

**School of Population Health**

**The Role of Distress Tolerance in  
Non-Suicidal Self-Injury**

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**This thesis is presented for the Degree of**

**Doctor of Philosophy**

**of**

**Curtin University**

**April 2021**

## Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

**Human Ethics** The research presented and reported in this thesis was conducted in accordance with the National Health and Medical Research Council National Statement on Ethical Conduct in Human Research (2007) – updated July 2018. The proposed research study received human research ethics approval from the Curtin University Human Research Ethics Committee (EC00262): Approval numbers HRE2018-0536; and HRE2019-0068.

Date: 6/04/2021

## Acknowledgements

First and foremost, to my supervisors Professor Penelope Hasking and Associate Professor Mark Boyes, thank you from the bottom of my heart for the past three years. Your guidance and support, both academically and personally, has allowed me to reach this milestone and I couldn't be more grateful. This PhD may have felt like a distress tolerance task in itself at times, but I can safely say my ability to tolerate distress has significantly improved, and I owe it to your constant belief in me (and very constructive feedback regarding time management!).

I would like to thank the Australian Government for funding my research through the awarded Research Training Scholarship. Thank you to Professor Ottmar Lipp and Dr Lies Notebaert for your invaluable inputs throughout this project. To my fellow PhD friends, this experience wouldn't have been the same without you! Thank you for the constant laughs and coffees. In particular to Emily Jones and Caitlin Liddelow; those summer weekends spent in the Curtin HUB eating triple butter popcorn and helping one-another reach the finish line will forever be some of my favourite memories.

Thank you to my incredible friends who are a constant source of joy, support and love in my life! Through the tears and laughter you are always there for me and I am grateful for you every day. To my beautiful sisters and biggest cheerleaders, Jessie and Jaime, thank you for celebrating these milestones with me every step of the way. You both mean the world to me. Finally, to the strongest woman I know, my Mum. Thank you for inspiring me every day with your kindness, resilience, authenticity, wisdom, and humour! I love you more than words can describe.

### List of Publications (\*included in the thesis)

1. \***Slabbert, A.**, Hasking, P., Notebaert, L., & Boyes, M. (Under Review). The associations between distress tolerance, emotion regulation deficits and strategies, and non-suicidal self-injury. *Stress and Health*.
2. \***Slabbert, A.**, Hasking, P., Notebaert, L., & Boyes, M. (in press). Assessing distress tolerance using a modified version of the Emotional Image Tolerance task. *Journal of Experimental Psychopathology*.
3. \***Slabbert, A.**, Hasking, P., Greene, D., & Boyes, M. (2021). Measurement invariance of the distress tolerance scale among university students with and without a history of non-suicidal self-injury. *PeerJ*, 9, e10915.  
doi:10.7717/peerj.10915
4. Mullan, B., Liddelow, C., Charlesworth, J., **Slabbert, A.**, Allom, V., Harris, C., Kothe, E. (2021). Investigating mechanisms for recruiting and retaining volunteers: The role of habit strength and planning in volunteering engagement. *Journal of Social Psychology*, 1-16.
5. \***Slabbert, A.**, Hasking, P., Notebaert, L., & Boyes, M. (2020). The Role of Distress Tolerance in the Relationship Between Affect and NSSI. *Archives of Suicide Research*, 1-15. doi:10.1080/13811118.2020.183379
6. Mullan, B. A., Dzidic, P., Boyes, M., Hasking, P., **Slabbert, A.**, Johnson, R., & Scott, A. (2020). The lived experience of young Australian adults with type 1 diabetes. *Psychology, health & medicine*, 25(4), 480-485.
7. McKee, M., Mullan, B., Mergelsberg, E., Gardner, B., Hamilton, K., **Slabbert, A.**, & Kothe, E. (2019). Predicting what mothers feed their preschoolers: Guided by an extended theory of planned behaviour. *Appetite*, 137, 250-258.
8. **Slabbert, A.**, Hasking, P., & Boyes, M. (2018). Riding the emotional roller

coaster: The role of distress tolerance in non-suicidal self-injury. *Psychiatry Research*, 269, 309-315. doi:<https://doi.org/10.1016/j.psychres.2018.08.061>

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## Abstract

Non-suicidal self-injury (NSSI) has gained increasing empirical attention over the past decade, in part due to its prevalence and associated adverse mental health outcomes. Primarily engaged in for affect regulation purposes, an inability to tolerate emotional distress has been linked to the aetiology and maintenance of NSSI but the extent to which we understand the role distress tolerance plays in self-injury remains limited. The aim of this thesis was to examine the role of distress tolerance (both self-reported and as assessed under controlled laboratory conditions) in understanding NSSI. This objective was addressed in five studies comprising this thesis.

In Study 1 ( $n = 531$ ), the factor structure and measurement invariance of the frequently employed self-report Distress Tolerance Scale was assessed. Findings indicated that the lower-order four-factor structure comprising the four subscales of the Distress Tolerance Scale is the optimal factor structure to use in NSSI populations. I also established that this measure is invariant across individuals with and without a history of self-injury, thus NSSI-related differences in trait distress tolerance identified using this measure can be attributed to true differences in the perceived ability to tolerate distress, and are unlikely a function of measurement error.

In Study 2 ( $n = 531$ ), I explored the multifaceted role of trait distress tolerance in the relationship between positive affect, negative affect and NSSI. Positive and negative affect, as well as the appraisal (i.e. negative perceptions of distress) and absorption (i.e. attention allocated towards distress) facets of distress tolerance, independently differentiated between people according to their NSSI history (no history, lifetime history, self-injury in the past 12 months). Interactions between the variables highlighted the protective role of positive affect in the relationships between the appraisal and absorption aspects of distress tolerance and NSSI.

In Study 3 ( $n = 951$ ), I aimed to assess whether perceived difficulties in emotion regulation, as well as the use of specific emotion regulation strategies impacts the relationship between the four dimensions of distress tolerance and NSSI. The appraisal, absorption, and regulation aspects of distress tolerance were directly associated with NSSI, as were difficulties in emotion regulation and expressive suppression. Additionally, expressive suppression also interacted with the tolerance and regulation facets of distress tolerance to differentiate between individuals who had self-injured in the past 12 months and individuals with a lifetime history of NSSI. These findings highlight the importance of targeting specific elements of distress tolerance, as well as the potential utility in decreasing the habitual use of expressive suppression as an emotion regulation strategy, to reduce the likelihood of engaging in self-injury.

In Study 4, I modified and validated the recently developed Emotional Image Tolerance task, to improve the assessment of behavioural distress tolerance. I made several minor modifications to the task (Study 4a:  $n = 50$ ) and adapted the task to include positive and neutral images in order to assess whether individuals respond to the valence or the intensity of the image content (Study 4b:  $n = 50$ ). In both studies I assessed subjective distress, gender differences in task responses, and associations between behavioural and self-reported distress tolerance, and related constructs. Both versions of the task induced distress, with gender-differences established in both studies, however the multi-valenced version of the task appeared to be most closely associated with self-report distress tolerance.

Based on the findings in the previous study, in Study 5 I employed the adapted version of the Emotional Image Tolerance task to examine NSSI-related differences in the tolerance of negative emotion ( $n = 118$ ). The task successfully induced distress, with all participants reporting similar levels of subjective distress regardless of NSSI history. Interestingly, whilst I did not establish NSSI-related differences in the tolerance of negative

images, individuals with a history of NSSI tended to indicate distress significantly less often, and took longer to do so than individuals who had never self-injured.

Together, the findings from these five studies seem to highlight that how one perceives their ability to tolerate distress, may be equally if not more salient in NSSI than one's actual ability to tolerate emotional distress. Importantly, challenging negative appraisals of distress, and reducing the amount of attention consumed by aversive emotional experiences, may prove to be effective prevention and clinical targets. Future research should continue to explore experimental methods of inducing distress, and the utility of the Emotional Image Tolerance task in assessing distress tolerance.

### **Author's note**

This thesis is presented as a hybrid thesis that includes papers that have been submitted or accepted for publication. As each chapter is a standalone manuscript, there is some unavoidable repetition throughout the thesis, particularly when describing the background and methodology of each chapter. Considering this, effort has been made to reduce repetition throughout the literature review and general discussion. Each chapter is presented with a short introduction linking the individual chapters to create a cohesive body of work. Additionally, reference lists have been removed from all papers and presented at the end of the thesis to increase cohesiveness and avoid repetition.

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## Chapter 1: Introduction to thesis

Common to almost all emotion regulation accounts of non-suicidal self-injury (NSSI), including the Experiential Avoidance Model (Chapman et al., 2006), the Emotional Cascade Model (Selby et al., 2008), and the Cognitive Emotional Model (Hasking et al., 2017), is the notion that individuals self-injure to reduce, avoid, or distract from unwanted emotions. An inability to tolerate emotional distress is thought to increase the likelihood of engaging in NSSI to escape the aversive state. The overarching aim of this thesis is to investigate associations between distress tolerance, (both self-reported and as assessed under controlled laboratory conditions) and non-suicidal self-injury.

An inability to tolerate distress is associated with self-injury, with individuals who self-injure perceiving themselves to be worse at tolerating distress relative to individuals who have never self-injured (Anestis et al., 2013; Kang et al., 2018; Laposa et al., 2015; Peterson et al., 2014). Such research generally takes a global approach to assessing distress tolerance, and uses the total score on the Distress Tolerance Scale (Anestis et al., 2013; Kang et al., 2018; Laposa et al., 2015; Peterson et al., 2014). However, distress tolerance is a multidimensional construct. One of the aims of this thesis is to explore associations between the different facets of distress tolerance assessed by the Distress Tolerance Scale (tolerance, appraisal, absorption and regulation) and self-injury (Studies 1-3). By doing so, we may better understand nuanced complexities underpinning the relationship between distress tolerance and NSSI. This may have theoretical implications, and inform future prevention and intervention initiatives.

Additionally, there are limited methods for assessing the ability to tolerate emotional distress under controlled conditions. The Emotional Image Tolerance task (Veilleux et al., 2019) was recently developed to assess tolerance of viewing negatively-valenced emotional images. A second aim of this thesis is to use this task to explore NSSI-related differences in

the tolerance of distress elicited under controlled conditions (Studies 4 & 5).

An overview of this thesis, and the five studies that address these objectives, is outlined below.

**Chapter 2** is a literature review that outlines the central topics of this thesis. A definition of NSSI is provided, and the nature and extent of the behaviour is described. The affect regulatory function of NSSI is detailed, before a review of the existing literature pertaining to the relationship between distress tolerance and self-injury is presented. This chapter concludes by identifying the gaps in the literature this doctoral thesis aims to address.

**Chapter 3** presents Study 1: *Measurement Invariance of the Distress Tolerance Scale among University Students With and Without a History of Non-Suicidal Self-Injury*. The objective of this first study was to evaluate the factor structure of the self-report Distress Tolerance Scale among individuals with and without a history of self-injury. Additionally, given this scale is frequently used to examine NSSI-related differences in the perceived ability to tolerate distress, the study also aimed to establish that the structure of this measure is invariant across individuals with and without a history of NSSI.

**Chapter 4** comprises Study 2: *The Role of Distress Tolerance in the Relationship between Affect and NSSI*. The primary aim of this study was to investigate whether or not particular facets of distress tolerance are more salient predictors of NSSI than others, and whether these facets may moderate the associations between both positive and negative affect and self-injury.

**Chapter 5** presents Study 3: *The Associations between Distress Tolerance, Emotion Regulation Deficits and Strategies, and Non-suicidal Self-injury*. The aim of this study was to investigate how distress tolerance and emotion regulation might work together in predicting self-injury. Specifically, we tested whether the associations between facets of distress tolerance were moderated by perceived difficulties in emotion regulation as well as the use of

specific emotion regulation strategies (namely cognitive reappraisal and expressive suppression).

**Chapter 6** includes Study 4: *Assessing Distress Tolerance Using a Modified Version of the Emotional Image Tolerance Task*. The aim of this study was to make several minor modifications to the Emotional Image Tolerance task (Study 4a), as well as develop an adapted version of the task that includes positive, negative, and neutral images in order to assess whether individuals respond to the valence or the intensity of the image content (Study 4b). In both studies, patterns of distress and gender-related differences in task responses were evaluated. Both tasks were validated by examining associations between task responses and self-report distress tolerance, as well as related constructs (e.g. emotional reactivity, anxiety, depression).

**Chapter 7** details Study 5: *Assessing NSSI-Related Differences in Behavioural Distress Tolerance Using a Modified Version of the Emotional Image Tolerance Task*. The aim of this study was to use the adapted version of the Emotional Image Tolerance Task (Chapter 6, Study 4a) to compare individuals with and without a history of self-injury in their ability to tolerate experimentally elicited distress using emotional images.

**Chapter 8** concludes the thesis with a general discussion that reviews the key findings and insights that emerged from the doctoral thesis, and the implications, limitations, and directions for future research.

## **Chapter 2: Literature review**

In Chapter 2, I review the existing literature pertaining to the central topics covered in this thesis. This chapter begins with a review of non-suicidal self-injury (NSSI), the emotion regulation accounts commonly used to explain it, and the relationship between emotion and NSSI. The construct of distress tolerance is introduced and the relationship between both trait and behavioural distress tolerance and NSSI is examined. The chapter concludes with a summary of the main objectives of this thesis.

### **Definition of NSSI**

Non-suicidal self-injury (NSSI) is the deliberate, self-inflicted damage of body tissue without suicidal intent and for purposes not socially or culturally sanctioned (International Society for the Study of Self-Injury, 2021). The most commonly reported method of NSSI is cutting, although self-injury can take many forms including scratching, burning, biting, pinching, self-battery, and wound interference, and it is not uncommon for individuals to engage in multiple forms of NSSI (Swannell et al., 2014). NSSI does not include indirect behaviours that lead to negative physical outcomes (i.e. smoking), accidental harm to body tissue, or risk-related behaviours, including excessive drinking and reckless driving. Culturally accepted behaviours that modify body tissue, such as tattoos and body piercings, are not classified as self-injury (Nock & Favazza, 2009).

Whilst under the broader umbrella of self-harm, which refers to the deliberate damage to the body regardless of intent, and includes both self-injury and suicide, NSSI is distinct from suicidal behaviour with regards to intention, frequency, and lethality (Hamza et al., 2012). NSSI tends to involve less lethal methods and occurs more frequently than suicide attempts (Andover & Gibb, 2010; Nock et al., 2006; Nock & Prinstein, 2004). It is not unusual for researchers and clinicians to refer to the term self-harm when describing both non-suicidal self-injury as well as suicidal self-injury (e.g. suicide attempts), however this

can result in a lack of clarity and the grouping of NSSI within the suicide literature.

Therefore, it is argued that researchers and clinicians need to be explicit and consistent in their definition of self-injurious thoughts and behaviours to allow for a cohesive and clear understanding of research on these behaviours and interventions developed to treat them (Nock & Favazza, 2009)

Although, by definition, NSSI occurs in the absence of suicidal intent, repeated self-injury is a reliable predictor of future suicidal thoughts and behaviours (Hamza et al., 2012; Kiekens et al., 2018; Ribeiro et al., 2016; Whitlock et al., 2013). Previous research shows individuals who self-injure are significantly more likely to report suicide ideation and are more likely to have attempted suicide in comparison to individuals who do not self-injure (Claes et al., 2010; Glenn & Klonsky, 2009; Wilcox et al., 2012). In this sense, NSSI has been likened to a ‘gateway’ for suicide (Hamza et al., 2012; Whitlock et al., 2013). Not only does engagement in NSSI increase one’s capability to suicide, but evidence suggests it may also increase one’s desire to die (Chu et al., 2018; Hamza et al., 2012; Willoughby et al., 2015). NSSI is also associated with a broad range of psychopathology (Bentley et al., 2015; Gollust et al., 2008; Zielinski et al., 2018), including anxiety (Zielinski et al., 2018), depression (Lin et al., 2018), borderline personality disorder (Chapman et al., 2005), and eating disorders (Claes et al., 2012). Whilst self-injury is often associated with psychopathology, it can also occur in the absence of any psychological disorder.

The transdiagnostic nature of NSSI, coupled with its strong associations with psychopathology and suicide, has led both researchers and clinicians to recognize that self-injury is a public health concern. Reflecting this, the American Psychiatric Association has proposed Non-Suicidal Self-Injury Disorder (NSSI-D) as a condition that warrants further research (American Psychiatric Association, 2013).

## **Epidemiology**

Pooled international prevalence estimates of NSSI indicate approximately 17% of adolescents, 13% of young adults, and 5% of adults report a lifetime history of NSSI (Swannell et al., 2014). Higher rates are evident in clinical samples, with up to 60% of adolescents (Glenn & Klonsky, 2013) and 18% of adults (Polanco-Roman et al., 2014) reporting engaging in NSSI. Onset of NSSI typically peaks at approximately 14 years of age (Nock et al., 2006), however recent evidence indicates a second peak occurs at the age of 20 years old (Gandhi et al., 2018). There are inconsistent findings regarding gender differences in the prevalence of NSSI. There tends to be a misconception that self-injury is a behaviour primarily engaged in by females (Lewis et al., 2014), and whilst statistically speaking females do report slightly elevated rates of self-injury compared to males in community (OR = 1.2) and clinical samples (OR = 1.5; Bresin & Schoenleber, 2015), this difference is fairly minor in comparison to the mainstream perception perpetuated by the media (Whitlock et al., 2009). Gender-related differences in NSSI methods have been established; whilst cutting is the primary form of NSSI for both females and males, females tend to engage in scratching and hair-pulling behaviours more often than males, whereas males are more likely to engage in burning and self-battery in comparison to females (Bresin & Schoenleber, 2015).

### **NSSI among university students**

Emerging adulthood, defined as the years from the late teens through to the mid-twenties, is a unique transitional period from adolescence to adulthood, distinguished by the exploration of identity, relationships, and future career prospects (Arnett, 2000). Whilst this time is often associated with a greater sense of autonomy and new opportunities both academically and socially (Arnett, 2000), evidence indicates mental disorders are highly prevalent amongst young adults who attend university (Auerbach et al., 2018; Bruffaerts et al., 2018). Studying at university brings with it a host of new challenges, including increased

academic stress, financial instability, and uncertainty about the future (Bruffaerts et al., 2018). Recent findings from a study exploring the onset of NSSI among university students reveal 10.3% of students report self-injuring for the first time in their first year of study, and approximately 6% of students report first onset of NSSI in their second year (Kiekens et al., 2019). Of these individuals, approximately 7% engage in repetitive NSSI (more than 5 times per year). Additionally, students who self-injure are more likely to experience adverse academic and mental health outcomes including poor academic performance (Kiekens et al., 2016) and heightened risk for suicide attempts (Whitlock et al., 2013), as well negative social outcomes including stigma, shame, and isolation (Hamza et al., 2012). These findings highlight the need for increased knowledge to assist in the understanding of self-injury within this population, and consequently reduce the likelihood of experiencing these negative outcomes.

### **Why do people self-injure?**

The concept of intentionally inflicting damage to oneself can be perplexing to many who do not understand the functions that underpin NSSI, particularly given it seemingly opposes the innate human drive to survive. Nock and Prinstein (2004) developed the Four-Function Model to elucidate the primary reasons people engage in self-injury. This model postulates that there are four primary functions of NSSI that differ with regards to whether they serve an intrapersonal or interpersonal function, and are either positively or negatively reinforced (Nock & Prinstein, 2004). For example, individuals who self-injure for intrapersonal reasons may do so to either reduce or avoid negative thoughts and emotions (negative reinforcement) or to generate emotions or physical sensations (positive reinforcement). On the other hand, individuals who self-injure for interpersonal reasons may do so to avoid or escape unwanted social situations (negative reinforcement) or to communicate to others that they require help or care (positive reinforcement; Nock &

Prinstein, 2004).

Findings from a recent meta-analysis suggest the majority of individuals self-injure for intrapersonal reasons (66-81%), most commonly emotion regulation, with self-punishment and sensation seeking also being reported by approximately 50% of participants (Taylor et al., 2018). Interpersonal functions were less frequently endorsed (33-56%), with communication of distress being reported as the most common interpersonal function, with lower rates being endorsed for 'hurting or punishing others'. These findings are consistent with a previous review of the literature that established affect regulation as the primary function of NSSI (Klonsky, 2007), with results suggesting i) increased negative affect precedes self-injury, and ii) NSSI reduces negative affect and provides a sense of relief for most people. Given this commonly endorsed function, unsurprisingly most theories of self-injury articulate how the experience of emotion, and related factors (e.g. rumination, lack of emotion regulation strategies), increase the likelihood and maintenance of self-injury.

### **Emotion and NSSI**

The Experiential Avoidance Model (Chapman et al., 2006), the Emotional Cascade Model (Selby et al., 2008), and the Cognitive Emotional Model (Hasking et al., 2017), are three emotion regulation models commonly used to describe affect regulatory processes underpinning self-injury. At the centre of these models, is the premise that individuals usually self-injure to distract, avoid, or regulate intense or unwanted emotions. The experience of negative emotion (Boyes et al., 2019; Hasking et al., 2018; Horgan & Martin, 2016; Muehlenkamp et al., 2009; Najmi et al., 2007), and more recently, the experience of positive emotion (Hasking et al., 2018; Kiekens et al., 2020; Muehlenkamp et al., 2009), are frequently explored in relation to NSSI.

There is extensive evidence highlighting the fundamental role negative emotion plays in NSSI (Boyes et al., 2019; Hasking, Di Simplicio, McEvoy, & Rees, 2018; Horgan &

Martin, 2016; Najmi, Wegner, & Nock, 2007). People who self-injure tend to report experiencing greater negative affectivity in general, relative to individuals who do not self-injure (Horgan & Martin, 2016; Najmi et al., 2007). Taylor et al (2012) also found that trait negative affectivity differentiated individuals with a recent history of NSSI (past month) and a lifetime history of self-injury.

