

The role of distress tolerance in the relationship between affect and NSSI

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Abstract

Objective. Non-suicidal self-injury (NSSI), the deliberate and self-inflicted damage of body tissue, typically serves an emotion regulation function. Both negative and positive affectivity have been associated with NSSI, as has low distress tolerance. In the current study, we tested whether relationships between both negative and positive affectivity and NSSI are moderated by the four facets of distress tolerance (tolerance, absorption, appraisal, regulation) captured by the Distress Tolerance Scale. **Methods.** A sample of 531 university students completed well-validated measures of NSSI, negative affectivity, positive affectivity, and distress tolerance. **Results.** Findings indicate that negative and positive affectivity, as well as the appraisal (i.e. negative perceptions of distress) and absorption (i.e. allocation of attention to distress) facets of distress tolerance, were directly associated with NSSI. Positive affectivity and appraisal also interacted in differentiating participants with recent, lifetime and no history of NSSI. Specifically, the association between negative perceptions of distress and self-injury was weaker at high levels of positive affectivity. Positive affectivity and absorption also interacted to differentiate between individuals with no history of NSSI and individuals who recently engaged in NSSI. Specifically, positive affectivity was negatively associated with self-injury, but only among individuals who allocate less attention to their distress. **Conclusions.** Considering the independent roles of negative and positive affectivity alongside specific facets of distress tolerance and their interactions with emotional experience, may enhance understanding of NSSI. Prevention and intervention initiatives that assist regulation of negative affectivity, increase positive affectivity, and improve distress tolerance, may reduce the likelihood of engaging in self-injury.

Non-suicidal self-injury (NSSI) is the deliberate damage to bodily tissue without intent to die (ISSS, 2020). NSSI is a prevalent behaviour with approximately one in five adolescents, 13.4% of young adults, and 20% of university students having engaged in self-injury (G. Kiekens et al., 2019; Swannell et al., 2014). Common behaviours include skin cutting and self-battery. Despite an absence of suicidal intent, frequent engagement in NSSI has been associated with adverse psychological outcomes as well as an increased risk of suicide (Whitlock et al., 2013). Increasing knowledge regarding the mechanisms that underlie NSSI is essential to inform both prevention and treatment initiatives. This paper will focus on the role of both negative affectivity, positive affectivity and distress tolerance in the occurrence of NSSI.

Self-injury primarily serves an emotion-regulation function (Houben et al., 2017; Nock & Prinstein, 2004; Nock, Prinstein, & Sterba, 2009; Selby et al., 2008; Taylor et al., 2018). NSSI can serve as an effective method for regulating emotion, by distracting from intense emotion through the sight of blood, the sensation of pain, or a focus on the injury itself. Several emotion regulation models, including the Experiential Avoidance Model (Chapman et al., 2006), the Emotional Cascade Model (Selby et al., 2008), and the Cognitive-Emotional Model (Hasking, J. Whitlock, D. Voon, & A. Rose, 2017), highlight how the experience and regulation of emotion play an important role in the likelihood of engaging in self-injury. Consistent with these theoretical perspectives, individuals who self-injure have a predisposition to experience emotions more intensely (Chapman et al., 2006; Houben et al., 2017), are more sensitive to emotional stimuli (Nock, Wedig, Holmberg, & Hooley, 2008), and experience emotion for longer periods of time (Boyes, Wilmot, & Hasking, 2019). Research has typically focused on the role of negative emotion in self-injurious behaviour, with many studies consistently demonstrating a relationship between trait negative affectivity and increased risk of self-injury (Boyes et al., 2019; Hasking, Di Simplicio, McEvoy, &

Rees, 2018; Horgan & Martin, 2016; Najmi, Wegner, & Nock, 2007). Specifically, individuals who experience higher levels of negative affectivity in general, are more likely to report a history of self-injury.

While the experience of negative affectivity plays an important role in self-injury, so too does the ability to tolerate the distress arising from the negative emotional experience. Distress tolerance, an individual's *perceived capacity* and *actual behaviour* associated with withstanding aversive psychological and physical states (Leyro, Zvolensky, et al., 2010), is a construct central to many emotion regulation accounts of NSSI. For example, the Experiential Avoidance Model (Chapman et al., 2006) postulates that individuals with an inability to tolerate distress are more likely to self-injure to avoid aversive states. Similarly, the Emotional Cascade Model, which is based on the premise individuals experience 'cascades' of emotion resulting from a cycle of intense affectivity and repetitive negative thinking, posits that individuals with a low distress tolerance are more likely to engage in NSSI as a means of escaping this perpetuating cycle (Selby et al., 2008). Therefore, individuals with a low tolerance for distress may be less likely to withstand distress arising from negative emotional experiences, and thus more likely to use self-injury as a way of escaping an aversive state. In contrast, individuals with a high tolerance for distress may be more likely to persevere through negative emotional states or employ alternative coping strategies to reduce distress.

