotional response, and hide their NSSI. That scores on this factor correlate with functions of interpersonal influence and boundaries, as well as intrapersonal functions, might suggest that people who self-injure for interpersonal reasons are met with disapproval, disgust, and anger, from friends and family. Negative reactions to NSSI are well-reported in the literature, particularly among medical staff, school staff, and parents of youth who self-injure (Heath, Toste, Sornberger, & Wagner, 2011; Kelada, Whitlock, Hasking, & Melvin, 2016; McAllister, Creedy, Moyle, & Farrugia, 2002). These negative reactions can further stigmatise people who self-injure, causing greater distress and reducing help-seeking. Similarly, the anticipation of negative reactions (regardless of actual response from others) may be sufficient to dissuade help-seeking for self-injury or related concerns.

Expectations of Communication were highest among people with no history of NSSI. This may reflect the

Table 5 Correlations between scores on the Non-Suicidal Self-Injury Expectancy Questionnaire and functions of non-suicidal self-injury

Function	Mean (*SD*)	Affect Regulation	Negative Social Outcomes	Communication	Pain	Negative Self-Beliefs
Affect regulation	4.23 (1.66)	.36***	.09	−.13	−.12	.11
Anti-dissociation	2.41 (1.88)	.33***	.28**	.10	−.07	.37***
Anti-suicide	1.86 (2.03)	.22*	.21*	.26**	−.13	.26**
Marking distress	2.33 (1.83)	.10	.18*	.26**	.12	.16
Self-punishment	3.57 (2.02)	.18*	.23**	.04	.03	.35***
Intrapersonal functions total	14.39 (6.17)	.36***	.30***	.21*	−.06	.40***
Autonomy	.82 (1.41)	.07	.06	.06	−.04	.02
Interpersonal boundaries	1.55 (1.80)	.06	.21*	.24**	.13	.05
Interpersonal influence	1.03 (1.45)	.05	.20*	.40***	.08	.10
Peer bonding	.34 (.94)	.08	.001	.16	.004	−.12
Revenge	.57 (1.22)	.01	.03	.23**	.04	−.08
Self-care	1.16 (1.45)	.09	.09	.07	.02	.04
Sensation seeking	.91 (1.32)	.11	.07	.22*	−.03	−.01
Toughness	1.68 (1.68)	.09	.10	.17	−.03	−.01
Interpersonal functions total	8.03 (7.90)	.09	.16	.29***	.02	.03

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

misunderstanding that NSSI is attention seeking (Klonsky, 2011), often held by people unfamiliar with the behaviour, or may also reflect that self-injuring does not result in a communication function for people who engage it. Among participants who self-injured, expectations of Communication were related to functions of marking distress, and interpersonal functions. Participants endorsing this expectancy are, perhaps, likely to self-injure when they lack the ability, or desire, to verbally communicate their distress, or when previous attempts to communicate with less intense strategies have failed (Nock, 2009).

Expectations of Pain were highest among people with no history of NSSI, and positively related to self-efficacy to resist NSSI. It is possible that positive correlations with GSE and cognitive reappraisal simply reflect that people who do not self-injure were more likely to report Pain expectancies. In line with social cognitive theory (Bandura, 1977, 1986), expecting NSSI to be painful can be a protective cognition, related to a reduced capability to intentionally harm the self (c.f. Joiner, 2005). A recent meta-analysis confirms that people who self-injure show a greater pain threshold, greater pain tolerance, and report less pain intensity than people who do not self-injure (Koenig, Thaver, & Kaess, 2016). Arguably, reduced pain sensitivity could increase risk of NSSI, and be a marker of at-risk youth, whereas experiencing pain as a result of NSSI may facilitate cessation (Koenig et al., 2016; Groschwitz & Plener, 2012).

Finally, expectations of Negative Self-Beliefs was the only factor related to all other factors, with positive relationships with all but the Affect Regulation factor. Scores on this factor were not related to any of the self-efficacy or emotion regulation variables, suggesting that negative self-beliefs have no bearing on whether someone is likely to resist NSSI. Instead, for people with a history of NSSI, these negative beliefs might indeed arise as a result of relapse, or continued engagement in NSSI. For people who do not self-injure, NSSI might signal a sense of failure—that to self-injure would mean to have failed to cope with life's challenges. That scores on this factor were most strongly related to self-punishment and anti-suicide functions mirrors the self-hatred reflected in the items on this factor, and may indicate that NSSI serves to reinforce these negative self-beliefs, further increasing risk of NSSI as punishment (Klonsky, 2007; Nock, 2009; Nock & Prinstein, 2004). As such, challenging Negative Self-Beliefs may be less effective in reducing NSSI than challenging Affect Regulation expectancies.