Findings from experimental studies also reflect differences in the experience of negative emotion. Boyes et al. (2019) explored NSSI-related differences in the experience of emotion using a negatively valenced film clip to induce a negative mood state. Although individuals with a history of NSSI did not report greater negative affect in comparison to individuals without a history of NSSI, they did demonstrate greater perseveration of negative affect. This suggests persistent negative emotional states may accumulate over time and result in a more intense experience of emotion. Researchers using Ecological Momentary Assessment to record real-time fluctuations in affect, have consistently demonstrated an increase in negative affect prior to NSSI in both clinical (Houben et al., 2017; Koenig et al., 2020; Muehlenkamp et al., 2009) and non-clinical samples (Kiekens et al., 2020; Kranzler et al., 2018; Selby et al., 2013). Koenig et al., (2020) recently assessed emotional and interpersonal states preceding NSSI among female adolescents who met the proposed criteria for NSSI-disorder. Results indicate that greater negative affect was associated with an increased likelihood to report self-injury in the following hour, and that negative affect was the strongest predictor of NSSI in comparison to other predictors including NSSI urges, and attachment towards mother or best friend (Koenig et al., 2020). These findings mirror previous work in clinical samples (Houben et al., 2017). Among individuals with borderline personality disorder, negative affect prospectively predicted higher probability of NSSI in the following two hours (Houben et al., 2017). Within non-clinical samples, momentary increases in negative affect predict NSSI behaviour among adolescents and young adults

(Kranzler et al., 2018), as well as young adults enrolled at university (Kiekens et al., 2020).

Until recently, the role of positive emotion in NSSI has received relatively less attention compared to negative affect. However, the experience and regulation of positive emotion in relation to NSSI has become an important focus for researchers. While there has previously been some debate surrounding whether positive and negative affect are two ends of a single affect dimension, positive and negative affect are best conceptualised as weakly correlated, independent dimensions (Russell & Carroll, 1999; Watson et al., 1988; Watson & Tellegen, 1999; Yik, 2007). Theoretically, a combination of decreased positive affect, and heightened negative affect, may increase the likelihood of self-injury (Hasking et al., 2018).

Lower trait positive affect has been associated with increased odds of lifetime NSSI (Gratz et al., 2006; Hasking et al., 2018). Comparatively, higher levels of positive affect appear to offer a protective effect against NSSI, even in the presence of negative emotion (Hasking et al., 2018). In daily diary studies, individuals who self-injure report lower levels of positive affect than individuals who do not (Bresin, 2014; Victor & Klonsky, 2014). Although real-time decreases in positive emotion have preceded NSSI behaviour in some studies (Andrewes et al., 2017; Muehlenkamp et al., 2009), this relationship has not always been replicated in others (Houben et al., 2017). In experimental studies, relative to individuals without a history of NSSI, individuals who self-injure tend to report experiencing lower trait and state positive affect (Boyes et al., 2019).

While there is emerging evidence for the role of positive affect in NSSI, the relationship between negative affect and self-injury is robust; however, an individual's ability to tolerate the distress arising from emotional experiences is also thought to impact whether a person engages in NSSI or not. Emotion regulation theories of NSSI specifically articulate a role for distress tolerance in NSSI.

## **Distress Tolerance**

Distress tolerance refers to both one's perceived capacity to withstand negative emotion and/or other aversive states, as well as the behavioural act of withstanding distressing internal states elicited by a stressor (Leyro et al., 2010). Researchers and clinicians have had a long-standing interest in distress tolerance, given its transdiagnostic nature that offers a promising lens through which we can understand multiple psychological disorders (Leyro et al., 2010). An inability to tolerate distress has been purported to underpin the onset and maintenance of several psychological disorders and dysregulated behaviours. Specifically, a low tolerance for distress is related to substance use (Brown et al., 2005), smoking (Veilleux, 2019), eating disorders (Anestis et al., 2007), and NSSI (Anestis et al., 2013; Horgan & Martin, 2016; Lin et al., 2018; Nock & Mendes, 2008).

Conceptualisations of the relationship between distress tolerance and dysregulated behaviours suggest individuals who experience greater difficulties tolerating distress are more likely to engage in behaviours that assist in their avoidance of aversive emotional experiences (Leyro et al., 2010). These individuals may be more motivated to seek negative reinforcement opportunities when possible. Comparatively, individuals with a higher tolerance for distress, may be more able to sit with or 'tolerate' unpleasant or aversive emotions, and when adaptive, be able to resist negative reinforcement opportunities (Leyro et al., 2010).

Low distress tolerance is a factor included in emotion regulation accounts of NSSI (Chapman et al., 2006; Hasking et al., 2017; Selby et al., 2008). For example, the Emotional Cascade Model posits individuals experience overwhelming cascades of emotion, resulting from self-perpetuating cycles of negative affect and rumination (Selby et al., 2008). According to this model, individuals who experience difficulties tolerating the distress arising from these cascades of negative emotion are more likely to self-injure as it provides an immediate and effective escape. Similarly, the Experiential Avoidance Model, postulates a

low tolerance for distress may increase the urge to avoid negative emotions, and therefore increase the likelihood of engaging in self-injury (Chapman et al., 2006). In essence, not being able to withstand intense emotions is associated with NSSI. Alternatively, individuals who are better able to withstand distress may be more able to tolerate their emotional states, and resist engaging in self-injury to escape them. In this sense, distress tolerance plays an important role in both the onset and maintenance of NSSI (Chapman et al., 2006; Nock & Mendes, 2008; Slabbert et al., 2018).

Individual differences in one's general perceived ability to tolerate distress (trait distress tolerance) have frequently been associated with NSSI in cross-sectional research (Anestis et al., 2013; Horgan & Martin, 2016; Lin et al., 2018; Slabbert et al., 2018). Lower self-reported distress tolerance has been linked to increased odds of reporting a prior history of NSSI (Horgan & Martin, 2016; Slabbert et al., 2018), as well as a higher frequency of NSSI among individuals who self-injure (Anestis et al., 2013). In a longitudinal study by Lin et al. (2018), low distress tolerance was able to predict NSSI frequency among high school students at the one-year follow-up, after controlling for baseline NSSI. In other research exploring the role of distress tolerance in the relationship between intense emotion and NSSI, distress tolerance has demonstrated a moderating effect, whereby heightened emotional intensity, coupled with greater difficulties tolerating distress, was associated with a higher frequency of NSSI (Slabbert et al., 2018).

Almost all studies exploring the role of trait distress tolerance in NSSI employ the self-report Distress Tolerance Scale (Simons & Gaher, 2005). The Distress Tolerance scale was developed to assess one's perception of their ability to tolerate distress, which according to Simons and Gaher (2005) refers to one's evaluations and expectations of experiencing negative emotions with regards to four key aspects: tolerability and aversiveness, appraisal and acceptability, tendency to absorb attention and disrupt functioning, and regulation of

emotions (action tendencies). Specifically, an individual who demonstrates a low tolerance for distress is likely to perceive their experience of distress as unbearable and that they are unable to handle it (tolerance), appraise their distress as shameful and/or unacceptable (appraisal), allocate a greater amount of their attention to their distressing experience (absorption), and behave in a way that assists in the avoidance/alleviation of negative emotion (Simons & Gaher, 2005).

The facets of distress tolerance are reflected in the four subscales of the Distress Tolerance Scale that load onto a higher-order global distress tolerance construct. This global score is most commonly utilised in research using this scale (Anestis et al., 2013; Kang et al., 2018; Laposa et al., 2015; Peterson et al., 2014; Veilleux & Skinner, 2019). However, distress tolerance is a multi-dimensional construct, with each aspect being captured uniquely within the subscales, and therefore it is plausible that different elements of distress tolerance may be related to behaviours such as NSSI. This may have clinical implications, in that treatment programs tailored to target specific elements of distress tolerance might be more effective than programs that target distress tolerance more generally. Whilst there is preliminary evidence to suggest these facets of distress tolerance are differentially related to NSSI (Horgan & Martin, 2016) this has yet to be explored extensively. One of the aims of this doctoral research is to investigate the way these dimensions of distress tolerance are related to NSSI, and how they work together with other constructs that comprise emotion regulation accounts of NSSI to predict self-injury.

Along with self-report measures, distress tolerance can also be assessed using behavioural measures. Behavioural measures are designed to assess one's actual ability to tolerate experimentally-elicited distress under controlled laboratory conditions. Currently, the most commonly used behavioural distress tolerance tasks include the Wisconsin Card Sorting Test (Nock & Mendes, 2008), Paced Serial Addition Test (Lejuez, Kahler, & Brown, 2003),

and Mirror Tracing Task (Strong et al., 2003) which assess tolerance of frustration, as well as the Cold Pressor Task (Hines, 1932) and Breath Holding Task (Daughters et al., 2005) which assess tolerance of physical discomfort/pain (see Leyro et al., 2010, for a review of the most frequently used laboratory tasks). Researchers have previously employed some of these tasks to assess NSSI-related differences in behavioural distress tolerance. For example, using a modified version of the Paced Serial Addition Test, Gratz et al (2006) compared the ability to tolerate distress between outpatients with borderline personality disorder and individuals without a personality disorder (of which NSSI is a diagnostic criterion). Participants completed a computerized mathematical task under a strict time limit during which they were provided with negative auditory feedback upon making an error. The final trial in the task allowed individuals to terminate the task at any stage. Findings indicated participants with borderline personality disorder were less willing than participants without a personality disorder to persist in the task when provided with the opportunity to escape, indicating a lower tolerance for distress (Gratz et al., 2006).

In a non-clinical sample of adolescents and young adults, Nock and Mendes (2008) explored NSSI-related differences in the ability to tolerate distress using an adapted version of the Wisconsin Card Sorting Test (Grant & Berg, 1948). In this task, participants engaged in a card sorting task that involved the experimenters providing them with consistent negative feedback on their performance as well as providing opportunities for participants to end or ‘escape’ the task. Relative to individuals without a history of NSSI, participants who had previously self-injured opted to cease participation in the task significantly earlier, indicating greater difficulties tolerating distress and a tendency to behave in a way that assists in the escape of aversive situations. Finally, findings from studies using the Cold Pressor Task (Hines, 1932), a behavioural task designed to assess tolerance of physical discomfort through the immersion of one’s hand in ice cold water, indicate people with a history of NSSI tend to

display an increased pain tolerance and threshold, and report decreased pain intensity ratings relative to individuals without a history of NSSI (Franklin, Aaron, Arthur, Shorkey, & Prinstein, 2012; Koenig et al., 2017).

Although the findings derived from studies using these tasks provide valuable information about NSSI-related differences in the tolerance of frustration and physical discomfort, these tasks do not explicitly assess tolerance of negative emotion, central to the function of NSSI. Recently, Veilleux et al (2019) developed the Emotional Image Tolerance task, a computer task designed to assess individuals' tolerance to negative emotionally-valenced stimuli. In early validation studies of the task, the developers established that the task successfully induces negative affect, and demonstrates associations with extant measures of behavioural distress tolerance (i.e. the Cold Pressor Task and Mirror-Tracing Task). Responses on the task were also associated with self-report distress tolerance in one study, but not in two others, however discrepancies between self-report and behavioural measures of the same construct are not uncommon (Bernstein et al., 2011; Glassman et al., 2016). These findings indicate this task may be a useful tool in the assessment of behavioural distress tolerance. Importantly, this task provides researchers with an opportunity to assess the relationship between tolerance of negative emotion and outcomes such as a history of NSSI, of which the experience of emotion and the ability to tolerate this emotion are central. A second aim of this doctoral project is to investigate whether there are NSSI-related differences in the tolerance of negative emotion using the Emotional Image Tolerance task.

## **Conclusion**

The ability to tolerate distress appears to be an important mechanism underlying self-injury, however further research exploring both the role of self-report and behavioural distress tolerance in self-injurious behaviour is required. The first aim of this doctoral project is to assess whether different facets of trait distress tolerance, assessed using the self-report

Distress Tolerance Scale, are differentially related to a history of NSSI (Studies 1-3). The second aim of this thesis is to use the Emotional Image Tolerance task to assess NSSI-related differences in the tolerance of distress elicited under controlled conditions (Studies 4 & 5).

## **Chapter 3: Measurement Invariance of the Distress Tolerance Scale among University Students with and Without a History of Non-Suicidal Self-Injury.**

### **Introduction to Chapter 3**

Study 1 evaluates the factor structure of commonly used self-report Distress Tolerance Scale (Simons & Gaher, 2005) among individuals with and without a history of self-injury. Testing of measurement invariance was conducted on the best fitting model to determine whether NSSI-related group differences established using the scale could be attributed to true differences in the perceived ability to tolerate distress, and are not simply artefacts of measurement. Given this measure will be used throughout this thesis, it is important to establish the optimal use of this scale and whether it is invariant across individuals who do and do not self-injure prior to using it to observe NSSI-related differences in perceived distress tolerance. A paper based on this chapter has been published.

Published:

**Slabbert, A.,** Hasking, P., Greene, D., & Boyes, M. (2021). Measurement Invariance of the Distress Tolerance Scale among University Students With and Without a History of Non-Suicidal Self-Injury. *PeerJ*, 9, e10915. doi:10.7717/peerj.10915

**Author contribution statement**

Author	Contribution
Ashley Slabbert	Development of research question, data collection, data analysis, interpretation of results and discussion, and led manuscript preparation.
Penelope Hasking	Assisted with development of research question, data analysis, interpretation, and manuscript preparation.
Danyelle Greene	Assisted with data analysis, interpretation, and manuscript preparation.
Mark Boyes	Assisted with development of research question, data analysis, interpretation, and manuscript preparation.

### **Abstract**

Non-suicidal self-injury (NSSI) is the intentional damage to one's body tissue in the absence of suicidal intent. NSSI primarily serves an emotion regulation function, with individuals engaging in self-injury to escape intense or unwanted emotion. Low distress tolerance has been identified as a mechanism that underlies self-injury, and is commonly assessed using the self-report Distress Tolerance Scale. There are mixed findings regarding the factor structure of the Distress Tolerance Scale, with some researchers utilising a higher-order distress tolerance score (derived from the scores on the four lower-order subscales) and other researchers using the four subscales as unique predictors of psychological outcomes. Neither of these factor structures have been assessed among individuals with a history of self-injury. Of note, an inability to tolerate distress (thought to underlie NSSI) may limit an individual's capacity to accurately observe and report specific thoughts and emotions experienced in a state of heightened distress, which may impact the validity of scores on the Distress Tolerance Scale. Therefore, measurement invariance should be established before attributing NSSI-related differences on the scale to true differences in distress tolerance. We compared the Distress Tolerance Scale higher-order model with the lower-order four factor model among university students with and without a history of NSSI. Our results indicated that the lower-order four factor model was a significantly better fit to the data than the higher-order model. We then tested the measurement invariance of this lower-order factor model among individuals with and without a history of NSSI, and established configural and full metric invariance, followed by partial scalar and full residual error invariance. These results suggest the four subscales of the Distress Tolerance Scale can be used to confidently discern NSSI-related differences in distress tolerance.

Non-suicidal self-injury (NSSI) is the intentional damage to one's body tissue in the absence of suicidal intent, for reasons not socially or culturally sanctioned (International Society for the Study of Self-Injury, 2018). International prevalence rates indicate approximately 13.4% of young adults report a history of self-injury, with elevated rates (20%) reported by university students (Swannell et al., 2014). NSSI is a behaviour receiving increasing attention from both researchers and clinicians, given its associations with negative psychological outcomes and heightened risk of suicide over time (Whitlock et al., 2013). Whilst there are various reasons for engaging in NSSI, individuals primarily report engaging in self-injury for emotion regulation purposes (Taylor et al., 2018). Several key theoretical models of NSSI, including the Emotional Cascade Model (Selby et al., 2008), the Experiential Avoidance Model (Chapman et al., 2006) and the Cognitive-Emotional Model (Hasking et al., 2017), specify a central role for emotion regulation in the onset and maintenance of self-injury. According to these models and previous empirical research, heightened negative affect (Armey et al., 2011; Boyes et al., 2019; Najmi et al., 2007; Slabbert et al., 2020), low positive affect (Bresin, 2014; Slabbert et al., 2020; Victor & Klonsky, 2014), greater repetitive negative thinking (Gong et al., 2019; Slabbert et al., 2018), as well as greater difficulties in emotion regulation (Gratz et al., 2010; Jenkins & Schmitz, 2012) are all associated with increased likelihood of engaging in NSSI. Also common to these models is one's ability to tolerate distress arising from emotional experiences.

Distress tolerance refers to both an individual's perceived and actual ability to tolerate aversive physical and emotional states (Leyro et al., 2010). Theoretically, individuals who experience greater difficulties tolerating intense emotion are less willing (or able) to withstand distress and more likely to self-injure as a means of escaping the aversive emotional state (Chapman et al., 2006). Researchers have established direct links between low distress tolerance and NSSI; individuals with lower levels of distress tolerance are more

likely to report a history of self-injury (Anestis et al., 2013; Lin et al., 2018) as well as more frequent NSSI (Anestis et al., 2013). Distress tolerance is typically assessed with self-report measures, most commonly the Distress Tolerance Scale (Simons & Gaher, 2005).

The Distress Tolerance Scale (Simons & Gaher, 2005) is a multidimensional scale designed to capture four core facets of distress tolerance; an individual's perceived ability to tolerate emotional distress (tolerance), subjective appraisal of distress regarding whether the distress is seen as acceptable or shameful (appraisal), the level of attention absorbed by distressing emotions (absorption), and efforts taken to alleviate the distress (regulation). A higher-order global distress tolerance score is derived by averaging the scores on the four subscales. The internal consistency of the higher-order scale and lower-order scales is generally good, with convergent and divergent validity previously established (Leyro et al., 2010; Simons & Gaher, 2005).

There is evidence to support the higher-order factor structure (Leyro et al., 2010; Sandín et al., 2017; Werner-Seidler et al., 2013), and many researchers opt to only utilise the total distress tolerance score in their research (Anestis et al., 2013; Hovrud et al., 2019; Peterson et al., 2014). However, there is growing acknowledgment that the tendency to only focus on global distress tolerance has resulted in researchers losing potentially important information captured in the individual subscales that may better explain relationships between distress tolerance and psychopathology, or behaviours such as NSSI (Leyro et al., 2010). In studies where researchers have elected to investigate the four subscale scores, findings indicate that some subscales may be more salient than others in predicting psychopathology such as anxiety and depression, as well as dysregulated behaviours including self-injury (Horgan & Martin, 2016; Lin et al., 2018).

The two different factor structures have only been directly compared in one study. Among a sample of Chinese adolescents, You and Leung (2012) found both the higher-order

factor model and lower-order four factor model demonstrated better fit than 1-factor and 2-factor structures with which they were compared, with the higher-order model demonstrating best fit. Despite You and Leung's (2012) findings, there is some evidence to suggest lower-order factor models may demonstrate better model fit than higher-order models (Meganck et al., 2008). Therefore, it is necessary to evaluate the fit of each of these models among individuals with a history of NSSI to further our theoretical understanding of the nature of the relationship between distress tolerance and self-injury, and consequently inform researchers about the optimal way to utilise this scale with samples of individuals with a history of NSSI.

Another growing concern regarding the measurement of constructs such as distress tolerance, is the accuracy of the heavily relied upon self-report scales such as the Distress Tolerance Scale to detect true group differences. Researchers have become increasingly aware that statistically observed differences on these scales are only meaningful when these instruments demonstrate invariance across groups (Sass, 2016). Measurement noninvariance may have several problematic implications. For example, using non-invariant scales to assess the severity of psychological disorders such as depression across groups (i.e. women and men) may result in one group (i.e. men) scoring lower than the other, simply because they interpret the items differently, as opposed to actually experiencing less severe depression (Putnick & Bornstein, 2016). Consequently, our understanding based on these findings is that females experience more severe depression than men which may not be accurate, but directs future research towards female-oriented studies and interventions (Putnick & Bornstein, 2016). Relatedly, another example of where measurement invariance is problematic is the use of pre-test and post-test measurements to assess the effectiveness of an intervention or clinical trial. It is possible that the intervention or trial itself may impact how participants interpret the constructs being assessed (Putnick & Bornstein, 2016). Consequently, this may result in inaccurate conclusions regarding the effectiveness of an intervention (Putnick &

Bornstein, 2016). These examples highlight the importance of establishing measurement invariance in psychological science.

Recent research testing the measurement invariance of three emotion regulation questionnaires in young adults with and without a history of NSSI showed that observed NSSI-related differences on the Difficulties in Emotion Regulation Scale – Short Form (DERS-SF; Gratz & Roemer, 2004) and the Cognitive Emotion Regulation Questionnaire – Short (CERQ-S; Garnefski & Kraaij, 2007) were reliable and likely a true reflection of group differences in emotion regulation (Kiekens et al., 2019). However, the widely used Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) did not demonstrate measurement invariance, with two of the items on the Cognitive Reappraisal subscale functioning differently for individuals with a history of self-injury compared to individuals who had never self-injured. This is concerning as previous research that has established NSSI-related differences in cognitive reappraisal using this scale may be reflecting a measurement artefact rather than true group differences. Similarly, Greene et al (2020) established that the Externally Oriented Thinking subscale of the frequently used Toronto Alexithymia Scale (TAS-20; Bagby et al., 2006) was not invariant across individuals with and without a history of NSSI, precluding any conclusions regarding NSSI-related differences in externally oriented thinking. These findings highlight the importance of investigating the measurement invariance of self-report measures to reveal whether or not we can reliably draw conclusions about particular group differences using these assessment tools.

Measurement invariance of the Distress Tolerance Scale between individuals with and without a history of NSSI has not yet been assessed. It is plausible that the very difficulties in withstanding distress underlying dysregulated behaviours such as NSSI, may limit an individual's capacity to accurately observe and report specific thoughts and emotions experienced in a heightened distressed state, which may impact the validity of results on self-

report measures such as the Distress Tolerance Scale. Observed differences in distress tolerance between people who do and do not self-injure may be a function of a differential interpretation of scale items, rather than a reflection of true group differences in distress tolerance. Given results derived from these measures are used by researchers and clinicians to inform future prevention and intervention programs, it is vital that we ensure these instruments are able to accurately produce reliable results across individuals with and without a history of self-injury. Additionally, this may have implications for the existing body of literature that has established NSSI-related differences in self-report distress tolerance using this scale, and future researchers may need to be cautious when using these findings to justify their aims or results.

This study had two primary aims. First, to test and compare the higher-order model of the Distress Tolerance Scale to the lower-order four factor model to determine the best fitting model among a sample of university students, as well as within subgroups of individuals with and without a history of NSSI. Second, to test measurement invariance of the best fitting model between individuals with and without a history of self-injury.

## **Method**

### **Participants and procedure.**

*Total Sample.* Participants were 531 Australian University students (74.7% female) between the ages of 17 and 25 ( $M = 20.58$ ,  $SD = 1.94$ ) recruited through an undergraduate participant pool and social media platforms. Of participants, 412 (77.6%) were born in Australia, followed by India (2.6%), and Malaysia (2.3%). The majority of participants were currently completing an undergraduate bachelor degree (96%), followed by a Master degree (2.4%). In total, 171 (32.2%) of individuals reported a history of mental illness, most commonly anxiety and depression.