Distress tolerance has been frequently associated with NSSI in self-report studies, with individuals reporting a history of self-injury also reporting lower levels of distress tolerance than individuals without a history of NSSI (Anestis, Knorr, Tull, Lavender, & Gratz, 2013b; Leyro, Zvolensky, et al., 2010; Slabbert et al., 2018b). Longitudinal research provides support for the predictive utility of distress tolerance, with self-report distress tolerance scores predicting NSSI behaviour one year later (Lin et al., 2018). Additionally,

experimental studies, with both clinical and non-clinical samples, indicate that individuals with a history of self-injury terminate distress-inducing tasks significantly more quickly than individuals without a history of NSSI (Gratz et al., 2006; Nock & Mendes, 2008). Low distress tolerance has also been associated with frequency of self-injury (Anestis et al., 2013a).

Despite emotion regulation frameworks positing that low distress tolerance may strengthen the relationship between intense emotion and NSSI, only recently has this been empirically assessed. Slabbert, Hasking and Boyes (2018) explored the way intense emotion, repetitive negative thinking, and distress tolerance interact to predict both history and frequency of NSSI. Results indicated that among individuals with a history of NSSI, heightened emotional experiences, coupled with an inability to tolerate distress, were associated with increased frequency of self-injury. These findings suggest that the interplay between emotions and distress tolerance may play an important role in NSSI. The authors discuss one possible limitation of their research being their use of the Distress Tolerance Scale total score.

The Distress Tolerance scale is a self-report measure that comprises four subscales; tolerance (the perceived ability to tolerate emotional distress), absorption (attention being absorbed by negative emotions), appraisal (subjective appraisal of distress), and regulation (regulation efforts to alleviate distress). A higher-order distress tolerance score is calculated from the summation of scores on each subscale. Almost all NSSI-related studies using the Distress Tolerance Scale utilise this total score. However, as distress tolerance is a multifaceted construct, reflected by the different items that comprise each subscale, it is likely researchers are missing important information captured in each subscale. Although use of the total scores allows researchers to make important claims about differences in distress tolerance between groups, information captured in the subscales allows us to narrow down

and precisely identify *how* differences in the ability to tolerate distress may result in behaviour such as self-injury. For example, knowing that individuals who hold particular negative beliefs about their distress, as captured in the appraisal subscale, are more likely to self-injure is significantly more informative for prevention and intervention programs than simply knowing individuals who self-injure have a lower tolerance for distress.

In one of the few studies to use the sub-facets of the Distress Tolerance Scale, Horgan and Martin (2016) conducted a study where they examined group differences between individuals with no history of NSSI, lifetime history of NSSI, and recent history of NSSI (past 12 months), on the Distress Tolerance Scale subscales. Interestingly, scores on the absorption subscale differentiated all three groups; individuals with no history of NSSI allocated the least attention to their negative emotions, compared to individuals who recently self-injured who allocated the most attention to their negative emotions. Scores on the tolerance subscale differentiated between recent self-injury and both lifetime history and no history of NSSI; individuals who recently self-injured reported the lowest scores indicating a lower perceived ability to tolerate distress. Scores on the appraisal subscale differentiated between recent and no history of NSSI, as well as between lifetime history and no history of NSSI; individuals who appraised their distress in a more negative manner were more likely to report recently self-injuring relative to individuals with a lifetime history and no history of NSSI (Horgan & Martin, 2016).

These findings provide promising evidence that different aspects of distress tolerance are related to NSSI and highlight the importance of examining the unique relationships between the subscales and NSSI to better inform and develop targeted prevention and intervention initiatives. Additionally, what still remains unknown is how these different facets of distress tolerance work together with negative affectivity to predict self-injury. Given the emotion-regulatory function of self-injury (Houben et al., 2017), and the evidence

demonstrating a clear link between negative affectivity and NSSI (Boyes et al., 2019; Bresin, 2014; Hasking et al., 2018; Najmi et al., 2007), the important next step is to explore how the different aspects of distress tolerance impact the relationship between emotion and NSSI.