As noted earlier, existing measures of the functions of NSSI are designed to assess the experience of people who self-injure. Conversely, our expectancy measure captures the anticipated outcomes of NSSI both for people who self-injure and those who do not. The relatively low correlations between the factors assessed by our measure and Section II of the ISAS assessing functions of NSSI confirms that expectancies and functions are related, but different, constructs. However, the low correlation might also be explained by the wording of the items on the respective measures. The response options of the ISAS ask participants to indicate how relevant each function is to them. Conversely, our measures ask respondents to indicate the likelihood of each outcome; arguably any particular outcomes could be likely to occur, but not perceived to be particularly relevant to maintaining NSSI. In addition to identifying cognitions that might encourage or protect against NSSI, our measure could be used to compare anticipated outcomes with the functions that actually maintain the behaviour. Further, consistent with motivational theories of drinking (e.g., Cox & Klinger, 1988), work in the alcohol field has demonstrated that the relationship between outcome expectancies and drinking behaviour is mediated by more proximal drinking motives (Hasking, Lyvers, & Carlopio, 2011). Our measure allows the assessment of NSSI outcome expectancies that could be used in similar tests of theoretical pathways to NSSI.

Limitations and Suggestions for Future Research

Due to the inclusion of only common variance (and exclusion of unique and error variance) in analyses, PAF typically accounts for less variance than other methods of extraction (e.g., principal components analysis; Beavers et al., 2013). However, although meeting minimal accepted standards, there is clearly room for improvement in the amount of variance our items account for. The analyses presented here are just the first step in developing a reliable and valid measure of NSSI outcome expectancies. Future work confirming the factor structure, and establishing invariance across people who do and do not self-injure is needed. Similarly, examination of the stability of the measure over time, and in clinical samples, with a larger number of people who self-injure, is warranted. Finally, it is worth noting our sample was disproportionately female; testing measurement invariance across equally sized samples of males and females will be important.

The cross-sectional nature of the data precludes any speculation about the development of NSSI outcome expectancies, or their causal role in the initiation or maintenance of NSSI. Of note, while some tentative assumptions can be made by examining differences across people with no history of NSSI, people who have ceased the behaviour, and people reporting more recent

NSSI, it is not clear to what extent the expectancies reported are held prior to the first episode of NSSI, or how expectancies change as a function of experiencing these outcomes. According to social cognitive theory (Bandura, 1986), expectancies are formed in a social context, and can be learned vicariously, without direct experience of behavioural consequences. Yet, expectancies are amenable to change, and direct (or vicarious) experience of behaviour will naturally modify these beliefs. Our measure taps expectancies that may well have been formed after participants engaged in NSSI. We believe our measure can serve as a useful starting point to see if these same expectancies are held prior to NSSI, but future work is required on the formation, and modification of NSSI outcome expectancies, and how we might reliably assess these changes over time. Regardless of how expectancies are developed, the expectancies currently held by people who self-injure are clinically important in identifying cognitions associated with the behaviour, and may indeed be at odds with the actual outcomes. This measure could thus help clinicians tease apart a variety of motivations for NSSI, including those that initiate the behaviour and those that maintain it.

Conclusion

In this study we have developed a new measure of NSSI outcome expectancies that can reliably differentiate the cognitions held by people who self-injure and those who do not. Notably, holding Affect Regulation expectancies regarding the potential outcomes of NSSI, and a reduced anticipation that NSSI could be painful, may be early markers of NSSI risk. Use of this measure in future work may provide valuable clues about the role of cognitions in the initiation, maintenance and cessation of NSSI, and provide targets for prevention, early intervention and expectancy challenge interventions.

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Appendix I. The NSSI Expectancy Questionnaire

We are interested in your thoughts about what might happen if someone engages in self-injury. If you personally have self-injured think about what you might expect the outcome to be when you self-injure. If you do not self-injure, think about what the outcome might be if you did.
How likely is it that after self-injuring:

		Extremely unlikely	Somewhat unlikely	Somewhat likely	Extremely likely
1.	I would feel less frustrated with the world	1	2	3	4
2.	My friends would be disgusted	1	2	3	4
3.	I could make other people do things for me	1	2	3	4
4.	I would feel physical pain	1	2	3	4
5.	I would feel like a failure	1	2	3	4
6.	I would feel better about myself	1	2	3	4
7.	My friends would not approve of me	1	2	3	4
8.	It would be easier to get what I want from others	1	2	3	4
9.	It would hurt	1	2	3	4
10.	I would feel ashamed	1	2	3	4
11.	I would feel calm	1	2	3	4
12.	My family would be disgusted	1	2	3	4
13.	Other people would notice and offer sympathy	1	2	3	4
14.	I would not be aware of any physical pain (R)	1	2	3	4
15.	I would feel numb	1	2	3	4
16.	The future would seem more optimistic	1	2	3	4
17.	My parents would be angry	1	2	3	4
18.	I would feel that it would be easier to open up and express my feelings	1	2	3	4
19.	I would not feel any pain (R)	1	2	3	4
20.	I would feel emotionally drained	1	2	3	4
21.	I would feel relieved	1	2	3	4
22.	Other people would notice and think I was a freak	1	2	3	4
23.	I would get care from others	1	2	3	4
24.	The pain would be intense	1	2	3	4
25.	I would hate myself	1	2	3	4

Positively worded items (e.g., I would feel closer to my friends) were included in the original questionnaire, but failed to uniquely load on any factor.