*History of NSSI.* Of the total sample, 215 individuals who reported a prior history of NSSI ( $M_{\text{age}} = 20.87$ ,  $SD = 2.0$ ). Of these, 188 (87.4%) were female, 173 (80.5%) were born in Australia, and 202 (94%) were studying an undergraduate bachelor degree. With regards to mental illness, 127 (59.1%) participants reported a history of mental illness, most commonly anxiety and depression.

*No history of NSSI.* Of the total sample, 316 participants reported never engaging in NSSI ( $M_{\text{age}} = 20.38$ ,  $SD = 1.88$ ). Of these, 209 were female (66.1%), 239 (75.6%) were born in Australia, and 308 (97.5%) were studying an undergraduate bachelor degree. With regards to mental illness, 44 (13.9%) participants reported a history of mental illness, again most commonly anxiety and depression.

After providing informed consent, participants completed a series of online questionnaires hosted by Qualtrics. Data were collected as part of a larger study investigating the role of social, cognitive, and emotional factors underlying health risk behaviours. Students received either course credit or were entered into a prize draw to win an iPad or \$50 gift cards. This study received ethical approval from the Curtin University Human Research Ethics Committee and participants were provided with a list of counselling resources and information about self-injury upon completion of the survey.

### **Measures.**

*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. Items are rated on a 5-point Likert scale (1: strongly agree; 5: strongly disagree), with higher scores reflecting higher levels of distress tolerance. The scale consists of four subscales: tolerance (3 items, e.g. "I can't handle feeling distressed or upset"), appraisal (6 items, e.g. "My feelings of distress or being upset are not acceptable"), 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 avoid feeling distressed or upset”).

Subscale scores are calculated by averaging response to all items on each subscale. A higher-order distress tolerance score is calculated by averaging the subscale mean scores. This scale demonstrates excellent internal consistency ( $\alpha = 0.89$ ; Simons & Gaher, 2005; Peterson et al., 2014). Internal consistencies were adequate to excellent in the current sample (Global Score,  $\alpha = 0.93$ ,  $\omega_t = 0.93$ ; Tolerance,  $\alpha = 0.84$ ,  $\omega_t = 0.85$ ; Appraisal,  $\alpha = 0.85$ ,  $\omega_t = .0.86$ ; Absorption  $\alpha = 0.86$ ,  $\omega_t = 0.86$ ; Regulation,  $\alpha = 0.76$ ,  $\omega_t = 0.79$ ).

*Non-suicidal self-injury.* Section I of the Inventory of Statements About Self-Injury (ISAS; Klonsky & Glenn, 2009) was used to assess history and frequency of NSSI (defined to participants as intentionally harming oneself without intention to suicide). Individuals were first provided with a definition of NSSI and then asked “Have you ever engaged in non-suicidal self-injury?”. Participant who responded yes to this question were then asked to report a lifetime frequency of twelve common methods of NSSI (e.g. cutting, scratching, burning). The ISAS demonstrates good four week test-retest reliability, ( $r = .85$ ; Klonsky & Olino, 2008).

### **Data analysis**

To determine the best fitting model, we examined the model fit of the original higher-order factor structure and the lower-order four factor structure of the Distress Tolerance Scale using a sequence of Confirmatory Factor Analyses with a Maximum Likelihood Estimation with robust standard errors and a mean- and variance adjusted test statistic (MLMV). These analyses were conducted among the total sample, the sub-sample of individuals with a history of NSSI, and the sub-sample of individuals without a history of NSSI. A model demonstrated acceptable fit if it met the following criteria: Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) values between 0.90 (adequate) and 0.95 (good) or higher, and a Standardized Root Mean Square Residual (SRMR) and Root Mean Square Error of Approximation

(RMSEA) values close to or below 0.08 (Brown, 2015). Modification indices suggested residual variances be correlated to improve model fit. Given there was a cluster of items with error covariances above .40 on the same subscale, we had theoretical justification for allowing these items to correlate in order to improve model fit (Whittaker, 2012). A chi-square difference test was conducted to statistically compare the two models.

We then tested for measurement invariance across individuals with and without a history of NSSI using the best-fitting model using a multigroup confirmatory factor analysis (MG-CFA) with Maximum Likelihood Estimation with robust standard errors and a mean- and variance adjusted test statistic (MLMV). We assessed configural (i.e., equal pattern of factor loadings), metric (i.e., equal factor loadings), scalar (i.e., equal factor loadings and equal intercepts), and residual error invariance (i.e., equal factor loadings, equal intercepts, and equal residual error variance uniqueness). Measurement invariance was supported if the configural model demonstrated acceptable fit and each of the subsequent models showed a non-significant change in chi-square test statistic and a change in Comparative Fit Index (CFI) of  $< 0.01$  and in Root Mean Square Error of Approximation (RMSEA) of  $< 0.015$  and Standardized Root Mean Square Residual (SRMR) of  $< 0.030$  (for metric invariance) or  $< 0.015$  (for scalar or residual invariance; Chen, 2007) from the previous levels. Partial invariance will be addressed using a sequential backwards approach where items are freed until partial invariance is achieved (Putnick, 2016). All analyses were conducted using MPlus v7.4 (Muthén & Muthén, 2012)<sup>1</sup>.

## Results

Results from a Missing Values Analysis indicated data were not missing completely at random,  $\chi^2(4012) = 4204.185$ ,  $p = .02$ , however given less than 5% of data were missing

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<sup>1</sup> Given the majority of participants were female, and at the request of an anonymous reviewer, we also tested measurement invariance across gender. Results indicated that configural, metric, scalar, and residual error invariance across gender were all supported, and thus we conclude males and females do not respond differently to items on this scale (see Supplementary Table 2).

on all variables, Expectation Maximization was used to impute missing data (Tabachnick & Fidell, 2013). Of the 531 participants, 215 (40.5%) reported a history of NSSI, with 118 (54.9%) of these individuals reporting engaging in self-injury in the past 12 months. The primary method of NSSI was cutting (50%), followed by severe scratching (12.4%), and self-battery (11.4%). Age of onset ranged from 4 to 23 years ( $M = 13.69$ ,  $SD = 2.99$ ). Descriptive statistics are presented in Table 3.1.

Table 3.1

*Descriptive statistics disaggregated by history of NSSI*

	Total Sample			No history of NSSI ( <i>n</i> = 316)			History of NSSI ( <i>n</i> =215)			<i>t</i> <sup>a</sup>
	M (SD)	Skewness (SD)	Kurtosis (SD)	M (SD)	Skewness (SD)	Kurtosis (SD)	M (SD)	Skewness (SD)	Kurtosis (SD)	
Tolerance	2.94 (1.07)	.11 (.11)	-.64 (.21)	3.22 (1.01)	.04 (.14)	-.66 (.27)	2.53 (1.01)	.31 (.17)	-.48 (.33)	7.70***
Appraisal	3.09 (.94)	.03 (.11)	-.61 (.21)	3.42 (.84)	.02 (.14)	-.62 (.27)	2.59 (.87)	.29 (.17)	-.52 (.33)	11.00***
Absorption	2.81 (1.10)	.18 (.11)	-.76 (.21)	3.18 (1.01)	.02 (.14)	-.67 (.27)	2.25 (.98)	.56 (.17)	-.37 (.33)	10.63***
Regulation	2.90 (.92)	.11 (.11)	-.27 (.21)	3.03 (.89)	.16 (.14)	-.11 (.27)	2.70 (.94)	.14 (.17)	-.50 (.33)	4.12***
Total DTS score	2.93 (.85)	.07 (.11)	-.35 (.21)	3.22 (.79)	.04 (.14)	-.29 (.27)	2.52 (.77)	.13 (.17)	-.42 (.33)	10.14***

<sup>a</sup>*t* values are in reference to the mean comparison between individuals with and without a history of NSSI.

\**p*<.05. \*\* *p*<.01. \*\*\* *p*<.001.

**Factor structure evaluation.** Both the original higher-order model and the lower-order four factor model demonstrated adequate baseline fit in the total sample and among individuals without a history of NSSI, but demonstrated poorer fit among individuals with a history of NSSI (Table 3.2). Given item 7 “My feelings of distress or being upset are not acceptable”, and 11 “I am ashamed of myself when I feel distressed or upset” were both on the appraisal subscale and had error covariance larger than 0.40, these two items were allowed to correlate. Item 11 and 12 “My feelings of distress or being upset scare me” were also on the appraisal subscale and had error variance larger than 0.40 so were allowed to correlate.

Results from chi-square difference tests indicate allowing these items to correlate significantly improved the baseline fit of the higher-order model in the total sample  $\Delta\chi^2(2) = 75.561$ ,  $p < .001$ , within the sub-sample of individuals with a history of NSSI  $\Delta\chi^2(2) = 24.355$ ,  $p < .001$ , and within the sub-sample of individuals without a history of NSSI  $\Delta\chi^2(2) = 47.708$ ,  $p < .001$ . Despite this improvement, the higher-order model still remained a poor fit among individuals with a history of NSSI (Table 3.2).

Comparatively, these modifications resulted in the lower-order four factor model demonstrating good fit within the total sample  $\Delta\chi^2(2) = 67.501$ ,  $p < .001$ , and among individuals without a history of NSSI  $\Delta\chi^2(2) = 43.334$ ,  $p < .001$ , and adequate fit among individuals with a history of NSSI,  $\Delta\chi^2(2) = 21.971$ ,  $p < .001$ . Importantly, chi-square difference tests indicated the lower-order four factor model was a significantly better fit than the higher-order model in all three groups (Table 3.2). The factor loadings (full sample) for both the higher-order and lower-order factor models are illustrated in Figure 3.1 and Figure 3.2.

Table 3.2

*Comparison of DTS models among the total sample, individuals with a history of NSSI, and individuals without a history of NSSI*

	$\chi^2$	df	$\Delta \chi^2 (\Delta df)$	<i>p</i> $\Delta \chi^2$	CFI	TLI	RMSEA	SRMR
<b>Total sample (n = 531)</b>								
<i>Baseline fit</i>								
Higher-order factor model	356.534	86	-	-	0.915	0.896	0.077	0.059
Lower-order factor model	312.991	82	43.543(2)	< 0.001	0.928	0.910	0.072	0.051
<i>Baseline fit with appraisal item correlations</i>								
Higher-order factor model	280.973	84	-	-	0.938	0.923	0.066	0.055
Lower-order factor model	245.490	82	35.483(2)	< 0.001	0.949	0.934	0.061	.047
<b>NSSI history (n = 215)</b>								
<i>Baseline fit</i>								
Higher-order factor model	210.779	86	-	-	0.872	0.844	0.082	0.087
Lower-order factor model	181.950	84	28.829(2)	< 0.001	0.899	0.874	0.074	0.071
<i>Baseline fit with appraisal item correlations</i>								
Higher-order factor model	186.424	84	-	-	0.895	0.869	0.075	0.084
Lower-order factor model	159.979	82	26.45 (2)	< 0.001	0.920	0.897	0.067	0.067
<b>No NSSI history (n = 316)</b>								
<i>Baseline fit</i>								
Higher-order factor model	200.891	86	-	-	0.923	0.906	0.065	0.053
Lower-order factor model	188.532	84	12.359(2)	0.002	0.930	0.913	0.063	0.051
<i>Baseline fit with appraisal item correlations</i>								
Higher-order factor model	153.183	84	-	-	0.954	0.942	0.051	0.049
Lower-order factor model	145.198	82	7.99 (2)	0.018	0.958	0.946	0.049	0.045

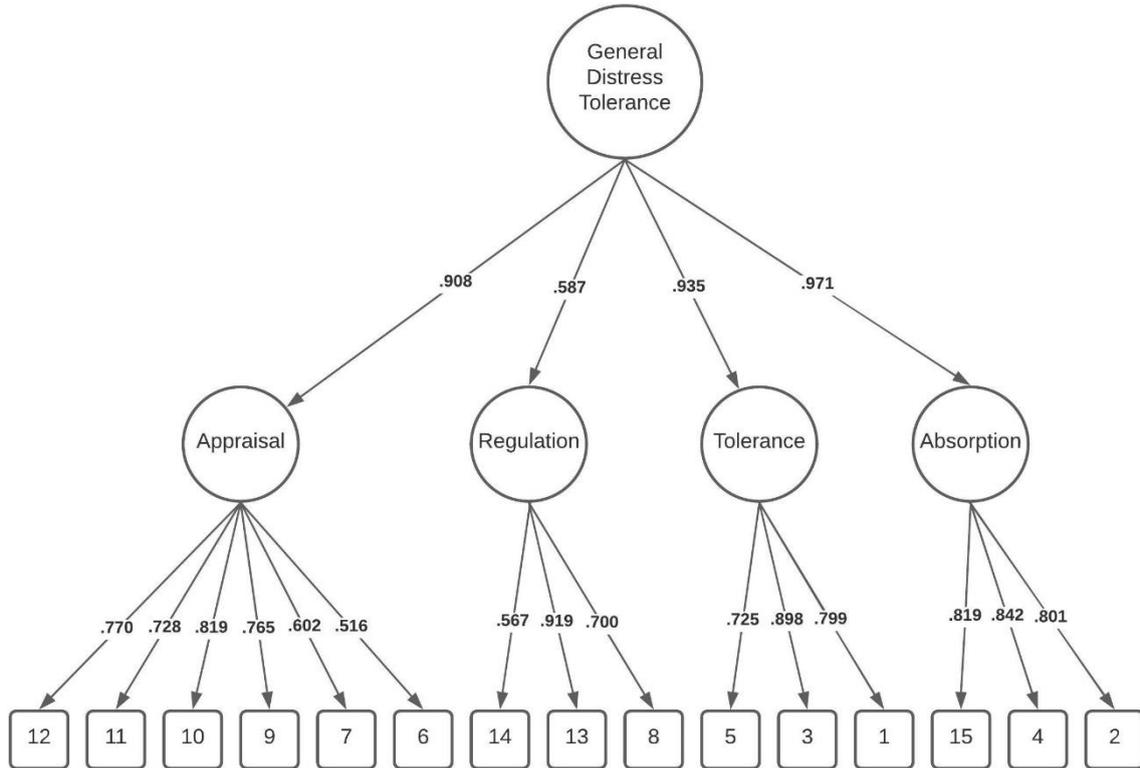


Figure 3.1. *Distress Tolerance Scale Higher-Order Factor Model (Total Sample)*

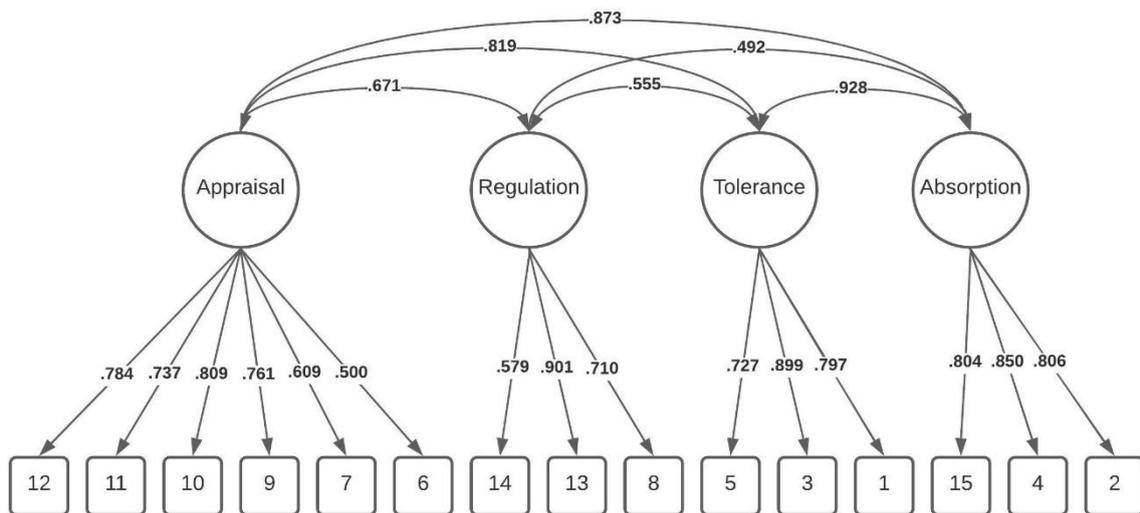


Figure 3.2. *Distress Tolerance Scale Lower-Order Four Factor Model (Total Sample)*

**Measurement invariance of the DTS lower order 4 factor model.** Given the correlated lower-order four factor model was the best fit, this is the model we chose to evaluate for measurement invariance. Configural (M1) and full metric (M2) invariance was supported for the lower-order four factor model, but the  $\Delta\chi^2$  test statistic indicated full scalar (M3.1) invariance was not supported (Table 3.3). To address achieve partial invariance, we identified the source of non-invariance by sequentially releasing item intercept constraints until the model was invariant (Putnick et al., 2016). We identified that releasing item 10 intercept constraints had the most influential impact on model fit. Irrespective of the score on the underlying latent factor appraisal, there was a tendency for young adults who self-injured to agree more with item 10 “Being distressed or upset is always a major ordeal for me” ( $\text{Intercept}_{(\text{No NSSI})} = 3.31$  vs.  $\text{Intercept}_{(\text{NSSI})} = 2.56$ ). Allowing these intercepts to vary between groups, partial scalar (M3.2) and full residual error (M4) invariance was supported.

There were significant latent mean differences, with individuals with a history of NSSI scoring lower than those with no history on the tolerance subscale ( $Z = -7.92, p < .001$ ), absorption subscale ( $Z = -10.20, p < .001$ ), and regulation subscale ( $Z = -4.52, p < .001$ ). Regardless of whether the differential item functioning of item 10 on the appraisal subscale was considered ( $Z = -8.08, p < .001$ ), or ignored ( $Z = -7.68, p < .001$ ), individuals with a history of NSSI scored lower than individuals without a history of NSSI.

Table 3.3

*Measurement invariance of the lower-order four factor Distress Tolerance Scale*

	$\chi^2$	<i>df</i>	$\Delta \chi^2$ ( $\Delta$ <i>df</i> )	<i>p</i> $\Delta \chi^2$	NCI	CFI	RMSEA	SRMR	Model Comparison	$\Delta$ NCI	$\Delta$ CFI	$\Delta$ RMSEA	$\Delta$ SRMR
Model 1: Configural invariance	304.965	164	-	-	0.8755	0.943	0.057	0.055	-	-	-	-	-
Model 2: Full metric invariance	315.623	175	10.66 (11)	0.472	0.8758	0.943	0.055	0.058	M1-M2	0.0003	<0.001	0.002	0.003
Model 3.1: Full scalar invariance	338.147	186	22.52 (11)	0.021	0.8663	0.939	0.056	0.063	M2-M3.1	0.0100	0.004	0.001	0.005
Model 3.2: Partial scalar invariance <sup>a</sup>	328.614	185	12.99 (10)	0.224	0.8733	0.942	0.054	0.060	M2-M3.2	0.0035	0.001	0.001	0.002
Model 4: Full residual error invariance	348.770	200	20.16 (15)	0.166	0.8691	0.940	0.053	0.062	M3.2-M4	0.0042	0.002	0.001	0.002

## Discussion

Many studies use the self-report Distress Tolerance Scale to examine group differences in distress tolerance between individuals with and without a history of self-injury (Anestis et al., 2013; Horgan & Martin, 2016; Lin et al., 2018). Relative to individuals with no history of self-injury, individuals with a history of NSSI report less global distress tolerance (Anestis et al., 2013; Lin et al., 2018), with group differences specifically observed on the appraisal and absorption subscales (Horgan & Martin, 2016; Slabbert et al., 2020). However, to ensure confidence in these findings it is important that we confirm the psychometric properties, including measurement invariance, of the Distress Tolerance Scale among individuals with and without a history of self-injury. The aim of the current study was to compare the higher-order and the lower-order four factor structure of the scale among a sample of university students, as well as within the sub-samples of individuals with and without a history of NSSI, to determine the best fitting model, and whether this was invariant across individuals with and without a history of NSSI.

Results indicated that the lower-order four factor structure demonstrated superior fit in all analyses. Based on these findings, measurement invariance analyses were conducted on the lower-order four factor model, with results indicating full invariance at the configural and metric level, followed by partial scalar and full residual error invariance. Despite freeing one item intercept at the scalar level, observation of latent mean differences indicate that all subscales can be confidently used to assess NSSI-related group differences in distress tolerance. The findings suggest that using the four subscales of the Distress Tolerance Scale including Tolerance, Appraisal, Absorption, and Regulation, as unique predictors of outcomes such as NSSI, as opposed to a single distress tolerance score, may be statistically superior. It is not uncommon for lower-order factor models to demonstrate better fit than when the lower-order factors are forced to load onto a higher-order factor, with similar results

evident in self-report measurement of alexithymia (Meganck et al., 2008). However, it is important to acknowledge that the difference between these two models, although significant, was not large. With some minor modifications, the higher-order factor model still demonstrated adequate fit in the full sample and among individuals with no history of self-injury. This higher-order model may prove useful in research contexts where a global distress tolerance score is valuable, perhaps in studies where researchers are interested in a broad range of constructs and require a more simplistic and direct way of assessing distress tolerance.

However, the use of the individual subscales may provide a more comprehensive and holistic understanding of key elements underlying distress tolerance and its relationship with psychopathology and behaviours such as NSSI. For example, in one of the few studies that examined associations between the four distress tolerance subscales and NSSI, Horgan and Martin (2009) established that only the appraisal and absorption subscales differentiated people with and without a history of self-injury. Similarly, Slabbert et al (2020) found that the appraisal and absorption scales differentiated between individuals who had recently self-injured and individuals who had never self-injured. Their results also indicated that experiencing greater positive affect might protect against negative appraisals of distress. Based on these findings, how one views their distress and how much attention they allocate towards this distress, appear to be more important in predicting NSSI than an individual's perception of their tolerance or how they attempt to regulate their distress. Employing this four factor model in future research will allow researchers to delve deeper into the relationship between distress tolerance and self-injury and consequently gain a more nuanced understanding regarding how different aspects of distress tolerance are related to NSSI.