Although the link between heightened negative affectivity and NSSI is well documented, it is also important to consider the experience and regulation of positive affectivity. Given negative and positive affectivity are best conceptualised as independent dimensions of affectivity, rather than two ends of a continuum (Watson et al., 1988), it is likely that they are differentially related to NSSI and require independent assessment. Recent evidence demonstrates associations between positive affectivity and self-injury (Boyes et al., 2019; K. Bresin, 2014; Hasking et al., 2018; Victor & Klonsky, 2014). In self-report studies, not only is low trait positive affectivity associated with increased odds of self-injury, but high trait positive affectivity also appears to play a protective role, as higher levels of positive emotion were related to reduced odds of NSSI even in the presence of negative affectivity (Hasking et al., 2018). Findings from ecological momentary assessment studies suggest individuals who self-injure report lower daily levels of positive emotion than individuals who do not (K. Bresin, 2014; Victor & Klonsky, 2014), and decreased levels of positive affectivity prior to engaging in NSSI (Muehlenkamp et al., 2009). Findings have also shown that, relative to individuals with no history of self-injury, participants with a history of NSSI report less positive emotion both before and after viewing an amusing film clip (Boyes et al., 2019). The relationship between positive affect and NSSI may be related to several factors, one being the experience of depression which is characterised by high levels of negative affect and low levels of positive affect (Boumparis, Karyotaki, Kleiboer, Hofmann, & Cuijpers, 2016; Dunkley et al., 2017; Winer & Salem, 2016). Depression has been associated with NSSI in several studies (Burke, Anne McArthur, Daryanani, Abramson, & Alloy, 2018; Laurence Claes, Luyckx, & Bijttebier, 2014; Jacobson, Hill, Pettit, & Grozeva, 2015). While

some individuals may self-injure to down-regulate intense negative emotion, in the absence of positive affect others may engage in self-injury for the purpose of up-regulating emotion or ‘to feel something’ (Bentley, Nock, & Barlow, 2014). Additionally, research suggests individuals with depression may engage in intentional cognitive strategies that ‘dampen’ and reduce the experience of positive affect, related to the fear of intense positive emotion characteristic of dysphoria (Burke et al., 2018; Feldman, Joormann, & Johnson, 2008; Werner-Seidler et al., 2013). However, it is important to note that NSSI can exist in the absence of a psychological disorder, and it is also plausible that individuals who experience low levels of positive affect may not necessarily have depression. Regardless, together these findings highlight the need to examine both positive and negative affect when investigating the relationship between emotion and self-injury as they are independently related to NSSI.

This study aimed to examine the potential moderating roles of facets of distress tolerance on the relationships between both negative affectivity and positive affectivity and NSSI. Based on previous research, we expected greater negative affectivity to be associated with increased odds of reporting a history of and more recent use of NSSI. We also expected lower levels of positive affectivity to be associated with increased odds of reporting a history of and more recent use of NSSI. Further, we expected the relationships between negative affectivity and NSSI to be exacerbated in those with low levels of distress tolerance. We did not make predictions regarding the moderating role of distress tolerance on the relationship between positive affectivity and NSSI given the exploratory nature of this research.

Method

Participants. The sample comprised 531 Australian university students between the ages of 18 and 25, recruited through an online research participation portal and social media platforms. Participants were recruited as part of a larger study exploring the role of social,

cognitive, and emotional factors underlying health risk behaviours. The full list of measures is available on the Open Science Framework:

https://osf.io/vugq2/?view_only=7ae9c1e1f7694bfc8de140c8c490cb50).

Of participants, 397 were female (74.7%), 215 (40.5%) reported a lifetime history of NSSI, and 171 (32.2%) reported a prior diagnosis of a mental illness, most commonly depression, anxiety, and comorbid depression and anxiety. Among individuals reporting a history of self-injury, 118 (54.9%) reported self-injuring in the past 12 months, 59 (27.4%) of whom had self-injured five or more times.

Materials and methods

Demographic information: Information regarding age, gender (1: Male, 2: Female) and history of mental illness (0: No history, 1: History of mental illness) was recorded. To assess a prior history of mental illness, participants responded either ‘yes’ or ‘no’ to the item ‘*Have you ever been diagnosed with a mental disorder?*’. Individuals who responded ‘yes’ were asked to specify their diagnosis in a text box provided.

Non-suicidal self-injury. History and frequency of self-injury were assessed using the Inventory of Statements About Self-Injury (ISAS; Klonsky & Glenn, 2009). Individuals were asked to respond ‘yes’ or ‘no’ to the item “Have you ever engaged in non-suicidal self-injury?”. The frequency of twelve self-injurious behaviours (e.g. cutting, scratching, burning) was assessed with individuals entering the number of times they had ever engaged in each behaviour. The ISAS demonstrates good test-retest reliability, ($r = .85$; (E. D. Klonsky & Olino, 2008) as well as good construct validity given its associations with clinical variables including depression and suicide ideation (Klonsky & Glenn, 2009).