After establishing that the lower-order four factor model was the superior fitting model, we investigated whether it was invariant among individuals with and without a history

of NSSI. Our results were promising, with full configural and metric invariance being supported, and after freeing the item intercept for one item (“Being distressed or upset is always a major deal for me”), partial scalar invariance was achieved. Consequently, full residual error invariance was satisfied however this was contingent on the partial scalar model where the intercept constraints for item 10 were released. When examining this item, it does not appear to differ in terms of its content in comparison to other items, such that it fits well within the general concept of perceived tolerance of distress tolerance. If it appeared to assess something more abstract or obscure in comparison to the other items this may explain differences in interpretation however this does not appear to be the case. Another factor thought to impact interpretation of items is whether they are positively or negatively keyed (Meganck et al., 2008). Previous research has established noninvariance between groups on negatively keyed items (Lindwall et al., 2012), however once again this is not the case with regards to item 10 on the Distress Tolerance Scale as it is positively keyed. Therefore it is unclear why individuals who self-injure may have a different interpretation of this item compared to individuals who have never self-injured. However, the strictest test of invariance was employed in this analysis (chi-square difference test). If we had employed the more liberal criteria used to assess measurement invariance which supports invariance if the difference in CFI between the configural level and other levels is less than 0.01 (Chen, 2007) then full scalar invariance would have been achieved. Regardless, whether this item intercept was freed or not, there were still significant mean differences on the appraisal subscale with individuals with a history of NSSI tending to appraise their distress as more unacceptable than individuals with no history of NSSI. These results instil confidence that we are able to reliably detect real group differences in distress tolerance between individuals with and without a history of NSSI using this four-factor Distress Tolerance Scale.

Whilst the findings of this study provide promising support for the use of the Distress Tolerance Scale to examine NSSI-related group differences in distress tolerance, several limitations warrant consideration. The sample predominantly comprised female university students who self-selected into the study, meaning these findings may not generalise to a community sample. Additionally, while NSSI is prevalent amongst university students, it is unlikely that many would meet the diagnostic criteria for the proposed NSSI disorder (Keikens et al., 2018). Individuals who meet this criteria would likely experience significantly greater difficulties in emotion regulation and consequently may also have more difficulty reflecting on previous times of heightened distress and reporting on their ability to tolerate distress. Therefore, investigation of measurement invariance of the Distress Tolerance Scale in clinical samples is warranted.

### **Conclusion**

In evaluating the two models of the Distress Tolerance Scale, as well as testing the measurement invariance of the lower-order four factor model, this study provides support for the use of this scale to reliably assess NSSI-related group differences. The lower-order four factor model appears to be statistically superior and may offer a more comprehensive understanding of the relationship between the specific facets of distress tolerance and behaviours such as NSSI. Additionally, the lower-order four factor model demonstrated invariance up until the scalar level according to the strictest invariance criteria, requiring only one item intercept to be freed to satisfy partial and full residual error invariance. Although further investigation in other samples is required, these results suggest that the Distress Tolerance Scale can be used with confidence that true group differences will be reflected in scores.

## **Chapter 4: The role of distress tolerance in the relationship between affectivity and NSSI**

### **Introduction to Chapter 4**

In Chapter 3, I established that the lower-order four factor model comprising the four subscales of the Distress Tolerance Scale appears to be the optimal model to use in research looking at distress tolerance and NSSI. Importantly, this measure was invariant across individuals with and without a history of NSSI, and therefore can be reliably used to detect group differences in the perceived ability to tolerate distress. These findings instil confidence in the use of the self-report Distress Tolerance Scale in the subsequent doctoral studies. In Chapter 4, I examine whether different dimensions of distress tolerance, captured in the four subscales, are differentially related to NSSI. Moreover, the relationship between affect and NSSI has been well-established in the literature, and therefore it is important to explore how the dimensions of distress tolerance interact with both positive and negative affect to predict NSSI. It is likely the relationship between negative affect and NSSI is strengthened by a low tolerance for distress, however the relationship between positive affect and distress tolerance is less obvious and this focus is more exploratory. Understanding how these key constructs in emotion regulation models of NSSI work together may aid more accurate prediction of self-injury. A paper based on this chapter has been published.

Published:

**Slabbert, A.,** Hasking, P., Notebaert, L., & Boyes, M. (2020). The Role of Distress Tolerance in the Relationship Between Affect and NSSI. *Archives of Suicide Research*, 1-15.  
doi:10.1080/13811118.2020.183379

**Author contribution statement**

Author	Contribution
Ashley Slabbert	Development of research question, data collection, data analysis, interpretation of results and discussion, and led manuscript preparation.
Penelope Hasking	Assisted with development of research question, data analysis, interpretation, and manuscript preparation.
Lies Notebaert	Assisted with data interpretation and manuscript preparation
Mark Boyes	Assisted with development of research question, data analysis, interpretation, and manuscript preparation.

### **Abstract**

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. A sample of 531 university students completed well-validated measures of NSSI, negative affectivity, positive affectivity, and distress tolerance. 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. 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 (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 et al., 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 et al., 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 et al., 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 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 (Leyro et al., 2010; Slabbert et al., 2018). 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., 2013).

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; 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 (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 et al., 2016; Dunkley et al., 2017; Winer & Salem, 2016). Depression has been associated with NSSI in several studies (Burke et al., 2018; Claes et al., 2014; Jacobson et al., 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 et al.,

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 et al., 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](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, ( $r = .85$ ; (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,  $\alpha = .85$ ; 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 4.1

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

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

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

Table 4.2

*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	<b>2.63(1.33-5.20)**</b>	<b>3.65(1.86-7.17)***</b>	1.39(.59-3.24)
History of mental illness	<b>5.75(3.32-9.97)***</b>	<b>11.39(6.86-18.91)***</b>	<b>1.98(1.12-3.55)*</b>
Step two			
Negative Affectivity	1.17(.87-1.57)	<b>1.92(1.44-2.56)***</b>	<b>1.64(1.19-2.28)**</b>
Positive Affectivity	<b>.72(.54-.96)*</b>	<b>.48(.36-.64)***</b>	<b>.66(.48-.91)*</b>
Step three			
DTS Tolerance	.94(.58-1.54)	1.42(.86-2.36)	1.51(.86-2.65)
DTS Appraisal	.70(.43-1.15)	<b>.54(.33-.89)*</b>	.77(.44-1.34)
DTS Absorption	.72(.43-1.21)	<b>.56(.32-.97)*</b>	.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)	<b>2.49(1.47-4.22)**</b>	<b>2.41(1.34-4.34)**</b>
Positive Affectivity *Absorption	.76(.43-1.35)	<b>.45(.25-.81)**</b>	.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 4.1a). 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 4.1b). 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 4.2). 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 4.1a. The relationship between appraisal and odds of NSSI (Never vs Recent) is moderated by positive affect.

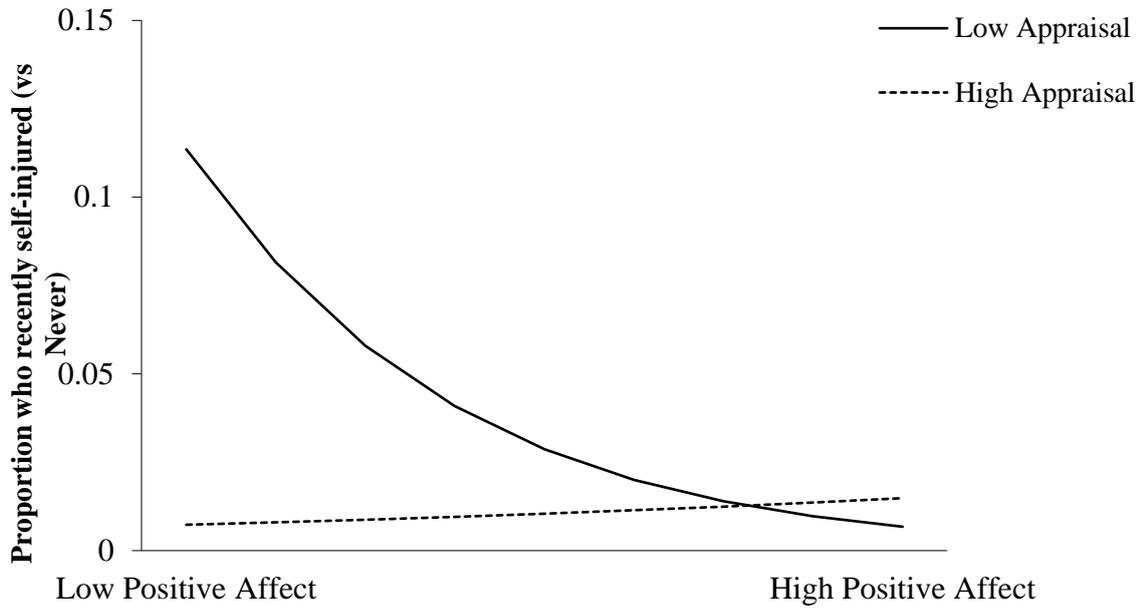


Figure 4.1b. The relationship between appraisal and odds of NSSI (Ever vs Recent) is moderated by positive affect.

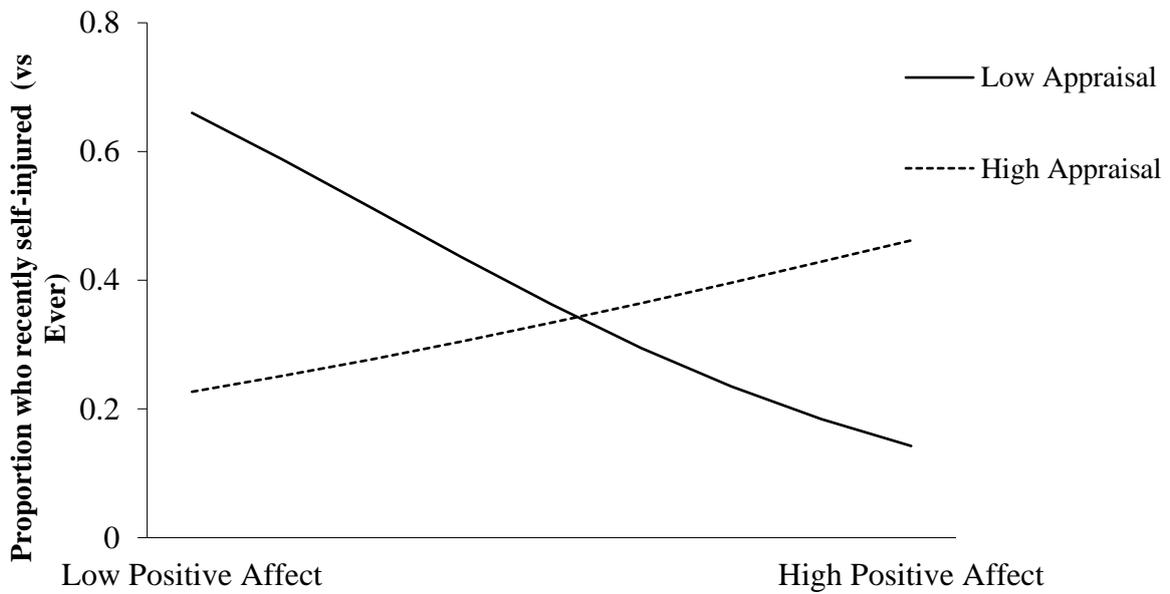
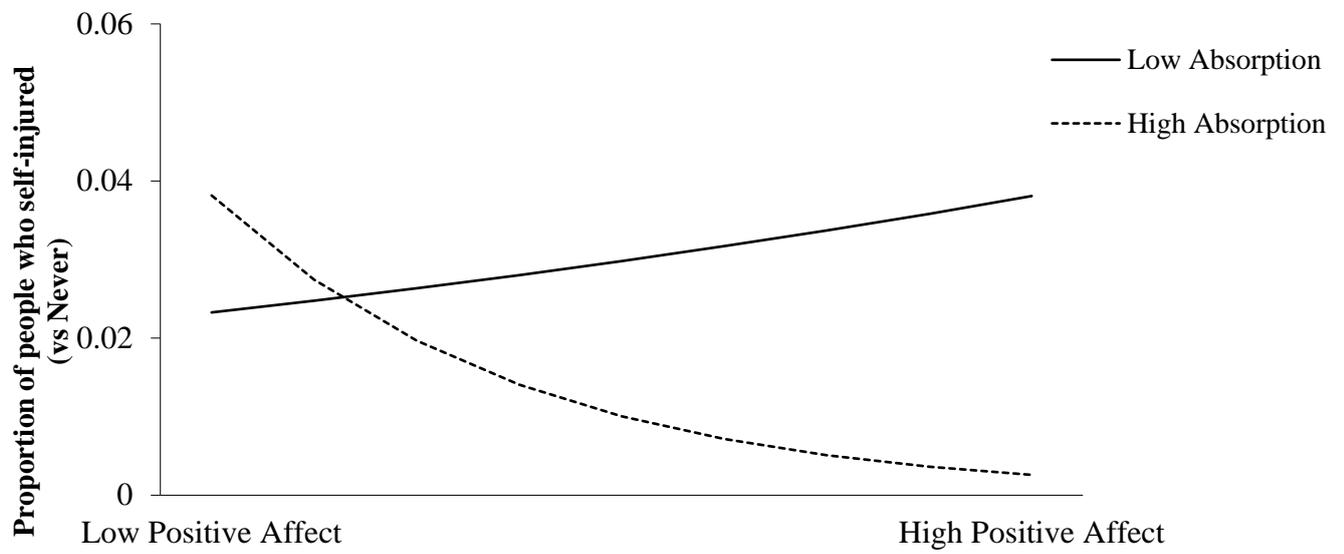


Figure 4.2. The relationship between absorption and odds of NSSI (Never vs Recent) is moderated by positive affect.



## 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 et al., 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 (Andrews et al., 2013b). 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., 2018). 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 et al., 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 et al., 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 et al., 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., 2019) 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.

## **Chapter 5: The associations between distress tolerance, emotion regulation, and non-suicidal self-injury**

### **Introduction to Chapter 5**

In the previous chapter I demonstrated associations between negative and positive affect in NSSI, as well as highlighted two dimensions of trait distress tolerance that appear to play a particularly important role in NSSI, namely appraisal and absorption. One's subjective appraisal of their distress, and how much of their attention is consumed by their distressing experience, seem to be related to whether an individual self-injures or not. However, how one actively regulates their emotions whilst experiencing this distress, or the difficulties they may face doing so, may also play a critical role in whether they engage in NSSI or not (Adrian et al., 2011; Gratz et al., 2010; Gratz & Chapman, 2007; Gratz & Roemer, 2008; Jenkins & Schmitz, 2012). Given greater expressive suppression and reduced engagement in cognitive reappraisal have been associated with NSSI (Andover & Morris, 2014; Andrews et al., 2013; Hasking et al., 2009; Richmond et al., 2017; Tatnell et al., 2017), it is plausible that one's habitual use of these strategies may strengthen the relationship between low distress tolerance and NSSI. Additionally, an individual who has a low tolerance for distress and who tends to perceive that they have difficulties in the regulation of emotion, may be more at risk of engaging in self-injury to escape their aversive emotional state. The objective of this study is to explore whether the relationship between one's perceived ability to tolerate distress and self-injury, is strengthened or weakened by general difficulties in emotion regulation and/or engagement in emotion regulation strategies.

**Author contribution statement**

Author	Contribution
Ashley Slabbert	Development of research question, data collection/management, data analysis, interpretation of results and discussion, and led manuscript preparation.
Penelope Hasking	Assisted with development of research question, data analysis, interpretation, and manuscript preparation.
Lies Notebaert	Assisted with data interpretation and manuscript preparation
Mark Boyes	Assisted with development of research question, data analysis, interpretation, and manuscript preparation.

### **Abstract**

Non-suicidal self-injury (NSSI) is the intentional damage to body tissue without suicidal intent. Individuals primarily engage in NSSI is to regulate intense emotion, and previous research indicates individuals who experience great difficulties tolerating distress are more likely to self-injure. Whether perceived difficulties in emotion regulation, as well as the use of specific emotion regulation strategies, moderates the relationship between distress tolerance and NSSI has yet to be tested. The current study tested the moderating roles of difficulties in emotion regulation, cognitive reappraisal, and expressive suppression in the relationships between the four facets of distress tolerance (tolerance, appraisal, absorption, regulation) and non-suicidal self-injury (NSSI). University students ( $n = 951$ ) completed self-report measures of key variables. The appraisal, absorption, and regulation aspects of distress tolerance were directly associated with NSSI, as were difficulties in emotion regulation and expressive suppression. Expressive suppression also interacted with the tolerance and regulation facets of distress tolerance to differentiate between individuals who had self-injured in the past 12 months and individuals with a lifetime history of NSSI. These findings highlight the importance of targeting specific elements of distress tolerance, as well as the potential utility in decreasing the habitual use of expressive suppression as an emotion regulation strategy, to reduce the likelihood of engaging in self-injury.

Non-suicidal self-injury (NSSI), defined as the deliberate damage to one's body in the absence of suicidal intent, is a perplexing behaviour primarily engaged in to regulate emotion (International Society for the Study of Self-Injury, 2020; Taylor et al., 2018). NSSI methods include, but are not limited to, cutting, scratching, self-battery, and burning oneself. They do not include culturally or socially sanctioned behaviours such as tattoos or piercings. Meta-analytic results indicate NSSI is prevalent, with between 13-17% of adolescents and young adults reporting a lifetime history, and approximately 20% of university students reporting having self-injured at some point in their lives (Swannell et al., 2014). While the age of onset of NSSI tends to peak at around 14 years of age, a secondary onset peak appears to occur between the ages of 20 and 24 (Gandhi et al., 2018). Research shows the transition into emerging adulthood and university can be a time of heightened stress (Bruffaerts et al., 2018; Dyson & Renk, 2006; Robotham, 2008) and that incoming university students are at a heightened risk for the onset of NSSI (Kiekens et al., 2019). Although NSSI can exist in the absence of psychopathology, evidence suggests there are associations between NSSI and psychological disorders including anxiety and depression (Bentley et al., 2014). Understanding what underlies self-injurious behaviour is a critical focus of current research, particularly given that frequent engagement in NSSI has been identified as a risk factor for later suicidal behaviour (Ribeiro et al., 2016).

One's ability to tolerate distress plays an important role in the development and maintenance of several disorders and dysregulated behaviours, including self-injury. Both theoretical accounts of NSSI (Chapman et al., 2006; Hasking et al., 2017; Selby et al., 2008), and empirical research (Boyes et al., 2019; Slabbert et al., 2018), establish a central role of heightened emotional reactivity, intensity, and perseveration in the onset and maintenance of NSSI. During these heightened emotional states, individuals who experience greater difficulty tolerating distress may self-injure to escape unwanted emotion by redirecting their

attention to NSSI-related stimuli such as the physical feeling of pain or sight of blood. In this sense, NSSI can be an effective short-term method of alleviating or reducing overwhelming and intense emotion. Conversely, individuals who are better able to tolerate distress may be more likely to sit with the emotional discomfort and/or implement other emotion regulation strategies.

Findings from self-report studies assessing the relationship between *perceived* distress tolerance and NSSI indicate individuals with a history of self-injury tend to report significantly lower levels of distress tolerance than individuals with no history of NSSI (Anestis et al., 2013; Gratz et al., 2006; Slabbert et al., 2018). More recently, research exploring how different facets of distress tolerance are related to NSSI indicate that particular aspects of distress tolerance may be more salient predictors of NSSI than others. There are four distinct components of distress tolerance; one's perceived ability to tolerate distress (tolerance), how one subjectively views their distress (appraisal), the amount of attention consumed by distress (absorption), and the behavioural efforts taken to reduce or avoid distress (regulation; Simons & Gaher, 2005). How one appraises their distress (e.g. shameful vs acceptable), and how consumed one is by their distress, appear to be particularly important in differentiating people with recent, lifetime, and no history of NSSI (Horgan & Martin, 2016; Slabbert et al., 2020). These findings highlight the importance of assessing all the individual facets of distress tolerance when examining its relationship with NSSI, as they may differentially relate to NSSI.

The relationship between low distress tolerance and NSSI is also evident in experimental research, whereby individuals who have previously self-injured terminate stress-inducing tasks significantly earlier than those with no such history (Nock & Mendes, 2008). This tendency to behave in a way that assists the immediate escape of intense emotion is argued to reflect an inability to tolerate distress. However, while it is clear that one's ability

to tolerate distress plays an important role in whether someone engages in self-injury or not, it is plausible that during heightened periods of distress, an individual's access to alternate emotion regulation strategies, or lack thereof, may also play a critical role in whether they self-injure.

Both emotion regulation difficulties and emotion regulation processes have been associated with NSSI. Gratz and Roemer's (2004) difficulties in emotion regulation model posits emotional awareness and acceptance are key components of emotion regulation, and that difficulties in these aspects can underpin many psychological disorders and behaviours, including NSSI. Specifically, individuals may experience difficulties with accepting emotional responses, engaging in goal-directed behaviour, controlling impulses, being aware of their emotional state, have limited access to emotion regulation strategies and a general lack of emotional clarity (Gratz & Roemer, 2004). In self-report studies examining the relationship between trait-level difficulties in emotion regulation and NSSI, individuals with a history of self-injury generally report more difficulties in emotion regulation than individuals who have never self-injured, in both clinical and community samples (Gratz et al., 2010; Gratz & Chapman, 2007; Gratz & Roemer, 2008). Greater emotion dysregulation has also been linked to increased frequency of NSSI (Adrian et al., 2011; Jenkins & Schmitz, 2012).

While general difficulties in emotion regulation are related to NSSI, so too are specific emotion regulation strategies. Gross' process model of emotion regulation specifies two primary emotion regulation strategies; cognitive reappraisal and expressive suppression (Gross, 1998). Cognitive reappraisal is an antecedent-focused strategy whereby individuals reframe emotionally charged stimuli to modify their interpretation and valence prior to emotion generation (e.g. actively choosing to interpret a potentially negative comment as neutral). Expressive suppression refers to the active process of reducing the behavioural

expression of an emotional response once it has already been generated. Cognitive reappraisal is generally associated with beneficial psychological outcomes in both cross-sectional (Garnefski & Kraaij, 2006) and longitudinal (Kraaij et al., 2002) research, likely as a result of reducing the negative association with the stimulus and therefore reducing the experience of negative emotion. Experimental findings also show how engagement in cognitive reappraisal not only decreases the experience of negative emotion but increases the experience of positive emotion (Troy et al., 2018). Expressive suppression on the other hand has the potential to heighten the experience of negative emotion whereby consistent efforts to reduce or avoid negative thoughts and emotions may have a paradoxical impact where the intensity of those thoughts and emotions are in fact amplified (Hasking et al., 2017; Selby et al., 2008).