Positive and negative affectivity. Positive and negative affectivity were assessed with the trait version of the widely used Positive and Negative Affectivity Schedule (PANAS;

Watson., 1988). This measure comprises two scales that independently assess the experience of positive affectivity (e.g. excited) and negative affectivity (e.g. afraid) with each scale containing 10 adjectives. Participants respond to the statement “This scale consists of a number of words that describe different feelings and emotions. Read each item and then indicate to what extent you generally feel this way, that is, how you feel on the average”. Participants then rate the extent to which they generally experience each emotion on a 5-point Likert Scale (1: very slightly or not at all; 5: Extremely). The measure demonstrates good internal consistency (Crawford & Henry, 2004). The internal consistency was excellent in the current sample (Negative affectivity, $\alpha = .91$; Positive affectivity, $\alpha = .91$).

Distress Tolerance. The 15-item Distress Tolerance Scale (Simons & Gaher, 2005) was used to assess individual differences in the ability to experience and withstand negative psychological states. This scale consists of four subscales; tolerance (3 items; e.g., I can't handle feeling distressed or upset); appraisal (6 items; e.g., I am ashamed of myself when I feel distressed or upset); absorption (3 items; e.g., My feelings of distress are so intense that they completely take over); and regulation (3 items; e.g., I'll do anything to stop feeling distressed or upset). Items are rated on a 5-point Likert scale (1: strongly agree; 5: strongly disagree), with higher scores reflecting higher levels of distress tolerance. This scale demonstrates excellent internal consistency ($\alpha = 0.89$; Simons and Gaher, 2005). Positive associations with positive affectivity ($r = 0.26$) and negative associations with negative affectivity ($r = 0.59$; Simons and Gaher, 2005) provide evidence of good convergent and divergent validity. The internal consistency was adequate in the current sample (Tolerance, $\alpha = .84$; Appraisal, $\alpha = .69$; Absorption $\alpha = .86$; Regulation $\alpha = .76$).

Procedure

Upon receiving ethical approval from the University Human Research Ethics Committee, the study was advertised on the University's online research participation pool, and other social media platforms. University students received course credit for participation, and external participants went into a prize draw to win an iPad. All participants were provided with a link to the online survey, where they were presented with an information sheet detailing the project aims, nature of the questions, as well as data storage and confidentiality information. Participants provided consent before completing the questionnaire. In total, participation took approximately one hour. All participants were provided with a list of resources including counselling services and information about self-injury.

Data Analysis

Individuals were classified into three groups based on their NSSI history; no history of NSSI (coded 0), lifetime history of NSSI where individuals have previously engaged in self-injury but not in the past 12 months (coded 1), and recent history of NSSI where individuals have engaged in self-injury in the past 12 months (coded 2). A series of multinomial logistic regression analyses were conducted to assess associations between negative affectivity, positive affectivity, the facets of distress tolerance and history of self-injury, as well as whether the four aspects of distress tolerance moderated relationships between positive and negative affectivity and NSSI. Gender and history of mental illness were entered as covariates in the model. Negative and positive affectivity were entered in Step 2, followed by the four subscales of the distress tolerance scale in Step 3, with all relevant two-way interactions entered in Step 4. Variables were standardised (Z-scores) to reduce multicollinearity and significant interactions were interpreted using simple slopes analysis at \pm one standard deviation from the mean (Aiken & West, 1991).

Results

Gender and history of mental illness differentiated between the groups, $\chi^2(4) = 142.54$, $p < .001$. Females were more likely to report both recent and lifetime NSSI compared to no history of NSSI, but there was no gender difference in recent and lifetime NSSI (Table 2). Having a history of mental illness was associated with greater odds of reporting recent and lifetime NSSI compared with no history of NSSI, as well as greater odds of engaging in recent NSSI relative to lifetime history of NSSI. The addition of positive and negative affectivity improved the predictive utility of the model, $\Delta\chi^2(4) = 58.20$, $p < .001$. Experiencing low positive affectivity was associated with greater odds of engaging in recent and lifetime NSSI compared to no history of NSSI, as well as greater odds of engaging in recent self-injury relative to lifetime history of NSSI. Negative affectivity was associated with greater odds of reporting recent NSSI relative to no history and lifetime history of NSSI. It did not differentiate between no history and lifetime history of NSSI.

Table 1

Descriptive statistics and correlations between variables of interest

	M	SD	2	3	4	5	6	7	8
1. Gender	-	-	.15**	.17**	-.08	-	-	-	-.08
2. Mental Illness	-	-	-	.33**	-.30*	.19**	.21**	.20**	-
3. Negative Affect	25.64	8.52	-	-	-.30**	.29**	.38**	.37**	.18**
4. Positive Affect	31.70	7.74	-	-	-.35**	.40**	.57**	.49**	.25**
5. Tolerance	2.94	1.07	-	-	-	.35**	.48**	.49**	.14**
6. Appraisal	3.09	.94	-	-	-	-	.70**	.79**	.50**
7. Absorption	2.81	1.10	-	-	-	-	-	.75**	.54**
8. Regulation	2.90	.92	-	-	-	-	-	-	.41**

Note: Associations between dichotomous and continuous variables are point bi-serial correlations.

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

Table 2

Multinomial regression: Negative and Positive Affectivity, Distress Tolerance, No NSSI history/Lifetime NSSI history/Recent NSSI history

	No history of NSSI/Lifetime NSSI history OR (95% CI)	No history of NSSI/Recent NSSI history OR (95% CI)	Lifetime NSSI history/Recent NSSI history OR (95% CI)
Step one			
Gender	2.63(1.33-5.20)**	3.65(1.86-7.17)***	1.39(.59-3.24)
History of mental illness	5.75(3.32-9.97)***	11.39(6.86-18.91)***	1.98(1.12-3.55)*
Step two			
Negative Affectivity	1.17(.87-1.57)	1.92(1.44-2.56)***	1.64(1.19-2.28)**
Positive Affectivity	.72(.54-.96)*	.48(.36-.64)***	.66(.48-.91)*
Step three			
DTS Tolerance	.94(.58-1.54)	1.42(.86-2.36)	1.51(.86-2.65)
DTS Appraisal	.70(.43-1.15)	.54(.33-.89)*	.77(.44-1.34)
DTS Absorption	.72(.43-1.21)	.56(.32-.97)*	.77(.41-1.46)
DTS Regulation	1.25(.88-1.76)	1.10(.78-1.55)	.88(.61-1.29)
Step four			
Negative Affectivity *Positive Affectivity	.96(.68-1.37)	1.22(.86-1.71)	1.24(.85-1.81)
Negative Affectivity *Tolerance	1.28(.72-2.26)	1.24(.71-2.16)	1.01(.54-1.89)
Negative Affectivity *Appraisal	1.25(.71-2.20)	.95(.54-1.64)	.79(.42-1.47)
Negative Affectivity *Absorption	.63(.34-1.18)	.62(.34-1.15)	.95(.47-1.91)
Negative Affectivity *Regulation	1.42(.93-2.18)	1.40(.92-2.12)	.99(.61-1.53)
Positive Affectivity *Tolerance	1.30(.75-2.25)	1.34(.78-2.32)	1.02(.57-1.85)
Positive Affectivity *Appraisal	1.03(.60-1.76)	2.49(1.47-4.22)**	2.41(1.34-4.34)**
Positive Affectivity *Absorption	.76(.43-1.35)	.45(.25-.81)**	.59(.30-1.16)
Positive Affectivity *Regulation	.91(.63-1.31)	.78(.55-1.11)	.86(.60-1.24)

Note. *** $p < .001$, ** $p < .01$, * $p < .05$

The addition of the four Distress Tolerance Scale subscales significantly improved the model $\Delta\chi^2(8) = 22.053, p = .005$. The appraisal and absorption subscales of the Distress Tolerance Scale differentiated between no history of NSSI and recent NSSI. Specifically, individuals who appraised their distress as unacceptable, and who allocated greater attention to their distress, were more likely to report recently engaging in self-injury relative to never having self-injured. These subscales did not differentiate between recent and lifetime history of NSSI, nor did they differentiate between no history and lifetime history of self-injury.

The addition of the two-way interactions significantly improved the model $\Delta\chi^2(18) = 31.03, p = .029$. There was a significant two-way interaction between positive affectivity and the appraisal subscale that differentiated between recent and no history of NSSI (Figure 1a). Results from a simple slopes analysis reveal a negative relationship between positive affectivity and recent history of NSSI at low levels of appraisal ($b = -1.46, z = -4.08, p = .000$) but not at high levels of appraisal ($b = -1.09, z = -1.21, p = .23$). Positive affectivity and appraisal also interacted to predict engagement in recent NSSI relative to lifetime history of NSSI (Figure 1b). The pattern of results was the same, with results indicating a negative relationship between positive affectivity and recent NSSI history at low levels of appraisal ($b = -1.70, z = -3.16, p = .002$), and no association at high levels of appraisal ($b = -.03, z = -.12, p = .91$). Finally, positive affectivity interacted with the absorption subscale to differentiate between recent and no history of NSSI (Figure 2). Results from a simple slopes analysis indicate a negative relationship between positive affectivity and recent history of NSSI at high levels of absorption ($b = -1.48, z = -3.29, p = .001$) but not at low levels of absorption ($b = -.18, z = -.65, p = .52$).

Figure 1a. The relationship between appraisal and odds of NSSI (Never vs Recent) is moderated by positive affect.