Both emotion regulation strategies have been associated with the tendency to engage in NSSI, although in opposite ways. Greater engagement in cognitive reappraisal has been associated with reduced likelihood and frequency of self-injury (Andrews et al., 2013; Tatnell et al., 2017), and therefore may play an important protective role against NSSI.

Comparatively, individuals who actively suppress their thoughts and emotions tend to be more likely to report a history of NSSI as well as self-injure more frequently (Andover & Morris, 2014; Hasking et al., 2009; Richmond et al., 2017).

Together, these findings highlight the important role of emotion regulation in self-injurious behaviour, however, whether emotion regulation difficulties and/or strategies interact with distress tolerance to predict self-injury is yet to be tested. Based on previous research, it is possible that these factors may have stronger associations with particular aspects of distress tolerance, likely the appraisal and absorption facets of distress tolerance (Horgan & Martin, 2016; Slabbert et al., 2020), which may shed light on how these two constructs are related to NSSI. Uncovering whether the relationship between distress tolerance and NSSI is dependent on whether someone has access to helpful or unhelpful

emotion regulation strategies, or simply whether they have difficulties regulating emotion when they feel distressed, has theoretical and practical implications. This would allow us to refine theoretical models to further elucidate the nature of these two factors that underlie NSSI, and may also indicate a need to simultaneously target particular elements of each construct to reduce the likelihood of self-injury.

The aim of this study was to test the moderating roles of both emotion regulation difficulties and emotion regulation strategies on the relationships between the four facets of distress tolerance and self-injury. We predicted lower levels of tolerance, appraisal, absorption, and regulation would be associated with increased odds of reporting a history of self-injury and more recent self-injury. We predicted greater use of expressive suppression and less use of cognitive reappraisal would be associated with both history and recency of self-injury. We also predicted greater difficulties in emotion regulation to be associated with increased odds of reporting a history of and more recent use of NSSI. While the interaction between these variables is exploratory, based on previous theoretical accounts of emotion regulation and NSSI, we predicted that the relationships between the four facets of distress tolerance and NSSI to be strengthened by high levels of expressive suppression, low levels of cognitive reappraisal, and greater difficulties in emotion regulation.

## **Method**

**Participants.** Participants were 951 university students between the ages of 17 and 68 ( $M = 24.02$ ,  $SD = 8.69$ ) recruited as part of three survey studies exploring the relationships between emotion, cognition, and NSSI (Study 1:  $n = 324$ , Study 2:  $n = 506$ , Study 3:  $n = 121$ ), all of which included the same measures of the key constructs, as well as other measures. Of these participants, 74.7% were female ( $n = 710$ ), 25.2% were male ( $n = 240$ ), and 20.8% reported a history of mental illness ( $n = 198$ ), most commonly anxiety and depression.

**Measures.**

***Non-suicidal self-injury.*** Prior engagement in NSSI was assessed using the Inventory of Statements about Self-Injury (ISAS; Klonsky & Glenn, 2008). After being provided with a definition of NSSI, participants were asked whether they had ever engaged in self-injury. Participants who reported having previously engaged in NSSI were then asked to complete several other questions relating to age of onset, frequency of NSSI in the past year, and primary method of self-injury. The ISAS demonstrates good internal consistency ( $\alpha = .84$ ), good four-week ( $r = .85$ ) and one-year ( $r = .85$ ) test-retest reliability, as well as strong construct validity (Glenn & Klonsky, 2011).

***Distress Tolerance.*** Individual differences in distress tolerance were assessed using the Distress Tolerance Scale (Simons & Gaher, 2005). This scale comprises 15 items assessing four key aspects of distress tolerance; tolerance (e.g. "I can't handle feeling distressed or upset"), appraisal (e.g. "I'm ashamed of myself when I feel distressed or upset"), absorption (e.g. "When I feel distressed or upset, I cannot help but concentrate on how bad the distress actually feels"), and regulation (e.g. "I'll do anything to avoid feeling distressed or upset"). Participants rate the extent to which they agree with each item using a 5-point Likert Scale (1: *Strongly agree* to 5: *Strongly disagree*). Subscale scores are calculated by averaging relevant item scores. Higher scores reflect a higher tolerance for distress. The Distress Tolerance Scale has previously demonstrated excellent internal consistency ( $\alpha = .90$ ) and good construct validity based on associations with negative and positive affectivity (Simons & Gaher, 2005). In the current sample, the internal consistency was good for the tolerance subscale ( $\alpha = .80$ ), appraisal subscale ( $\alpha = .85$ ), and absorption subscale ( $\alpha = .85$ ), and acceptable for the regulation subscale ( $\alpha = .78$ ).

***Difficulties in Emotion Regulation.*** The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) comprises 36 items assessing a range of emotion regulation

difficulties including non-acceptance of emotional responses (e.g. “When I’m upset, I become angry with myself for feeling that way”), difficulty in engaging in goal-directed behaviour (e.g. “When I’m upset, I have difficulty getting work done”), impulse control difficulties (e.g. “When I’m upset, I become out of control”), lack of emotional awareness (e.g. “I pay attention to how I feel” – reverse coded), limited access to emotion regulation strategies (e.g. “When I’m upset, I believe that wallowing in it is all I can do”), and lack of emotional clarity (e.g. “I am confused about how I feel”). Participants rate how often each statement applies to them on a 5-point Likert scale (1: *Almost never* to 5: *Almost always*). In line with previous research (Gratz et al., 2010; Gratz & Chapman, 2007; Gratz & Roemer, 2008) a global score was calculated from the summation of item scores. Higher scores reflect greater difficulties in emotion regulation. The DERS has previously demonstrated excellent internal consistency (Gratz & Roemer, 2004) and construct validity given its associations with depression and anxiety (Fowler et al., 2014). The internal consistency was excellent in this sample ( $\alpha = .92$ ).

***Emotion Regulation Strategies.*** The habitual use of two emotion regulation strategies, cognitive reappraisal and expressive suppression, was assessed using the Emotion Regulation Questionnaire (Gross & John 2003). This scale contains 10 items, six assessing cognitive reappraisal (e.g. “When I want to feel less negative emotion (such as sadness or anger), I change what I’m thinking about”), and four assessing expressive suppression (e.g. “I control my emotions by not expressing them.”). Participants rate each item using a 7-point Likert scale (1: *Strongly disagree* to 7: *Strongly Agree*). Higher scores on each subscale reflect greater use of each strategy. The internal consistency was excellent for the cognitive reappraisal subscale ( $\alpha = .89$ ) and good for the expressive suppression subscale ( $\alpha = .79$ ).

### **Procedure.**

After receiving ethical approval from the University's Human Research Ethics Committee, all three survey studies were advertised on the University's online research participation portal, where undergraduate psychology students are able to sign up in exchange for course credit. Social media was also used to advertise the studies, and participants recruited via this method were entered into a prize draw after completing the study. Upon sign up, participants were provided with an information sheet detailing the aims of the study, questionnaire content, as well as information regarding confidentiality and data storage. Before proceeding to complete the questionnaires, participants were required to provide consent. All three studies took approximately 60 minutes to complete. Participants received information about self-injury and a list of useful counselling resources upon completion of the study.

### **Data Analysis**

Descriptive analyses were run to describe the nature of self-injury in the sample, and correlations between constructs of interest (including potential confounding variables such as gender). Participants were categorised into three groups related to their NSSI history: no history of NSSI, lifetime history of NSSI (i.e. previously self-injured but not in the past 12 months), and recent history of NSSI (i.e. have engaged in self-injury in the past 12 months). Two multinomial regressions were conducted to assess whether emotion regulation strategies, and emotion regulation difficulties, moderate the relationship between the four aspects of distress tolerance and NSSI. Gender was statistically controlled by entering it in Step 1, the subscales of the Distress Tolerance Scale were entered in Step 2, cognitive reappraisal, expressive suppression and difficulties in emotion regulation were entered in Step 3, with all two-way interactions entered in Step 4. In all analyses, variables were standardised to reduce

multicollinearity and significant interactions were probed using simple slopes analyses, with slopes assessed at  $\pm$  one standard deviation from the mean (Aiken and West, 1991).

## Results

Missing Value Analysis results indicated data was not missing completely at random,  $\chi^2(4207) = 4361.533, p = .047$ , however given that less than 1% of data were missing on average, Expectation Maximisation was used to impute missing values (Tabachnick and Fidell, 2013). Descriptive statistics and correlations between key variables are presented in Table 1. Of all participants, 38% reported a prior history of NSSI ( $n = 361$ ). Among individuals with a history of self-injury, 52% ( $n = 185$ ) reported engaging in NSSI in the past 12 months. Reported age of onset ranged from 4 to 42 years of age ( $M = 14.42, SD = 3.65$ ) with most participants citing cutting (17.8%), severe scratching (5.4%) and self-battery (4.2%) as their primary method of self-injury. Gender was significantly correlated with several key variables (i.e. cognitive reappraisal, expressive suppression etc.) and therefore was statistically controlled in subsequent analyses.

Table 5.1

*Descriptive statistics and correlations between variables of interest*

	M	SD	2	3	4	5	6	7	8	9
1. NSSI	-	-	.18**	-.23**	-.35**	-.32**	-.12**	.36**	-.20**	.081*
2. Gender	-	-	-	-.18**	-.18**	-.18**	-.08*	-.20**	-.09*	-.06
3. Tolerance	3.04	1.01		-	.69**	.76**	.55**	-.53**	.25**	-.13**
4. Appraisal	3.19	.92			-	.75**	.54**	-.72**	.34**	-.24**
5. Absorption	2.93	1.08				-	.47**	-.63**	.32**	-.13
6. Regulation	2.95	.93					-	-.32**	.04**	-.17**
7. Difficulties in Emotion Regulation	96.44	23.72						-	-.39**	.37**
8. Cognitive reappraisal	4.59	1.16							-	-.01
9. Expressive Suppression	3.84	1.28								-

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

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

### **Distress Tolerance, Difficulties in Emotion Regulation, Cognitive Reappraisal, Expressive Suppression and NSSI**

Gender was significantly associated with history of NSSI in Step 1,  $\chi^2(2) = 30.08, p < .001$ , with females being more likely to report a recent or lifetime history of NSSI relative to individuals without a history of NSSI (Table 5.2). There was no gender difference in whether people with a history of NSSI had self-injured in the past 12 months or not. In Step 2, the addition of the four Distress Tolerance Scale subscales significantly improved the model  $\Delta\chi^2(8) = 146.124, p < .001$ . Scores on the appraisal subscale significantly differentiated between all three groups; lower appraisal (i.e. negative perceptions of distress) was associated with greater odds of recent and lifetime NSSI relative to no history of NSSI, as well as greater odds of recent NSSI relative to no history of NSSI. Scores on the absorption subscale significantly differentiated between no history and recent history of NSSI; lower absorption (i.e. greater attention consumed by distress), was associated with increased odds of reporting recent NSSI relative to no history of NSSI. Regulation was also uniquely associated with recent NSSI, where higher regulation (i.e. a tendency to not behave in ways that avoid the experience of distress), was associated with greater odds of reporting a recent NSSI history relative to no NSSI history.

Difficulties in emotion regulation, cognitive reappraisal and expressive suppression were entered in Step 3, significantly improving the model  $\Delta\chi^2(6) = 38.10, p < .001$ . Higher scores on the Difficulties in Emotion Regulation Scale were related to increased odds of engaging in recent NSSI rather than lifetime or no history of NSSI. Expressive suppression significantly differentiated between participants with no history of NSSI and lifetime history of NSSI; lower expressive suppression was associated with increased odds of reporting a lifetime history of NSSI. Expressive suppression also differentiated between recent and lifetime history of NSSI; higher expressive suppression was associated with increased odds of

reporting a recent history of NSSI. Cognitive reappraisal was not significantly associated with NSSI.

The addition of the two-way interactions entered in Step 4 did not significantly improve the model  $\Delta\chi^2(24) = 24.66, p = .42$ . However, there was a significant interaction between the tolerance subscale and expressive suppression that differentiated between recent and lifetime history of NSSI. Simple slopes results indicate a negative relationship between tolerance and NSSI at low levels of expressive suppression ( $b = .74, z = 2.20, p = .03$ ) but not at high levels of expressive suppression ( $b = -.46, z = -1.26, p = .23$ ). There was also a significant interaction between regulation and expressive suppression that differentiated between recent and lifetime history of NSSI. Simple slopes results indicate a positive relationship between regulation and NSSI at high levels of expressive suppression ( $b = -.56, z = 2.21, p = .03$ ) but not at low levels of expressive suppression ( $b = -.19, z = -1.81, p = .42$ ).

Table 5.2

*Multinomial regression: Gender, Four facets of Distress Tolerance, Cognitive Reappraisal, Expressive Suppression*

	No NSSI history/Lifetime NSSI history OR (95% CI)	No NSSI history/Recent NSSI history OR (95% CI)	Lifetime NSSI history/Recent NSSI history OR (95% CI)
Step one			
Gender	<b>1.92(1.25-2.97)**</b>	<b>2.98(1.88-4.73)***</b>	1.55(.86-2.78)
Step two			
DTS Tolerance	1.13(.84-1.53)	1.26(.93-1.72)	1.11(.77-1.61)
DTS Appraisal	<b>.67(.50-.90)**</b>	<b>.39(.29-.54)***</b>	<b>.58(.41-.84)**</b>
DTS Absorption	.77(.57-1.06)	<b>.54(.38-.75)***</b>	.69(.46-1.03)
DTS Regulation	1.17(.93-1.46)	<b>1.34(1.06-1.70)*</b>	1.15(.87-1.52)
Step three			
Difficulties in Emotion Regulation (DERS)	1.24(.93-1.65)	<b>1.81(1.34-2.44)***</b>	<b>1.46(1.02-2.09)*</b>
Cognitive Reappraisal	.93(.76-1.14)	.85(.70-1.0)	.91(.72-1.16)
Expressive Suppression	<b>.81(.66-.99)*</b>	1.20(.97-1.50)	<b>1.48(1.15-1.89)**</b>
Step four			
DERS* Tolerance	.89(.61-1.31)	1.00(.67-1.47)	1.11(.70-1.77)
DERS* Appraisal	.90(.62-1.33)	.82(.56-1.22)	.91(.58-1.43)
DERS* Absorption	1.15(.77-1.73)	.99(.65-1.51)	.86(.53-1.41)
DERS* Regulation	1.08(.77-1.73)	.95(.70-1.29)	.88(.62-1.25)
Cognitive Reappraisal*Tolerance	.89(.64-1.25)	1.02(.73-1.44)	1.14(.76-1.71)

Cognitive	.78(.56-1.08)	.97(.70-1.34)	1.24(.85-1.83)
Reappraisal*Appraisal			
Cognitive	1.20(.86-1.67)	1.08(.75-1.56)	.90(.59-1.38)
Reappraisal*Absorption			
Cognitive	1.01(.79-1.31)	1.00(.77-1.29)	.99(.73-1.34)
Reappraisal*Regulation			
Expressive	1.33(.95-1.86)	.86(.61-1.22)	<b>.65(.43-.99)*</b>
Suppression*Tolerance			
Expressive	1.00(.72-1.39)	.86(.61-1.21)	.86(.58-1.28)
Suppression*Appraisal			
Expressive	.98(.70-1.37)	1.36(.94-1.98)	1.40(.90-2.17)
Suppression*Absorption			
Expressive	.85(.67-1.08)	1.29(.99-1.67)	<b>1.51(1.10-2.06)*</b>
Suppression*Regulation			

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

Figure 5.1. The relationship between DTS Tolerance and NSSI is moderated by Expressive Suppression

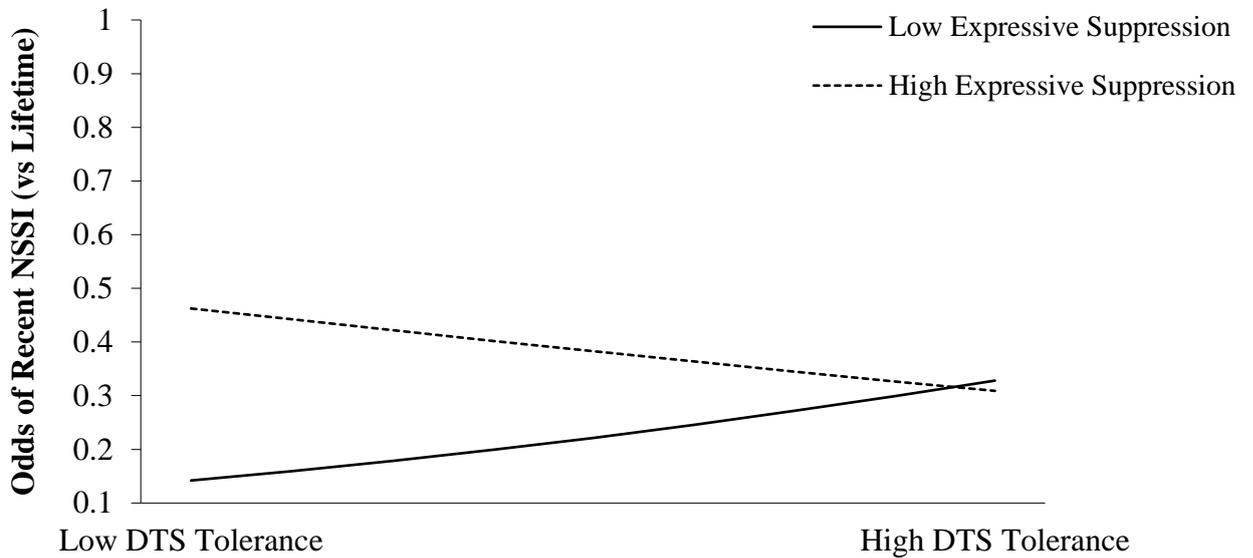
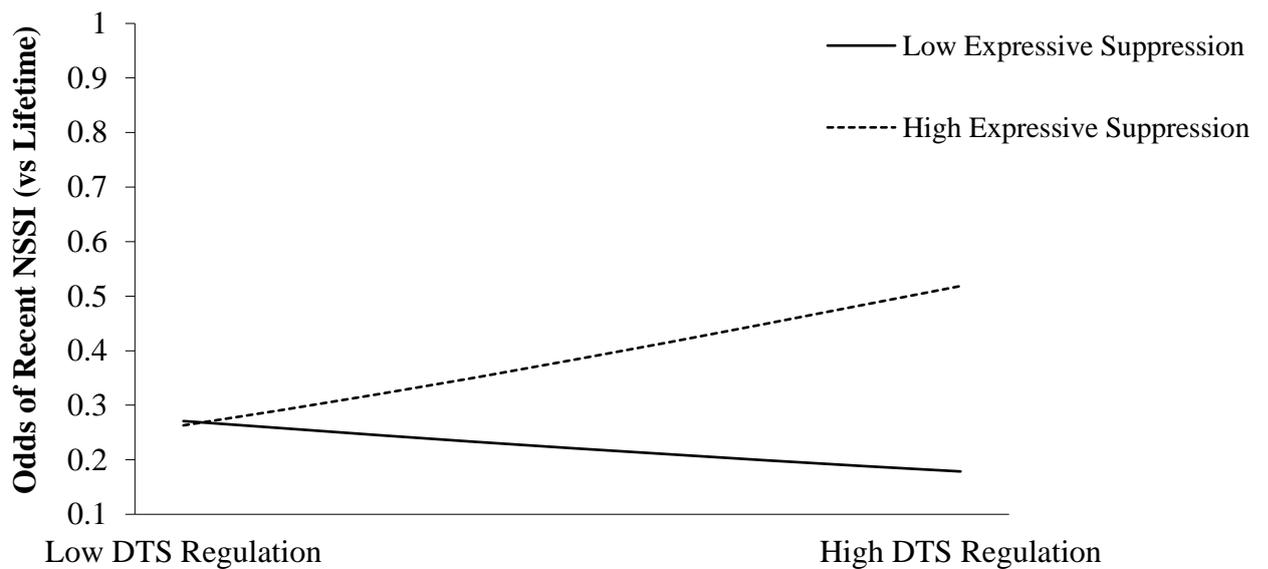


Figure 5.2. The relationship between DTS Regulation and NSSI is moderated by Expressive Suppression



## Discussion

The current study aimed to examine whether emotion regulation difficulties, and emotion regulation strategies (i.e. cognitive reappraisal and expressive suppression), interact with the four facets of distress tolerance to predict lifetime history and recency of NSSI. As predicted, the appraisal, absorption and regulation aspects of distress tolerance were directly related to NSSI history, as were difficulties in emotion regulation and expressive suppression. Furthermore, exploratory analyses suggested that expressive suppression may interact with the tolerance and regulation facets of distress tolerance to predict recent self-injury.

Although the tolerance subscale of distress tolerance was not directly associated with NSSI, the appraisal, absorption and regulation subscales were all uniquely related to history of self-injury. Importantly, individuals who appraised their distress as more shameful and unacceptable, were more likely to report a lifetime and recent history of NSSI compared to individuals with no history of NSSI, as well as more likely to have recently self-injured compared to people with a lifetime history. These findings are consistent with previous research where the appraisal subscale has differentiated between no history and recent history (Horgan & Martin, 2016; Slabbert et al., 2020) and no history and lifetime history of NSSI (Horgan & Martin, 2016); however, this is the first time appraisal scores have differentiated between people with a recent and lifetime history of NSSI, likely due to a larger sample size and consequently greater statistical power. These results contribute to the growing body of literature that indicates modifying the way one subjectively appraises their distress may decrease the likelihood of engaging in self-injury and possibly assist in the cessation of NSSI.

The attentional aspect of distress tolerance (absorption), as well as the efforts taken to avoid or alleviate distress (regulation) were also significant predictors of NSSI. Specifically, individuals who feel more consumed by their emotional experience and consequently whose attention is more *absorbed* by their distress are more likely to have recently self-injured

relative to people without a history of NSSI. This pattern of results is consistent with previous research (Horgan & Martin, 2016; Slabbert et al., 2020). Interestingly, the regulation facet of distress tolerance was also a significant predictor of NSSI. However, the pattern of results was in an unexpected direction, with individuals who do not generally behave in ways that assist in the avoidance or alleviation of distress, being more likely to report recently engaging in self-injury compared to individuals without a history of NSSI. This is inconsistent with emotion regulation models of NSSI which posit individuals use self-injury as an escape from intense emotion (Chapman et al., 2006; Selby et al., 2008). Perhaps when responding to items on this subscale such as “I’ll do anything to stop feeling distressed or upset”, individuals who have never self-injured respond based on the range of different emotion regulation strategies they employ when feeling distressed, whereas individuals who self-injure may do so before the distress becomes unbearable and therefore do not respond to this question in the same way.

As expected, individuals who experience greater difficulties in emotion regulation were more likely to have self-injured in the past 12 months. These results are consistent with previous research that highlights how greater difficulties in emotion regulation are associated with higher odds of reporting a history of NSSI (Gratz et al., 2010; Gratz & Chapman, 2007; Gratz & Roemer, 2008). Interestingly, difficulties in emotion regulation did not distinguish between individuals with a lifetime history of NSSI and no history of NSSI. Individuals who report a lifetime history of NSSI but have not self-injured in the past 12 months may have developed better emotion regulation skills and therefore were able to cease engaging in NSSI and consequently score more similarly to individuals without a history of NSSI on the Difficulties in Emotion Regulation Scale.

Surprisingly, cognitive reappraisal was not directly associated with NSSI, despite previous research demonstrating a link between the two (Garnefski & Kraaij, 2006; Kraaij et

al., 2002; Troy et al., 2018). Whilst expressive suppression was related to NSSI, the direction of the relationships were mixed. As expected, individuals who habitually suppress their emotional responses were more likely to have recently self-injured than individuals who do not use expressive suppression. This pattern of results supports previous research that suggests the active avoidance of emotional thoughts and states can work to amplify the negative emotional experience, and this may be why people self-injure (Andover & Morris, 2014; Hasking et al., 2009; Richmond et al., 2017).

However, expressive suppression also differentiated between no history and lifetime history of NSSI, but less engagement in emotional suppression was related to a greater likelihood of having previously self-injured. One explanation may be that individuals who previously self-injured (but do not anymore), may have gained emotion regulation skills that allowed them to cease engagement in NSSI, perhaps through therapy or interventions such as Dialectal Behaviour Therapy, and therefore are able to use more adaptive emotion regulation strategies rather than trying to suppress their emotional response. Individuals who have never self-injured might still use expressive suppression in times of emotional distress, and consequently score higher on this scale. However, given these individuals tend to experience emotion less intensely (Slabbert et al., 2018) and for shorter periods of time (Boyes et al., 2019) in comparison to individuals who self-injure, this use of suppression may be adaptive rather than harmful. Voon, Hasking and Martin (2014) conducted a longitudinal study examining how changes in emotion regulation strategies (cognitive reappraisal, expressive suppression, and rumination) impacted NSSI engagement over a three-year period, and found that increased use of cognitive reappraisal was associated with reduced severity of NSSI over time. While cognitive reappraisal was not significantly associated with NSSI in our study, these findings do support the notion that improving emotion regulation skills can offer a protective effect against NSSI, and may explain why individuals who previously but no

longer self-injure, score lower in expressive suppression. Future research may benefit from assessing whether or not individuals had received these sorts of therapies which would allow testing this proposition.

Although the addition of the interaction terms did not significantly improve the models, there some indication that expressive suppression may also work together with the tolerance facet of distress tolerance in differentiating people with a lifetime and recent history of NSSI. Specifically, a tendency to suppress emotional responses, coupled with the perception of being unable to handle distress, was associated with recent NSSI relative to lifetime NSSI. Similarly, expressive suppression and the regulation facet of distress tolerance may work together to predict recent self-injury, however the pattern of results was less straightforward. Greater use of expressive suppression was associated with recent NSSI, but only among individuals who do not tend to behave in ways that help them alleviate distress (i.e. high distress tolerance). This could possibly be due to individuals with a history of self-injury not reporting behaving in ways to avoid distress (potentially because they self-injure before their distress becomes too overwhelming) however given the cross-sectional nature of this research, and the fact that the addition of the interaction terms did not significantly improve model fit, we can only tentatively speculate and further research is necessary to understand these complex relationships.

These findings have several theoretical and clinical implications. Building on previous research, these results continue to highlight the utility of examining individual differences in the unique facets of distress tolerance as they offer a valuable insight into the nature of the relationship between distress tolerance and NSSI. The direct relationships between how one appraises their distress, as well as how much attention is consumed by distress, and NSSI, support the implementation of intervention programs that assist in the development of skills related to these two facets of distress tolerance. Further, programs that

target emotional acceptance and the development of general emotion regulation abilities may also be effective in reducing the likelihood of engaging in self-injury. Programs such as Dialectal Behaviour Therapy specifically target distress tolerance and emotion regulation skill development and promising evidence exists to support their utility in improving these constructs (Muhomba et al., 2017). Rumination-based mindfulness is another intervention shown to reduce the frequency of unwanted thoughts and improve the acceptance of emotions which may be particularly beneficial given the associations between absorption and NSSI.

Whilst these findings provide an interesting insight into the way distress tolerance and emotion regulation work together to predict self-injury, there are a number of limitations that warrant consideration. The cross-sectional nature of the data and retrospective reporting limits the extent to which we can draw conclusions regarding the direction of the effects. Further, the unexpected direction of the relationships between the regulation facet of distress tolerance and NSSI, as well the relationship between regulation and expressive suppression in predicting NSSI, warrant further research. Whilst we have provided possible explanations for these patterns, future research may benefit from assessing these relationships using a variety of methodologies, including longitudinal designs or Ecological Momentary Assessment as they better capture the real-time experience of emotion and the difficulties and/or processes engaged in to regulate it.

## **Conclusion**

Our findings indicate potentially important relationships between distress tolerance, emotion regulation difficulties and strategies, and NSSI. In particular, they highlight how considering specific aspects of distress tolerance that are more salient in NSSI (namely appraisal and absorption) may be an important focus for future research looking at distress tolerance and NSSI, as well as developing more targeted prevention and intervention initiatives. Additionally, assisting in the development of emotion regulation skills, with a

specific focus on reducing expressive suppression, may decrease the likelihood of engaging in self-injury. Further, it appears that whilst distress tolerance and emotion regulation are independently related to NSSI, the experience of withstanding distress in the moment is partly dependent on how one actively manages that distress. Although these findings are novel and informative, future research is required to continue examining these relationships using multiple methodologies.

## **Chapter 6: Assessing distress tolerance using a modified version of the Emotional Image**

### **Tolerance task**

#### **Introduction to Chapter 6**

Chapters 3, 4, and 5 were primarily concerned with examining the relationship between one's perceived ability to tolerate distress, captured using the self-report Distress Tolerance Scale, and NSSI. Whilst one's perception of their distress clearly plays an important role in NSSI, it is necessary to assess whether NSSI-related differences exist with regards to the actual ability to withstand distress, captured using behavioural distress tolerance tasks. Chapter 6 involves making minor modifications to recently developed Emotional Image Tolerance task, as well as adapting the task to include positive and neutral images in order to assess whether individuals respond to the valence or the intensity of the image content. Subjective distress ratings and gender-related differences on the tasks are also assessed. A paper based on this chapter has been accepted for publication.

In Press:

**Slabbert, A.,** Hasking, P., Notebaert, L., & Boyes, M. (in press). Assessing distress tolerance using a modified version of the Emotional Image Tolerance task. *Journal of Experimental Psychopathology*

**Author contribution statement**

Author	Contribution
Ashley Slabbert	Development of research question and study design (including task modification), data collection, data analysis, interpretation of results and discussion, and led manuscript preparation.
Penelope Hasking	Assisted with development of research question, data analysis, interpretation, and manuscript preparation.
Lies Notebaert	Assisted with task modification, study design, interpretation of results, and manuscript preparation.
Mark Boyes	Assisted with development of research question, data analysis, interpretation, and manuscript preparation.

### **Abstract**

The Emotional Image Tolerance (EIT) task assesses tolerance of negative emotion induced by negatively-valenced images. We made several minor modifications to the task (Study 4a) and adapted the task to include positive and neutral images in order to assess whether individuals respond to the valence or the intensity of the image content (Study 4b). In both studies we assessed subjective distress, gender differences in task responses, and associations between behavioural and self-reported distress tolerance, and related constructs. Across both studies the EIT successfully induced distress and gender differences were observed, with females generally indicating more distress than males. In Study 4b, responses on the adapted EIT task were correlated with self-reported distress tolerance, rumination, and emotion reactivity. The EIT successfully induces distress and the correlations in Study 4b provide promising evidence of validity.

Distress tolerance, the ability to withstand negative emotional and/or aversive states, is linked to the development and maintenance of several psychopathologies including anxiety (Bernstein et al., 2011) and depression (Lin et al., 2018), as well as dysregulated behaviours including substance use (Brown et al., 2005), eating disorders (Anestis et al., 2007), and non-suicidal self-injury (Anestis et al., 2013). Conceptualised as a multifaceted construct, distress tolerance encompasses five facets; tolerance of uncertainty, ambiguity, frustration, physical discomfort, and negative emotion (Zvolensky et al., 2010). Its transdiagnostic nature has captured the attention of many researchers and clinicians, whose focus is to improve methods of measurement in order to better ascertain how distress tolerance functions as a mechanism underlying these disorders, and consequently develop targeted prevention and intervention initiatives.

Assessment of the five facets of distress tolerance has predominantly utilised well-validated and widely-used self-report measures that capture one's *perceived* ability to withstand aversive emotional and physical states, and have been established to be related to emotional disorders (Anestis et al., 2007; Bernstein et al., 2011; Leyro, Zvolensky, et al., 2010; Zvolensky et al., 2010). In contrast, behavioural tasks attempt to capture differences in *actual* ability to tolerate experimentally-elicited distress. However, until recently, only two facets of distress tolerance had been assessed using behavioural tasks: tolerance of frustration, which is commonly assessed using the Paced Serial Addition Test (Lejuez et al., 2003), mirror tracing task (Strong et al., 2003), and an adaptation of the Wisconsin Card Sorting Task (Nock & Mendes, 2008), as well as tolerance of physical discomfort, which is generally assessed using the breath holding task (Daughters et al., 2005) cold pressor task (Daughters et al., 2005; see Leyro et al., 2010, for a review of the most frequently used laboratory tasks). Although performance on these tasks is associated with psychopathology (Feldner & Hekmat, 2001; Renna et al., 2018; Tull & Gratz, 2013), given the links between

distress tolerance and emotional symptomology, it is surprising that little effort has been made to develop tasks specifically assessing tolerance of emotional distress.

Recently, Veilleux and colleagues (2019) developed the Emotional Image Tolerance task. This is a computer task designed to assess individuals' tolerance to negative emotionally-valenced stimuli whilst experiencing distress (Veilleux et al., 2019). In this task, participants are presented with 45 images sourced from the International Affective Picture System (IAPS), a well validated image set containing images demonstrated to reliably induce both positive and negative affect (Lang et al., 2008). Individuals are presented with each of the images and instructed to indicate distress when they experience it (using pre-determined keys on the keyboard). Additionally, after indicating distress participants have the option to escape the image if their distress becomes too overwhelming. Images are presented for a maximum of 30 seconds.

This task differs from previous behavioural distress tolerance tasks in two key ways; it separates overall task persistence from task persistence whilst experiencing distress (as indicated by the individual), and it also provides multiple trials (45 images) over a range of emotional content to more reliably assess tolerance of negative emotion. Whilst the separation between overall task persistence and distress persistence is sometimes measured in studies using the cold pressor task (with overall task persistence capturing the total time a participants hand is immersed in cold water, and distress persistence capturing the time between acknowledging distress before removing the hand), this metric is not often used and the distress is related to physical pain/discomfort rather than emotional distress. The authors validated the task in a series of studies which established significant associations between the Emotional Image Tolerance task and extant measures of behavioural distress tolerance, namely, the mirror-tracing task and the cold pressor task (Veilleux et al., 2019). Importantly, participants reported higher levels of negative affect after completing the Emotional Image

Tolerance task, even in comparison to the mirror tracing task, which indicates the task is successful in eliciting negative emotion. The Emotional Image Tolerance task showed small yet significant associations with self-report distress tolerance in one study, but no significant associations in the other two studies, consistent with the discrepancies that exist in the literature between many self-report and behavioural measurements of the same construct (Glassman et al., 2016; McHugh et al., 2011; Podsakoff et al., 2003).

While early validation studies are encouraging, there are several aspects of the task that could be improved. Currently, when participants elect to escape an image as they find it too distressing, the next image is immediately presented on the screen. This poses a potential concern, whereby participants may be inclined to escape the images more quickly in order to complete the task faster. One way to address this would be to display a blank screen after a participant escapes an image, which will remain there until the 30 seconds is complete. This would remove any potential incentive to escape images to move through the task more quickly. Additionally, although Veilleux et al (2019) assessed changes in negative affect pre and post task, the experience of subjective distress was not directly assessed throughout the task. This means researchers are unable to evaluate how the distress elicited is initiated and evolves throughout the task. Individuals may experience a significant increase in distress after the first few blocks but then plateau towards the end as they become more accustomed to the nature of the images. Alternatively, participants may become increasingly more distressed towards the end of the task if they feel 'overwhelmed' by the number of distressing images they are exposed to. An explicit measurement of subjective distress, asking participants to rate their level of distress both prior to completing the task and at the end of each block of images, would be a valuable addition and allow researchers to analyse patterns of distress over time.

It is also important to assess gender-related differences on the task. Evidence suggests males and females tend to have differential responses to emotional stimuli (Bradley et al., 2001; Gomez et al., 2013). In one of the earlier studies assessing gender-related difference in the emotional processing of the IAPS images, Bradley et al (2001) established that while both men and women exhibited large affective reactions to highly arousing images (i.e. threat, mutilation, erotica), women tended to demonstrate greater ‘defensive reactivity’ (i.e. startle response) to aversive images than men. While both men and women reacted similarly to pleasant images, men demonstrated heightened arousal for erotica. These results are mirrored in other research where compared with men, women rate images with content related to physical violence, and suffering of animals, as more unpleasant (Gomez et al., 2013). Women also rated these content-specific images, along with images of mutilated bodies, as more arousing than men (Gomez et al., 2013).

Gender-related differences have also been identified on other behavioural distress tolerance tasks, such as the cold pressor task, whereby females tend to report greater subjective distress (Lighthall et al., 2012), pain (Fowler et al., 2010; Robinson et al., 2003), anxiety (Fowler et al., 2010) and do not endure the task for as long as men (Fowler et al., 2010; Robinson et al., 2003). Given these differences in behavioural tolerance, as well as the differential processing of emotional stimuli, it is necessary to explore how males and females respond to the Emotional Image Tolerance task, as it is plausible females may find the task more distressing than males.

Further, the highly arousing nature of these images does call into question whether individuals responding to the task are in fact responding to the negative valence of the images, or to their arousing and intense nature. The task is designed to assess individuals’ ability to tolerate *negative* emotional images. However, given these images are all rated as highly arousing, there is the potential for responses to be a result of individuals not being able to

withstand the arousal intensity of the image, regardless of whether they are negatively or positively valenced. This raises the question as to whether responses would be similar when viewing images that are positive in valence but equally as intense, particularly given there is evidence to suggest individuals display an augmented physiological response (i.e. skin conductance) when processing arousing stimuli of either valence, compared with stimuli low in arousal (Bradley et al., 1996). It is therefore important to assess the relative impact of valence versus arousal in order to ensure that the Emotional Image Tolerance task is in fact assessing tolerance of ‘negative’ emotional images.

We conducted two studies to address these concerns. In Study 4a, we made minor modifications to the Emotional Image Tolerance task and assessed gender-related differences in responses on the task as well as patterns of distress over time. To validate the task, we also examined associations between performance on the task and other constructs known to be related to distress tolerance. In Study 4b, we extended the task, to contain negative, positive, and neutral images, in order to assess whether participants’ responses to the images in the task are a result of the valence of the image, rather than their arousing nature.

#### **Study 6.4a: Modifying the Emotional Image Tolerance task**

The aim of the first study was to further validate the Emotional Image Tolerance task, modified to include a blank screen presented immediately after an image is escaped until the maximum viewing time of 30 seconds is met, as well as Visual Analogue Scale distress ratings completed prior to commencing the task and at the end of each block of images. We assessed gender-related differences in responses on the task as well as patterns of distress over time. We also examined associations between behavioural responses on the task, (i.e. how often/quickly a person indicates distress and number of images escaped) and other related psychological constructs. Constructs selected were based on previous research establishing relationships between low distress tolerance and greater emotion reactivity

(Cogle et al., 2013), rumination (Slabbert et al., 2018), difficulties in emotion regulation (Bardeen et al., 2015), anxiety (Bernstein et al., 2011), depression (Lin et al., 2018), and intolerance of uncertainty (Laposa et al., 2015).

## Method

**Participants.** Participants were 50 undergraduate psychology students between the ages of 17 and 48 ( $M_{age} = 21.17$ ,  $SD = 4.72$ ). Given our focus on exploring gender-related differences in task responding, an equal number of males ( $n = 25$ ) and females ( $n = 25$ ) were recruited and completed the study<sup>2</sup>. All 50 participants were included in the analyses. The majority of participants (80%) were born in Australia. Due to the graphic nature of the images, and in line with the screening process employed by Veilleux et al (2019) to minimize participant risk, individuals who self-reported a prior history of social anxiety, posttraumatic stress disorder, and/or panic disorder were ineligible to participate. Individuals who reported heightened psychological distress, as indicated by scores on the Kessler Psychological Distress Scale (K6), or reported having made any plans or attempts to end their life in the past 12 months were also ineligible. Eligibility criteria were stated on the study advertisement.

## Measures.

***Behavioural Distress Tolerance.*** Individual differences in behavioural distress tolerance were assessed using the modified Emotional Image Tolerance task (Veilleux et al., 2019). Participants were instructed to view the image presented and press ‘q’ as soon as they experienced distress or discomfort. They were asked to continue viewing the image until the distress or discomfort was nearly intolerable, at which point they could press ‘p’ to escape the image. Images were presented for a maximum of 30 seconds. If a participant elected to escape an image, a black blank screen would appear for the remainder of the 30 seconds. Five

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<sup>2</sup> An a priori power analysis was conducted using G\*Power. Based on a repeated measures design (within-between interaction) with 2 groups and 5 time points, with an expected medium effect size ( $f = 0.25$ ), a total of 34 participants (17 participants per group) were required to achieve 80% power with an alpha of 0.05

key variables were calculated for each participant. First, the number of times an individual indicates distress (distress threshold count). Second, the number of times a participant escapes an image (distress escape count). Third, the average time taken to indicate distress when viewing an image (average distress threshold reaction time). Fourth, the average time between indicating distress and escaping an image (average distress escape reaction time). This variable by nature only includes images where participants pressed 'p' on the keyboard to escape and image. Finally, the fifth variable encapsulates both time taken between indicating distress and escaping an image, as well as time between indicating distress and the image automatically moving onto the next one at the end of the 30 seconds (average distress persistence reaction time). Images were 45 negatively valenced images selected from the International Affective Picture System (Lang et al., 2008), presented in five blocks of nine images (Appendix G). Images were randomized within in blocks, and presentation of blocks was randomized across participants. The task was run using E-Prime 2.0 on a 22" monitor.

***Self-report distress.*** Participants responded to the statement "Please rate how distressed you currently feel", rating their level of distress on a 10 point Visual Analogue Scale (0: Not at all distressed to 9: Extremely distressed) prior to completing the task, and after each block of images.

***Individual Image Distress Ratings.*** After completing the behavioural task, all images were viewed again and rated on a 10-point Likert scale for the degree of distress they elicited (0: no distress to 9: extreme distress). These ratings were completed for the purpose of selecting the 15 most distressing images to form the stimulus set for Study 4b.

***Self-Reported Distress Tolerance.*** Individual differences in self-reported perceptions of distress tolerance were assessed using the Distress Tolerance Scale (Simons & Gaher, 2005). The 15 items are measured on a 5-point Likert scale (1: strongly agree to 5: strongly

disagree), with higher scores reflecting a greater perceived ability to tolerate distress. The internal consistency was good in this sample ( $\alpha = 0.83$ ).

***Emotional Reactivity.*** Individual differences in emotion reactivity were assessed using the Emotional Reactivity Scale (Nock et al., 2008). The 21-item scale assesses three aspects of emotional reactivity; sensitivity (eight items: e.g. “My feelings get hurt easily”), intensity (ten items: e.g. “When I experience emotions, I feel them very strongly/intensely”), and persistence (three items: e.g. “When I am angry/upset, it takes me much longer than most people to calm down”). Items are rated on a 5-point Likert scale (1: *Not at all like me* to 5: *Completely like me*) and scores are summated to produce a total emotional reactivity score. Higher scores reflect greater emotion reactivity. The internal consistency was excellent in this sample ( $\alpha = 0.94$ ).

***Intolerance of Uncertainty.*** The 27-item Intolerance of Uncertainty Scale (Freeston et al., 1994) was used to assess negative beliefs regarding uncertainty. Items including “uncertainty makes life unbearable” and “uncertainty makes me uneasy, anxious, or stressed.” are rated on a 5-point Likert Scale (1: *Not at all like me* to 5: *Completely like me*, with higher scores reflecting a higher intolerance of uncertainty. The internal consistency was excellent in this sample ( $\alpha = 0.92$ ).

***Emotion Regulation.*** Individual differences in the use of two emotion regulation strategies, cognitive reappraisal and expressive suppression, were assessed using the Emotion Regulation Questionnaire (Gross & John, 2003). The questionnaire contains six items that assess cognitive reappraisal (e.g. I control my emotions by changing the way I think about the situation I’m in”) and four items that assess the use of expressive suppression (e.g. “I keep my emotions to myself”). Items are rated on a 7 point Likert scale (1: *Strongly disagree* to 7: *Strongly Agree*), with higher scores on each subscale reflecting greater use of the emotion

regulation strategy. The internal consistency was adequate for the cognitive reappraisal subscale ( $\alpha = 0.74$ ) and good for the expressive suppression subscale ( $\alpha = 0.82$ ).

***Difficulties in Emotion Regulation.*** The Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004) was used to assess challenges in regulating emotions. This scale contains 36 items that assess six difficulties with emotion regulation; non-acceptance of emotional responses (e.g. “When I’m upset, I become irritated at myself for feeling that way”), difficulty in engaging in goal-directed behaviour (e.g. When I’m upset, I have difficulty concentrating”, impulse control difficulties (e.g. “When I’m upset I lose control over my behaviour”), lack of emotional awareness (e.g., “When I’m upset I take time to figure out how I’m really feeling”), limited access to emotion regulation strategies (e.g. “When I’m upset, I believe there is nothing I can do to make myself feel better”), and lack of emotional clarity (e.g. “I have difficulty making sense out of my feelings”). Items are rated on a 5-point Likert scale (1: *almost never* to 5: *almost always*) and are summed to generate a total difficulties in emotion regulation score, with higher scores reflecting greater difficulties with emotion regulation. The internal consistency was good in this sample ( $\alpha = 0.89$ ).