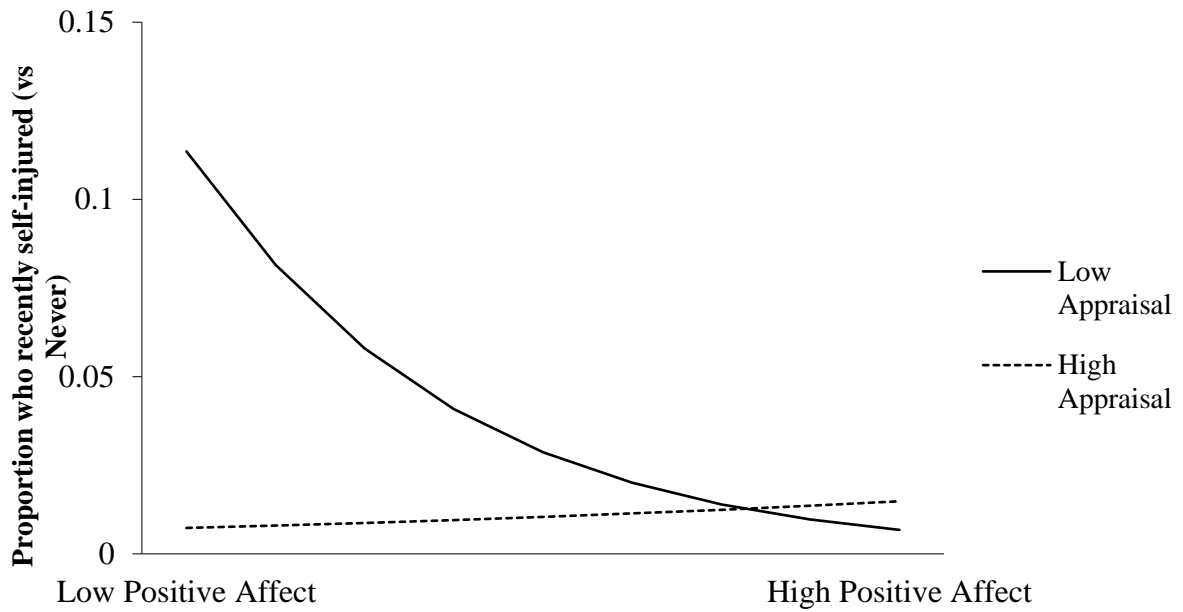


Figure 1b. The relationship between appraisal and odds of NSSI (Ever vs Recent) is moderated by positive affect.

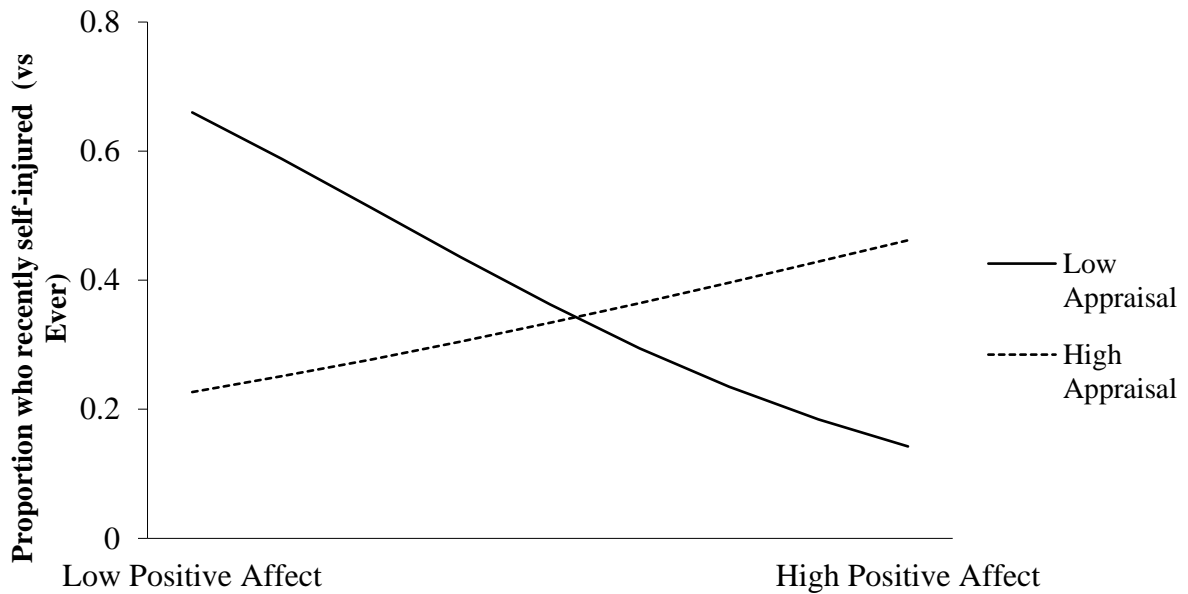
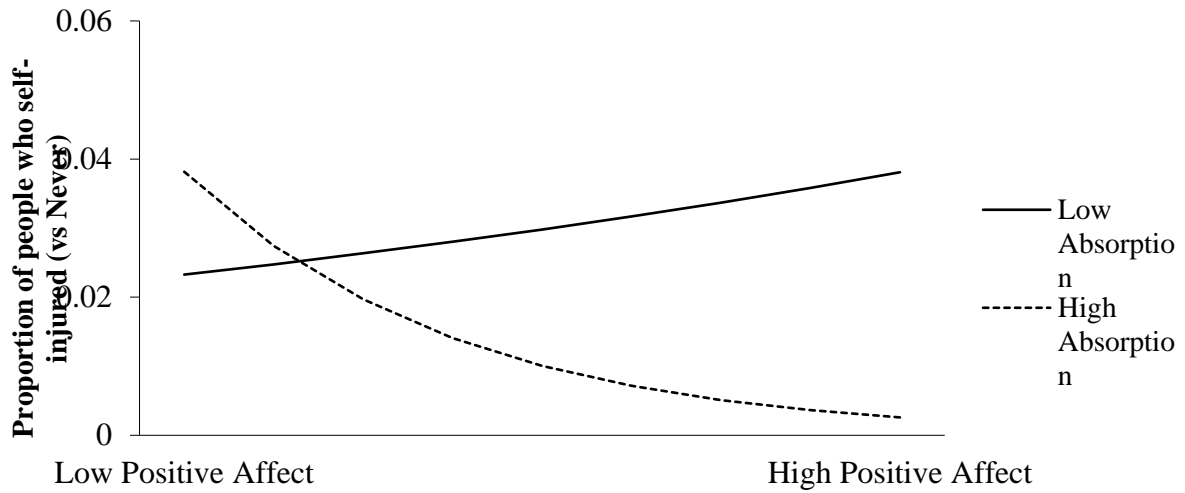