***Experiential Avoidance.*** The tendency to avoid unpleasant situations and/or feelings was assessed using the Brief Experiential Avoidance Questionnaire (Gámez et al., 2014). This questionnaire contains 15 items (e.g. “I’m quick to leave any situation that makes me feel uneasy” and “I work hard to keep out upsetting feelings”) rated on a 6-point Likert scale (1: *strongly disagree* to 6: *strongly agree*) with higher scores reflecting higher levels of experiential avoidance. The internal consistency was good in this sample ( $\alpha = 0.79$ ).

***Rumination.*** Individual differences in repetitive negative thinking were assessed using the 10-item abbreviated version of the Repetitive Thinking Questionnaire (RTQ; McEvoy et al., 2014). Participants responded to items such as “Once I start thinking about the situation I can’t stop” and “I know I shouldn’t think about the situation but I can’t stop”,

using a 5-point Likert scale (1: *not true at all* to 5: *very true*). Higher scores reflect a greater tendency to engage in repetitive negative thinking. The internal consistency was excellent in this sample ( $\alpha = 0.90$ ).

***Depression, Anxiety and Stress.*** The 21-item Depression, Anxiety, and Stress Scale (DASS; Lovibond & Lovibond, 1995) contains three 7-item scales that assess individual differences in depression (e.g. “I couldn’t seem to experience any positive emotion at all”), anxiety (e.g. “I felt I was close to panic”), and stress (e.g. “I found it difficult to relax”). Participants are asked to rate the extent to which each statement applied to them in the past week on a 4-point Likert scale (0: *did not apply to me at all* to 3: *applied to me very much, or most of the time*). The DASS-21 has demonstrated good reliability and validity (Antony et al., 1998; Henry & Crawford, 2005). The internal consistency was adequate for the depression ( $\alpha = 0.74$ ) and stress ( $\alpha = 0.75$ ) subscales, and good for the anxiety subscale ( $\alpha = 0.80$ ).

### **Procedure.**

Ethical approval was granted by the University Human Research Ethics Committee (HRE2019-0068). The study was advertised on the University’s online research participation pool, with eligibility criteria explicitly stated on the advertisement. Upon arriving at the lab, participants were asked to complete an eligibility screener to confirm they met the criteria to take part in the study. Eligible participants were then seated in a lab cubicle in front of a computer. After providing informed consent, participants completed the well-validated self-report measures using the online survey program Qualtrics. The experimenter then explained the Emotional Image Tolerance task, before leaving the participant in the cubicle to read the written instructions and complete the task. The experimenter remained present outside the cubicle in order to answer and queries or respond to any adverse experiences viewing the images. Upon completion of the task, participants rated each image for degree of distress. They were then given the opportunity to view a humorous video, before being provided with

a list of useful resources containing counselling service details. The study took approximately one hour and students received course credit for their participation.

## Results

On average, less than 1% of data were missing, and missing completely at random  $\chi^2(2948) = .000, p = 1$ . Missing data were imputed using Expectation Maximization (Tabachnick and Fidell, 2013). Task descriptive statistics, disaggregated by gender, are presented in Table 6.1. In total, there were 3 participants who did not indicate distress on any of the 45 images, and 18 participants who did not press ‘p’ to skip an image and therefore viewed all 45 images for the entire 30 seconds.

Table 6.1

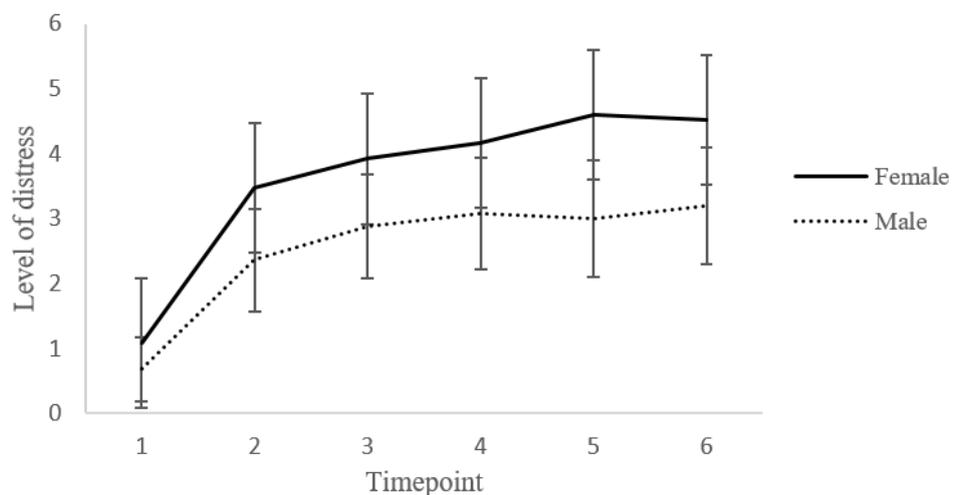
*Study 4a EIT Task Scores Disaggregated by Gender*

	Female		Male		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Distress Threshold Count	33.16	11.82	17.68	14.93	4.07***
Distress Escape Count	14.36	9.98	6.28	11.82	2.69*
Distress Threshold RT	11936.87	7470.69	21185.04	8395.26	-4.12***
Distress Escape RT	7253.02	3745.46	4318.20	2753.50	2.12*
Distress Persistence RT	16059.74	4314.23	16853.23	4867.46	-.57

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

**Subjective ratings of distress over time.** To examine patterns of distress over the duration of the task, and explore whether these differed between males and females, a mixed model ANOVA was conducted to assess Visual Analogue Scale distress ratings over time, with gender included as a between-subjects factor (Figure 6.1). Mauchly's Test of Sphericity revealed that the assumption of sphericity had been violated,  $\chi^2(14) = 108.775, p < .001$ , therefore a Greenhouse-Geisser correction was used (Tabachnick & Fidell, 2019). There was a significant effect of time on distress ratings,  $F(2.598, 124.712) = 57.552, p < .001, \eta_p^2 = .55$ , with distress ratings increasing over time. Specifically, participants reported a significant increase in distress after viewing images in block 1, and again after block 2, and then distress plateaued for the remaining blocks (Appendix I). There was also a significant effect of gender,  $F(1, 48) = 4.898, p = .032, \eta_p^2 = .09$ , with females reporting higher levels of distress than males. There was no significant interaction between time and gender,  $F(2.598, 124.712) = 1.687, p = .180$ .

Figure 6.1. Study 4a distress ratings over time



**Gender-related differences on key Emotional Image Tolerance task variables.** To examine if males and females responded differently to the task, five generalised linear mixed models (GLMMs) were conducted to assess gender-related differences with regards to: how often distress was indicated, how many images were escaped, how quickly distress was indicated, how quickly an image was escaped, and how long individuals were willing to view an image after indicating distress (Table 6.2). All GLMMs included participant as a random factor, and both gender, time and the interaction between the two as fixed factors.

***Distress Threshold Count (number of times distress is indicated).*** There was a significant main effect of gender on the number of times distress was indicated,  $F(1,240) = 17.21, p < .001$ . In general, females indicated distress significantly more times than males throughout the task. There was no main effect of time,  $F(4,240) = 1.26, p = .29$ , nor was there a significant interaction between gender and time,  $F(4,240) = 0.30, p = .88$ .

***Distress Escape Count (number of times participants escaped an image).*** There was a significant main effect of gender on the number of times a participant elected to escape an image after indicating distress,  $F(1,240) = 7.52, p < .01$ . Females escaped significantly more images than males throughout the task, however there was no main effect of time,  $F(4,240) = 1.26, p = .29$ , or interaction between gender and time,  $F(4,240) = 0.73, p = .57$ .

***Average Distress Threshold Reaction Time (time taken to indicate distress).*** There was a significant main effect of gender on distress threshold reaction times,  $F(1,240) = 17.64, p < .01$ , whereby females were, on average, quicker to indicate distress than males. There was no main effect of time,  $F(4,240) = 0.53, p = .71$ , or interaction between gender and time  $F(4,240) = 0.08, p = .99$ .

***Average Distress Escape Reaction Time (time taken to escape an image after indicating distress).*** There were no main effects of gender,  $F(1,134) = 1.12, p = .29$ , time,

$F(4,134) = 1.40, p = .24$ , or an interaction between gender and time,  $F(4,134) = 0.45, p = .77$ , on average escape reaction times.

***Average Distress Persistence Reaction Time (time spent viewing an image after indication of distress)***. There were no main effects of gender,  $F(1,209) = .65, p = .42$ , or time,  $F(4,209) = 1.22, p = .30$ , on distress persistence reaction times. The interaction between gender and time was also not significant,  $F(4,209) = 0.21, p = .93$ .

**Within task correlations.** To assess within task validity, we examined correlations between subjective distress ratings and responses on the task (Table 6.3). Distress ratings at the end of each block were significantly correlated with three of the five key task variables. Higher self-reported distress was associated with a higher distress threshold count, higher distress escape count, and faster distress threshold reaction times.

Table 6.2

*Study 4a EIT task estimated marginal means (SD) disaggregated by gender*

		T1	T2	T3	T4	T5
Distress Threshold Count	Female	6.72 (.50)	6.68 (.51)	6.72 (.45)	6.48 (.54)	6.56 (.51)
	Male	3.72 (.55)	3.68 (.62)	3.64 (.62)	3.40 (.64)	3.24 (.62)
Distress Escape Count	Female	2.64 (.37)	3.00 (.45)	3.04 (.42)	3.00 (.49)	2.68 (.48)
	Male	1.20 (.43)	1.16 (.44)	1.32 (.46)	1.40 (.49)	1.20 (.47)
Average Distress Threshold Reaction Time (ms)	Female	11965.47 (1576.29)	11655.70 (1565.98)	11770.96 (1475.14)	12106.09 (1669.22)	12186.15 (1533.58)
	Male	20843.62 (1464.88)	20932.52 (1706.50)	21123.94 (1691.61)	21479.63 (1839.79)	21545.51 (1783.33)
Average Distress Escape Reaction Time (ms)	Female	7962.94 (1048.66)	8080.80 (1273.04)	6792.18 (876.43)	6412.42 (784.44)	6683.70 (1148.75)
	Male	6925.07 (1603.43)	5476.03 (1327.96)	5203.97 (1534.77)	5292.08 (1838.39)	4755.27 (1347.60)
Average Distress Persistence Reaction Time (ms)	Female	16533.734 (1061.72)	16159.60 (1123.94)	15284.70 (1078.93)	15956.76 (1080.12)	16692.08 (1084.81)
	Male	15828.88 (1468.93)	15045.87 (1524.89)	13983.67 (1620.84)	14220.58 (1777.92)	14739.10 (1615.57)

**Associations between Emotional Image Tolerance task variables, self-report distress tolerance, and other psychological constructs.** To assess the validity of the task, we examined partial correlations (adjusting for gender) between the key Emotional Image Tolerance task variables, self-reported distress tolerance, and other psychological constructs that have been demonstrated to be related to distress tolerance (Table 6.4). None of the correlations between the Emotional Image Tolerance task variables and self-report distress tolerance were significant. With regards to the other variables, only two of the hypothesized relationships were significant. Expressive suppression was negatively correlated with the Distress Escape Count variable, such that individuals who reported engaging in expression suppression to a greater degree, were less likely to escape images. Difficulties in emotion regulation were negatively associated with the Distress Escape Count variable such that individuals who reported greater difficulties regulating their emotions, were less likely to escape images.

Table 6.3.

*Study 4a correlations between key EIT variables and Distress Ratings after controlling for gender*

	Distress Rating T1	Distress Rating T2	Distress Rating T3	Distress Rating T4	Distress Rating T5	Distress Rating T6
Distress Threshold Count	.14	.36*	.46**	.47**	.44**	.45**
Distress Escape Count	.19	.33*	.44**	.45**	.50***	.46**
Distress Threshold RT	-.15	-.34*	-.41**	-.42**	-.40**	-.39**
Distress Escape RT	.11	-.03	-.04	-.09	-.11	.01
Distress Persistence	-.05	-.13	-.30	-.27	-.38	-.35

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

Table 6.4

*Study 4a correlations between EIT key variables, demographics and self-report psychological measures controlling for gender*

	Distress Threshold Count	Distress Escape Count	Distress Threshold RT	Distress Escape RT	Distress Persistence RT
Age	-.29*	-.28	.31*	.06	.20
Mental Illness	.20	.04	-.21	-.03	.36*
Distress Tolerance	-.10	-.16	.06	-.34	.10
Intolerance of Uncertainty	-.05	-.24	.12	.32	.10
Cognitive Reappraisal	.04	.14	-.05	.34	-.01
Expressive Suppression	-.13	-.29*	.17	.13	.06
Difficulties in Emotion Regulation	-.17	-.33*	.22	.26	.22
Emotion Reactivity	.03	.02	.01	.23	-.04
Experiential Avoidance	-.00	-.02	.03	.35	-.03
Rumination	.05	-.05	-.02	.22	-.01
Depression (DASS)	.02	-.23	.04	.02	.11
Anxiety (DASS)	.05	-.10	-.06	-.18	.07
Stress (DASS)	.03	-.06	-.05	-.21	.08

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

## Discussion

Using the Emotional Image Tolerance task, modified to include the presentation of a blank screen after an image is escaped and subjective distress ratings, this study aimed to examine patterns of distress over time, assess whether males and females responded differently on the task, as well as validate the modified version of the task. Results indicate, that consistent with the original Veilleux et al paper, the modified Emotional Image Tolerance task successfully induces distress, with both males and females experiencing heightened distress over the duration of the task. Overall, females reported significantly more distress than males, indicated distress more frequently, indicated distress more quickly, and escaped more images than males. The Emotional Image Tolerance task variables were significantly associated with within-task distress ratings; however, they were not correlated with self-report distress tolerance, or emotion regulation, emotional reactivity, rumination, depression, anxiety and stress. Significant negative associations were established between the number of times distress was indicated and expressive suppression whereby individuals who tend to suppress their emotions, were less likely to indicate distress, which provides some support for the validity of the task. It is possible individuals who suppress their emotions experience a dampened level of distress while completing the task, and consequently indicate distress less often. Additionally, individuals who experienced greater difficulties in emotion regulation were less likely to escape images. Failure to escape intensely negative images may reflect difficulty disengaging from emotional stimuli, and this may be reflected in self-reported emotion regulation difficulties. However, further research is clearly needed to test both these possibilities. Given the small sample size ( $n = 50$ ), validation in larger samples is necessary as it is likely that some of these correlations (i.e. self-report distress tolerance and Distress Escape RT;  $r = -.34$ ) may be significant with a higher sample size, particularly given the samples are further reduced for associations such as these which only include data for

individuals who pressed 'p' to escape an image and thus have even lower power than correlations which include the entire sample.

Taken together, these findings indicate the modified version of the task effectively induces distress, and that behavioural indices of distress tolerance are associated with subjective distress ratings, suggesting the task functions as a valid assessment of distress tolerance. Results also suggest females experienced more distress overall, at both a self-report level and captured behaviourally.

### **Study 6.4b: Responding to valence or arousal?**

The aim of the second study was to assess whether participants' responses to the images in the Emotional Image Tolerance task are a result of the valence of the images, rather than their arousing nature. To do this, we extended the task, to contain negative, positive, and neutral images, with negative and positive images matched on arousal ratings. We also examined distress ratings over time, gender-related differences on task variables, and associations with other theoretically-related constructs.

### **Method**

**Participants.** Participants were 50 undergraduate psychology students (who had not participated in Study 4a) between the ages of 17 and 43 ( $M_{age} = 22.04$ ,  $SD = 6.14$ ), recruited through the University research participation pool. The same screening process employed in Study 5a was implemented, and an equal number of males ( $n = 25$ ) and females ( $n = 25$ ) were recruited and completed the study<sup>3</sup>. All 50 participants were included in the analyses.

**Task development.** To assess whether individuals are in fact responding to the valence of the images and not the arousal aspect, we adapted the Emotional Image Tolerance

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<sup>3</sup> An a priori power analysis was conducted using G\*Power. Based on a repeated measures design (within-between interaction) with 2 groups and 5 time points, with an expected medium effect size ( $f = 0.25$ ), a total of 34 participants (17 participants per group) were required to achieve 80% power with an alpha of 0.05.

task to contain 15 negative images, 15 positive images, and 15 neutral images<sup>4</sup> (45 images in total). The 15 negative images were selected based on participant image ratings in Study 4a. The 15 images with the highest distress ratings, common to both males and females, were selected. Example of these images include burn victims, mutilated bodies, and deceased children. Within the International Affective Picture System all images are rated on how pleasant or unpleasant they are (1: unpleasant to 9: pleasant), and on how intense (or arousing) they are (1: not at all intense to 9: highly intense). Based on the validated valence and arousal ratings provided in the IAPS handbook, the top 15 negative images selected from Study 4a had an average valence rating of 1.66 and average arousal rating of 6.466. The 15 positive images were then selected to match this arousal rating, with an average arousal rating of 6.43 and average valence rating of 7.29. Examples of these images include rollercoasters (IAPS 8499), skydivers (IAPS 8185), money (IAPS 8501), and excited children playing in the swimming pool (IAPS 2216). Given our focus on examining gender-related differences in tolerance of emotional stimuli, we explicitly avoided including images of a sexual nature despite their high arousal rating and positive valence, as evidence has established males rate these images as more pleasant than females (Bradley et al., 2001). The 15 neutral images were selected based on a valence rating of approximately 4.5 (scores ranging from 1-9) indicating neutrality. They had a valence rating of 4.72 and arousal rating of 2.81. Examples of these images include mugs (IAPS 7009), a tissue box (IAPS 7950), a towel (IAPS 7002), and filing cabinet (IAPS 7224). The structure of the task remained the same, with 5 blocks of 9 images, each block containing three negative, three positive, and three neutral images. Images were randomized within block, and block order was randomized. The Visual

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<sup>4</sup> IAPS Image Numbers: 1650; 2216; 3000; 3001; 3005.1; 3015; 3053; 3063; 3064; 3080; 3100; 3102; 3150; 3261; 4597; 5130; 6415; 7002; 7009; 7010; 7025; 7031; 7045; 7059; 7060; 7186; 7217; 7224; 7405; 7502; 7595; 7650; 7950; 8030; 8080; 8116; 8179; 8185; 8470; 8492; 8499; 8501; 9187; 9260; 9405.

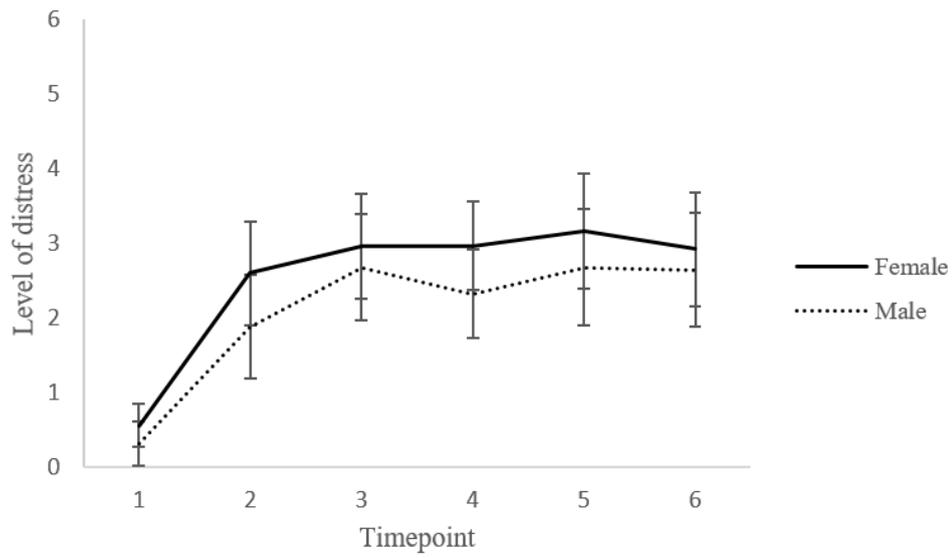
Analogue Scale distress ratings remained the same, as did the instructions the participants were provided.

**Measures.** The same self-report measures used in Study 4a were used in Study 4b. Reliability indexes are as follows; Distress Tolerance Scale ( $\alpha = .87$ ), Emotional Reactivity Scale ( $\alpha = .94$ ), Intolerance of Uncertainty Scale ( $\alpha = .94$ ), Cognitive Reappraisal ( $\alpha = .87$ ), Expressive Suppression ( $\alpha = .83$ ), Difficulties in Emotion Regulation Scale ( $\alpha = .91$ ), Brief Experiential Avoidance Questionnaire ( $\alpha = .86$ ), Repetitive Thinking Questionnaire ( $\alpha = .92$ ), Depression ( $\alpha = .85$ ), Anxiety ( $\alpha = .74$ ), and Stress ( $\alpha = .77$ ). *Procedure.* The procedure remained the same as Study 4a, with the exception that participants were no longer required to rate the images for distress after completing the task.

## Results

On average, less than 1% of data were missing, and missing completely at random  $\chi^2(2953) = .000, p = 1$ . Missing data were imputed using Expectation Maximization (Tabachnick and Fidell, 2013).

**Subjective ratings of distress over time.** A mixed model ANOVA was conducted to assess Visual Analogue Scale distress ratings over the duration of the task, with gender included as a between-subjects factor (Figure 6.2). Mauchly's Test of Sphericity revealed that the assumption of sphericity had been violated,  $\chi^2(14) = 28.45, p < .001$ , therefore a Greenhouse-Geisser correction was used (Tabachnick & Fidell, 2019). There was a significant effect of time on distress ratings,  $F(4.08, 54.737) = 36.458, p < .001, \eta^2_p = .43$ , with distress ratings increasing over time. The pattern of distress ratings was the same as in Study 4a whereby participants reported a significant increase in distress after viewing images in block 1, and again after block 2, and then distress plateaued for the remaining blocks (Appendix M). There was no significant effect of gender,  $F(1, 48) = 1.45, p = .029$ , or interaction between time and gender,  $F(4.077, .647) = .413, p = .790$ .

**Figure 6.2.** Study 4b distress ratings over time

**Valence-related and gender-related differences in task responses.** Given participants generally did not tend to indicate distress or escape positive and neutral images, we only examined differences in ‘count’ variables (i.e. number of images distress was indicated on/number of images escaped) as there was insufficient data to examine differences on reaction time variables (i.e. time taken to indicate distress).