Figure 2. The relationship between absorption and odds of NSSI (Never vs Recent) is moderated by positive affect.



Discussion

The aim of the current study was to examine how different facets of distress tolerance relate to NSSI, with a specific focus on how they interact with both positive and negative affectivity to predict history of self-injury. Consistent with previous research, negative affectivity (Boyes et al., 2019; Hasking et al., 2018; Horgan & Martin, 2016; Najmi et al., 2007) and a lack of positive affectivity (Bresin, 2014; Muehlenkamp et al., 2009; Victor & Klonsky, 2014) were associated with NSSI. Although there were direct associations between distress tolerance and NSSI, this was only true for the appraisal and absorption subscales. Additionally, interactions between these two subscales and positive affectivity suggest an important interplay between these variables, particularly in relation to recent engagement in NSSI. These findings highlight a need to focus on increasing both the experience of positive emotion and specific aspects of distress tolerance to reduce the likelihood of engaging in NSSI.

As expected, heightened negative affectivity was associated with recent NSSI, however it did not differentiate between individuals who had never engaged in self-injury and individuals who reported a lifetime history of NSSI. Although inconsistent with other self-

report studies where negative affectivity has been able to make this distinction (Horgan & Martin, 2016), the pattern of results was still in the anticipated direction. In contrast, low positive affectivity differentiated all three groups. These findings support recent research in the NSSI field that emphasizes the important role positive emotion plays in preventing self-injury and highlight how regardless of negative affectivity (which has been predominantly focused on in the literature), individuals are at greater risk of engaging in self-injury if they experience low positive affectivity. Importantly, evidence suggests, relative to individuals with no history of NSSI, individuals with a history of self-injury report reacting less strongly to positive emotion, experience positive emotion less intensely, and experience it for a shorter period of time (Boyes et al., 2019). Together, these findings continue to pave the way for future research and treatment initiatives that would both benefit from a greater focus on the role that positive emotion plays in NSSI.

While previous research has already established the total distress tolerance score is a significant correlate of NSSI, the current findings build on this to highlight that appraisal and absorption are uniquely associated with NSSI, and may be particularly important in understanding the relationships between trait emotional experience and self-injury. Specifically, our findings suggest individuals who perceive their distress as shameful or unacceptable are more likely to have recently self-injured. This supports previous findings that demonstrate a link between the appraisal subscale of the Distress Tolerance Scale and self-injury (Horgan & Martin, 2016; Kang et al., 2018; Lin et al., 2018). Therefore, altering the way one appraises their distress may be important in reducing the likelihood of engaging in self-injury. By assisting individuals to view their distress as acceptable and manageable as opposed to shameful and intolerable, these individuals may be more likely to persevere through their emotional experiences and avoid using self-injury to escape it. Acceptance Commitment Therapy (ACT) is one established intervention that may effectively change

appraisal as it targets the acceptance of distress and feelings of discomfort while fostering the development of alternate emotion regulation strategies (Fledderus, Bohlmeijer, Fox, Schreurs, & Spinhoven, 2013). Cognitive reappraisal is another emotion-focused strategy that involves reducing the emotional impact of distress by shaping how one initially perceives or appraises it. Findings from a study exploring the predictors of continuation and cessation of self-injury revealed low cognitive reappraisal distinguished between individuals who continued to self-injure at a one-year follow up and individuals who had ceased self-injuring at the follow up (T. Andrews, G. Martin, P. Hasking, & A. Page, 2013). This provides further support for the implementation of programs designed to increase cognitive appraisal.

Regarding the second significant aspect of distress tolerance, individuals who allocate a greater amount of their attention to their emotional distress are also more likely to endorse a recent history of NSSI. This attentional aspect of distress tolerance reflected in the appraisal subscale is consistent with the role that rumination is posited to play within the Emotional Cascade Model, whereby individuals who engage in a cycle of repetitive thinking about their emotional experience are more likely to self-injure (Selby et al., 2008; Slabbert et al., 2018b). Utilising a program such as Rumination-Based Cognitive Behavioural Therapy, designed to target these negative cyclical thought processes, may provide individuals with the skills to control their negative thoughts, and consequently allocate less attention towards distress when they experience it (Watkins et al., 2011).

The interplay between positive affectivity and appraisal appears to be important in differentiating people who have recently self-injured from both individuals who endorse a lifetime history of NSSI and those with no history of NSSI. Specifically, positive affectivity appears to provide a protective effect against one's negative perception of their distress such that individuals who experience greater positive affectivity on a day-to-day basis are less likely to engage in self-injury despite perceiving their distress as unacceptable. Positive

affectivity and absorption also worked together to predict recent self-injury. Again, positive affectivity appears to be protective, but only for individuals who do not allocate a greater amount of attention to their distress. Improving individuals' capacity to control the extent to which they think about their distress may assist in reducing the likelihood of them self-injuring, particularly if they experience greater positive affectivity on a day-to-day basis.

Together, these findings have important implications for prevention and intervention initiatives. Rather than clinical interventions simply focusing on reducing the experience of negative emotion, it may be equally important to provide individuals with skills that allow them to foster and savour positive emotional experiences, to protect against a low distress tolerance and reduce the likelihood of engaging in self-injury. Positive psychology is a psychological approach focused on the development and promotion of well-being and engagement in strategies designed to enhance meaningful and pleasurable experiences and social relationships (Seligman, Rashid, & Parks, 2006). Studies examining the effectiveness of these strategies, particularly among individuals with depression, show promising support for their ability to increase the experience of positive emotion and reduce symptoms of depression (Mak, Ng, & Wong, 2011; Seligman et al., 2006). Some specific strategies that have demonstrated clinical utility include fostering positive social relationships (Mak et al., 2011), cultivating gratitude (Wood, Maltby, Stewart, Linley, & Joseph, 2008), and developing positive cognitions (Mak et al., 2011). These strategies have yet to be employed in an NSSI treatment setting, however, in combination with established interventions such as cognitive reappraisal, there is potential for them to be effective in preventing and treating NSSI. Future research would benefit from exploration of the effectiveness of such a treatment.

Although the findings of this study provide a more comprehensive understanding of how positive and negative affectivity, as well as the different facets of distress tolerance, are

related to NSSI, the cross-sectional nature of the data and retrospective reporting of self-injurious behaviour limits our ability to draw conclusions regarding the direction of effects. Assessing these relationships in real-time using ecological momentary assessment would be an important extension of this work.

Although self-report measures such as the Distress Tolerance Scale are a widely-used and valid way of assessing psychological constructs, they are limited in that they capture an individual's subjective appraisal of a construct. Participants completing the Distress Tolerance Scale report what they *perceive* to be their ability to tolerate distress, and whether this differs from their *actual* ability to tolerate distress is up for question. Future research would benefit from studies employing behavioural measures of distress tolerance to allow for a comparison to be made between perceived and actual distress tolerance and NSSI-related differences on these measures. The Emotional Image Tolerance task (Veilleux et al., 2018) is a recently developed task designed to assess an individual's ability to tolerate emotionally distressing images. Exploring NSSI-related differences in responding on this task may provide even greater insight into the differences in *actual* distress tolerance between individuals who self-injure and individuals who do not.

In testing the relationships between negative affectivity, positive affectivity, four facets of distress tolerance and NSSI, this study indicates that both negative and positive affectivity play independent roles in self-injury, and that the appraisal and absorption facets of distress tolerance may be particularly salient in understanding NSSI. Importantly, our findings also suggest prevention and treatment initiatives would benefit from not only focusing on alleviating negative affectivity, but also from increasing the day-to-day experiences of positive affectivity.

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