A mixed model ANOVA was conducted to assess whether participants indicated distress significantly more times on negative, positive, or neutral images, with gender included as a between-subjects factor. Mauchly's Test of Sphericity revealed that the assumption of sphericity had been violated,  $\chi^2(2) = 116.465$ ,  $p < .001$ , therefore a Greenhouse-Geisser correction was used (Tabachnick & Fidell, 2019). There was a main effect of valence,  $F(1.04, 4232.88) = 289.711$ ,  $p < .001$ ,  $\eta^2_p = .86$ , with participants indicating distress significantly more times on negatively valenced images ( $M = 11.76$ ,  $SD = 4.91$ ) than both positively ( $M = .39$ ,  $SD = .87$ ,  $p < .001$ ) and neutrally ( $M = .10$ ,  $SD = .57$ ,  $p < .001$ ) valenced images. Individuals also indicated distress significantly more times on positively valenced images than neutrally valenced images ( $p < .05$ ). There was also a main effect of gender  $F(1, 50.46) = 5.748$ ,  $p < .05$ ,  $\eta^2_p = .11$ , with females indicating distress significantly more times than males overall, however there was no significant interaction between gender and valence,  $F(1.04, 53.382) = 3.654$ ,  $p = .061$ .

This analysis was repeated to examine valence-related differences in terms of number of images escaped. Mauchly's Test of Sphericity revealed that the assumption of sphericity had been violated,  $\chi^2(2) = 261.473$ ,  $p < .001$ , therefore a Greenhouse-Geisser correction was used again (Tabachnick & Fidell, 2019). There was a significant effect of valence on number of images escaped,  $F(1, 1028.48) = 47.62$ ,  $p < .001$ ,  $\eta^2_p = .498$ , with individuals escaping significantly more negatively valenced images ( $M = 5.59$ ,  $SD = 5.93$ ) than positively ( $M = .02$ ,  $SD = .14$ ,  $p < .001$ ) and neutrally ( $M = .02$ ,  $SD = .14$ ,  $p < .001$ ) valenced images. There

was a significant main effect of gender  $F(1, 65.34) = 5.904, p < .05, \eta^2_p = .11$ , with females escaping significantly more images than males. There was also a significant interaction between gender and valence  $F(1, 122.644) = 5.679, p < .05, \eta^2_p = .11$ , whereby females escaped significantly more negative images than males ( $t(1) = 2.4, p < .05$ ). There were no gender-related differences on positive ( $t(1) = 1.00, p = .32$ ) and neutral images ( $t(1) = 1.00, p = .32$ ).

**Associations between Emotional Image Tolerance task negative image variables, self-report distress tolerance, and other psychological constructs.** To assess the validity of this task, we examined the correlations between the key Emotional Image Tolerance task variables calculated from scores on the negative images, with the self-report distress tolerance and the same psychological constructs assessed in Study 4a (Table 6.5). After controlling for gender, several of the Emotional Image Tolerance task variables were significantly correlated with self-report distress tolerance. Specifically, self-report distress tolerance was negatively correlated with the distress threshold count variable, such that individuals who reported a higher tolerance for distress on the Distress Tolerance Scale, indicated distress significantly less on negative images. Self-report distress tolerance was also negatively correlated with the Distress Escape Count variable, such that individuals who reported a higher tolerance for distress, escaped significantly fewer negative images than individuals with a lower self-reported distress tolerance. Further, self-report distress tolerance was positively associated with Distress Threshold reaction times, whereby individuals who reported a higher tolerance for distress, took longer to indicate distress on negative images. Additionally, the Distress Threshold reaction time variable was negatively associated with emotional reactivity, such that individuals who reported higher emotional reactivity were quicker to indicate distress on negative images than individuals who reported lower emotional reactivity. The Distress Threshold reaction time variables was also negatively associated with rumination, whereby

individuals who reported higher levels of rumination, indicated distress significantly more quickly than individuals who reported lower levels of rumination.

Table 6.5.

*Study 4b correlations between EIT key variables on negative images, demographics and self-report psychological measures controlling for gender*

	Distress Threshold Count	Distress Escape Count	Distress Threshold RT	Distress Escape RT	Distress Persistence RT
Distress Tolerance	-.32*	-.30*	.34*	.10	.07
Intolerance of Uncertainty	.17	.22	-.25	.19	-.03
Cognitive Reappraisal	-.07	.10	-.07	-.25	-.04
Expressive Suppression	.10	.12	-.14	.04	-.03
Difficulties in Emotion Regulation	.14	.14	-.16	.12	.13
Emotion Reactivity	.24	.14	-.31*	.03	.08
Experiential Avoidance	.12	-.12	-.13	.09	-.07
Rumination	.27	.14	-.36*	.01	-.10
Depression (DASS)	.06	-.04	-.08	.13	-.02
Anxiety (DASS)	.01	.18	-.04	-.04	-.13
Stress (DASS)	.06	.17	-.12	-.06	.14

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

## **Discussion**

The aim of this study was to examine patterns of distress over time, gender-related differences on key task variables, and importantly, to ascertain whether individuals respond to the valence or arousal aspect of images in the Emotional Image Tolerance task. Using a version of the task containing negative and positive images matched on arousal, as well as 15 neutral images, results confirmed that individuals responded to the ‘valence’ or ‘negative aspect’ of the image, as opposed to simply its arousing nature, with participants indicating distress on, and escaping significantly more negative images than positive and neutral images. Indeed there was almost no indication of distress, or escaping of positive and neutral images. Consistent with Study 4a, gender-related differences in responding were also identified, with females indicating distress on, and escaping, more images than males. Further, these gender differences were specifically related to negative images, with no gender-related differences apparent on positive and neutral images. This version of the Emotional Image Tolerance task was also successful in inducing distress, with all participants increasing in self-reported distress (VAS distress ratings) over the duration of the task. There were no gender-related differences in distress ratings. Finally, there were significant associations between key Emotional Image Tolerance task responses on the negative images and self-report Distress Tolerance Scale scores, with all correlations in the expected direction, providing support for the validity of the task. Additionally, significant relationships with both emotional reactivity and rumination provide further support for task validity.

### **General discussion**

The aim of this paper was to modify and evaluate the Emotional Image Tolerance task, with a specific focus on assessing patterns of distress, gender-related differences and determining whether individuals respond to the valence of images as opposed to the intensity of their content. This was achieved in two studies. In the first study, the Emotional Image

Tolerance task was modified to present a blank screen for the remainder of the 30 seconds after participants elected to escape an image, as well as the addition of Visual Analogue Scale distress ratings throughout the task. The second study focused on determining whether individuals responded to the valence or the arousal of the images. In both studies, patterns of distress and gender-related differences were assessed. Additionally, both tasks were validated by examining associations between key task variables, self-report distress tolerance, and other constructs known to be related to distress tolerance.

In both studies, the modified version of the Emotional Image Tolerance task successfully induced distress, with individuals not only experiencing heightened distress after viewing the first block of images, but with distress increasing and then plateauing for the duration of the task. These results support findings from the original study, where negative affect increased post-task (Veilleux et al., 2019), and build on these findings by allowing researchers to examine patterns of subjective distress at different points throughout the task. Specifically, in both studies individuals experience a sharp spike in distress after viewing the first block of images, with distress continuing to increase after viewing the second block, before plateauing for the remainder of the task. One possible implication of this could be that researchers may not need to administer the entire task in future research. They may acquire similar results using only the first three blocks which would reduce the amount of lab time and participant burden significantly. Unsurprisingly, effect sizes indicate these patterns are stronger in the first study, where individuals viewed 45 negative images in succession, as opposed to 15 negative images dispersed between positive and neutral images in the second study. This suggests that the inclusion of positive and neutral images reduced the impact of the negative images (that were rated the most distressing in Study 4a) on the experience of distress throughout the task. From a clinical perspective, this finding indicates that ‘buffering’ negative stimuli with positive or neutral information/stimuli might assist in decreasing overall

distress. This is evidenced in previous research that supports the postulation that positive emotional experiences buffer the effects of negative moods and/or distress and this can reduce the likelihood of engaging in dysregulated behaviours such as risky drinking (Mohr, Brannan, Mohr, Armeli, & Tennen, 2008). Interestingly, females reported higher distress ratings than males in the first study but not in the second. These differences are likely attributable to the consistent presentation of negative emotional stimuli which is more effective at eliciting a greater distress response, and potentially females find this overwhelming consumption of negative content more distressing than males, however this may not be the case when distressing content is presented less frequently, as in Study 4b.

Additionally, gender-related differences on key task variables were present in both versions of the task, with females tending to indicate distress and escape negative images faster and more frequently than males. These findings add to the existing body of literature that demonstrate males and females tend to respond differentially to emotional stimuli (Gomez et al., 2013), are consistent with previous research that demonstrates females tend to exhibit stronger affective, defensive reactions on unpleasant IAPS images (Bradley et al., 2001). Therefore, researchers utilising this task in future studies may wish to control for gender in analyses or account for these differences in the design of their studies. With regards to whether individuals' responses on the task were driven by the valence or arousal of the images, results from the second study demonstrate that participants are indeed responding to the negative valence of the image, and not simply the intensity and arousing nature of the content. Our findings allows us to conclude that this task is in fact assessing tolerance of negative emotion and not simply tolerance of intense and confronting stimuli.

In terms of task validation, our findings were mixed, however this is not uncommon, particularly when examining associations between self-report and behavioural measures of the same construct (Ameral et al., 2014; Bernstein et al., 2011; Cogle et al., 2013; Kiselica

et al., 2015). No relationships between task variables and self-report distress tolerance were present in the first study, however in the second study, three of the five key task variables were associated with self-report distress tolerance, whereby individuals with a higher perceived tolerance for distress, took longer to indicate distress, indicated distress less often and escaping fewer negative images in the task. These inconsistencies are similar to those in the original task development study, where Veilleux et al. established small to moderate relationships with self-report distress tolerance in the first study, but not in the second or third. Several arguments exist in regards to why these discrepancies frequent the literature, one being that items comprising self-report measures such as the Distress Tolerance Scale predominantly assess judgments about feelings (i.e. “There’s nothing worse than feeling distressed or upset”), as opposed to behavioural tasks that assess actual willingness to continue engaging in distress (Veilleux et al., 2019). However, we did establish significant associations with self-report distress tolerance in Study 4b, prompting an exploration as to why this may be.

A possible explanation for these significant findings may be the addition of positive and neutral images to the task. It is possible that the 15 negative images, classified as the most distressing from the original task, become more salient when dispersed between neutral and positive images. An additional explanation could be that these findings may be explained by the ‘strong situation hypothesis’ that is based on the premise that the strength of the situation impacts the degree to which individual differences influence behaviour (Cooper & Withey, 2009; Mischel, 1977). According to this concept and supporting evidence (Beaty et al., 2001; Withey et al., 2005), strong situations result in limited behavioural options and individual differences are less likely to be detected given most people tend to respond in a similar manner. In Study 4a, participants were repeatedly presented with only distressing, negative images, which may have resulted in ‘overwhelming distress’ and consequently

similar behaviour between all participants with regards to indicating distress and escaping images given the nature of the heightened, distressing situation. In contrast, in weaker situations such as Study 4b where only 15 negative images were dispersed between neutral and positive images, behaviour is more likely to reflect individual differences (i.e. distress tolerance) as behavioural expectancies are more ambiguous and responses are more likely to be driven by personality than by the situation (Cooper & Withey, 2009). These findings suggest the version of the task comprising negative, positive, and neutral images may allow for better detection of individual differences in distress tolerance, despite the first task inducing higher levels of distress.

With regards to associations with other relevant constructs, there were also mixed findings. Although the Emotional Image Tolerance task was associated with expressive suppression and difficulties in regulating emotions in the first study, the second version of the task in Study 4b was significantly associated with rumination and emotional reactivity. Both sets of associations provide some evidence of validity, however they were not consistent across studies; this may be a function of the differences between the tasks. Further research is required to continue to explore whether these associations can be replicated. It is important to note, as Veilleux et al. did, that it is possible both samples may comprise individuals who tend to experience lower levels of distress given the strict eligibility criteria. This may explain why there are not many significant associations with symptomology. Future research would benefit by loosening eligibility criteria or using the task to assess distress tolerance in clinical samples.

While these findings provide a valuable contribution to the assessment of behavioural distress tolerance, there are several limitations. Given the recency of the task, the modifications made in this research, and the relatively small sample, it is important that both versions of the task continue to be tested and validated in larger samples, particularly to

attempt to replicate the established relationships with self-report distress tolerance evidenced in Study 4b. A specific limitation of the task in Study 4b is the use of the same instructions as Study 4a which ask participants to indicate when they feel 'distressed'. Given the nature of the positive and neutral images, asking participants to indicate when they experience an 'emotional reaction' may be a more accurate way of assessing responses to the images, and may consequently produce a different pattern of results. With regards to the selection of positive images for Study 4b, despite being specifically selected to match the negative image arousal ratings from the IAPS normative sample, it is important to acknowledge that these stimuli are inherently very different to the negative stimuli. Compared to the negative content including images of mutilations and burn victims, images of happy children and other pleasant scenes are, on face value, unlikely to elicit an equally arousing response and consequently would not be as difficult to tolerate. The only other more positively valenced, highly arousing images in the IAPS collection were erotica, and given past research has demonstrated large gender differences in responses to these images, we decided not to include these. Additionally, our lack of physiological measures (i.e. skin conductance, meant we were unable to capture and directly compare physiological arousal responses across images. This is something to consider for future research using this task. Both studies comprised non-clinical samples, specifically university students who had to adhere to strict eligibility criteria to participate. Given the importance of assessing distress tolerance is to examine its relationship with psychopathology, it is necessary for future research to utilise the task among clinical populations, particularly among disorders where low distress tolerance is known to play significant role in aetiology and maintenance. Finally, the subjective distress ratings and validation measures are reliant on self-report data. Future research may benefit from incorporating psychophysiological assessment as it may provide a more holistic understanding of how the task functions.

In conclusion, the current research establishes that the Emotional Image Tolerance task successfully induces distress that this is specifically linked to the valence of the images, and that gender differences need to be considered when using the task given females respond more strongly than males. While the version of the task containing only negative images appears to induce the highest levels of distress and may be utilised as an effective stressor in many areas of research, the multi-valenced version appears to be more closely associated with self-report distress tolerance and potentially more sensitive to detecting individual differences in tolerance. Although further assessment of both tasks if required, our findings are an important extension of current behavioural assessments of distress tolerance.

## **Chapter 7: Assessing NSSI-related differences in behavioural distress tolerance using a modified version of the Emotional Image Tolerance Task**

### **Introduction to Chapter 7**

In the previous chapter, I made some minor modifications to the original Emotional Image Tolerance task, and created an adapted version of the task that includes negative, positive, and neutral images. Although the original version of the task containing only negative images seems to induce the highest level of distress, the adapted version of the task showed promising associations with self-report distress tolerance, providing some evidence for validity. The aim of the final study is to use the adapted version of the task to compare individuals with and without a history of self-injury in their ability to tolerate experimentally elicited distress under controlled laboratory conditions. Given I am specifically interested in looking at individual differences in distress tolerance, I decided to use the adapted version of the task, containing negatively valenced images interspersed with neutral and positively valenced images as it's associations with self-report distress tolerance suggest it may be more sensitive to detecting these differences.

Data collection for this study commenced on March 1st 2020, however due to the COVID-19 pandemic, the university laboratories closed three weeks later and I was unable to continue collecting data. In this short period, I collected data from 68 participants. Power analyses indicated I required approximately 132 participants to achieve sufficient power. After several contingency planning discussions with my supervisors, I decided to include data from the 50 participants that completed the exact same version of the task and measures in the previous study in Chapter 6 (Study 6.4b). In total, the participants from the previous study ( $n = 50$ ), combined with the 68 participants who completed the study in March, brought the sample to 118 participants. Whilst merging the datasets was not my initial plan, doing so would allow me to conduct exploratory analyses and provide some preliminary findings.

Given the research question relating to NSSI-related differences on the task was not explored in the previous study, merging the datasets to explore this research question is justified, however it also acknowledged as a limitation in the discussion.

The previous studies all outline the definition and function of NSSI, and present the current literature on the relationship between distress tolerance and self-injury. To avoid unnecessary repetition, I present the aims of the current study, and have stated that the method section including the description of the task, the self-report measures, and the procedure is identical to Chapter 6 (Study 6.4b).

## Aims

Using an adapted version of the Emotional Image Tolerance task (Slabbert, Hasking, Notebaert, et al., in press; Veilleux et al., 2019), the aim of this study is to compare individuals with and without a history of self-injury in their ability to tolerate experimentally-elicited distress using emotional images. Based on findings from previous experimental studies whereby individuals with a history of NSSI tend to cease participation in distress inducing tasks significantly earlier relative to individuals without a history of NSSI (Nock & Mendes, 2008), I predicted that individuals with a history of NSSI would demonstrate a lower distress threshold (indicate distress more quickly), and tolerate distress for a significantly shorter period of time relative to individuals who had never self-injured. I also predicted individuals with a history of NSSI would indicate distress and escape negative images more frequently than those with no such history.

## Method

**Participants.** The sample comprised 118 participants from two separate datasets. Of these 105 were undergraduate psychology students recruited through the University online research and 13 were community members recruited through social media advertising. Of participants, 62.7% were female ( $n = 74$ ), with ages ranging between 17 and 43 ( $M_{\text{age}} = 22.18$ ,  $SD = 5.16$ ). Prior history of mental illness was assessed, with 12.7% of individuals reporting a history of mental illness ( $n = 15$ ), most commonly depression, followed by anxiety, and comorbid depression and anxiety.

**Measures.** Prior history of NSSI, distress tolerance (self-report and behavioural), and subjective distress were assessed using the measures described in the previous chapter (Chapter 6, Study 6.4b). The internal consistency for the self-report Distress Tolerance Scale was good in the current sample (Tolerance,  $\alpha = 0.76$ ; Appraisal,  $\alpha = 0.78$ ; Absorption,  $\alpha = 0.74$ ; Regulation,  $\alpha = 0.78$ ).

**Procedure.** Data collection followed the same procedure outlined for Study 6.4b in the previous chapter.

### **Data Analysis**

First, to assess NSSI-related differences in subjective distress throughout the task, a mixed model ANOVA was conducted to assess Visual Analogue Scale distress ratings over time, with NSSI history included as a between-subjects factor. Mauchly's Test of Sphericity indicated that sphericity had been violated,  $\chi^2(14) = 75.200$ ,  $p < .001$ , therefore a Greenhouse-Geisser correction was used (Tabachnick & Fidell, 2019). Second, to assess NSSI-related differences on key Emotional Image Tolerance task variables, five generalised linear mixed models (GLMMs) were conducted, using data from the negatively-valenced images, to assess NSSI-related differences with regards to: how often distress was indicated, how many images were escaped, how quickly distress was indicated, how quickly an image was escaped, and how long individuals were willing to view an image after indicating distress. All GLMMs included participant as a random factor. NSSI history, time (at the end of each block of images), and the interaction between NSSI history and time as were included as fixed factors. Given that gender differences have previously been established on the task (Chapter 6), we controlled for gender in all analyses by including it as a fixed factor.

### **Results**

**Self-injury.** Within the total sample of 118 participants, 34 (28.8%) reported a history of self-injury. Of these, 17 (51.5%) had self-injured in the past 12 months, with 7 (21.2%) reporting engaging in self-injury five or more times in the last year. Primary forms of NSSI were cutting (42.2%) and self-battery (30.3%), followed by severe scratching (9.1%). Age of NSSI onset ranged from 7 years of age to 20 years of age ( $M_{\text{age}}=14.61$ ,  $SD = 3.04$ ).

Descriptive statistics for the key task variables, disaggregated by NSSI history, are presented in Table 7.1. Descriptive statistics and correlations between variables of interest are

presented in Table 7.2. NSSI was correlated (in the expected direction) with a history of mental illness and the tolerance, appraisal, and absorption facets of trait distress tolerance. There were no significant correlations between NSSI history and any of the five Emotional Image Tolerance task variables. Of note, there were significant associations between the tolerance and appraisal aspects of trait distress tolerance and the distress escape count, distress threshold reaction time, and the image persistence variables, all in the expected direction.

Table 7.1.

*EIT Task Scores on Negative Images Disaggregated by History of NSSI*

	No History of NSSI		History of NSSI		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Distress Threshold Count	12.75	3.88	10.71	5.70	1.92
Distress Escape Count	7.19	5.87	6.15	6.28	.83
Distress Threshold RT	9108.87	7890.60	12358.15	10368.84	-1.65
Distress Escape RT	3599.83	2691.27	3040.30	2603.36	.85
Distress Persistence RT	11122.55	7441.58	10329.13	6892.97	.52

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

Table 7.2.

*Descriptive statistics and correlations between variables of interest*

	M	SD	2	3	4	5	6	7	8	9	10	11	12
1. Gender	-	-	-.04	-.15	.27*	.17	.24*	.15	-.02	-.19	.11	.17	.25*
2. Mental Illness	-	-	-	.36**	.02	-.21	-.15	.11	-.06	-.06	.02	.04	.03
3. NSSI <sup>a</sup>	-	-	-	-	-.23*	-.34**	-.42**	-.21	-.02	-.06	-.02	-.09	.01
4. DTS Tolerance	3.52	.93	-	-	-	.60**	.66**	.51**	-.13	-.29**	.14	.150	.31**
5. DTS Appraisal	3.68	.81	-	-	-	-	.71**	.43**	-.19	-.29**	.22*	-.047	.182
6. DTS Absorption	3.35	.92	-	-	-	-	-	.46**	-.11	-.21	.14	-.06	.14
7. DTS Regulation	3.15	.97	-	-	-	-	-	-	-.14	-.17	.14	.02	.11
8. Distress Threshold Count	12.16	4.55	-	-	-	-	-	-	-	.63**	-.91**	.32**	.12
9. Distress Escape Count	.02	.18	-	-	-	-	-	-	-	-	-.71**	.20	-.61**
10. Distress Threshold RT (ms)	10045.10	8756.52	-	-	-	-	-	-	-	-	-	-.23*	.01
11. Distress Escape RT (ms)	3449.71	2663.65	-	-	-	-	-	-	-	-	-	-	.40**
12. Distress Persistence RT (ms)	10920.58	7282.97	-	-	-	-	-	-	-	-	-	-	-

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

<sup>a</sup>NSSI is scored as a dichotomous variable (0 = no history of NSSI, 1 = history of NSSI).

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

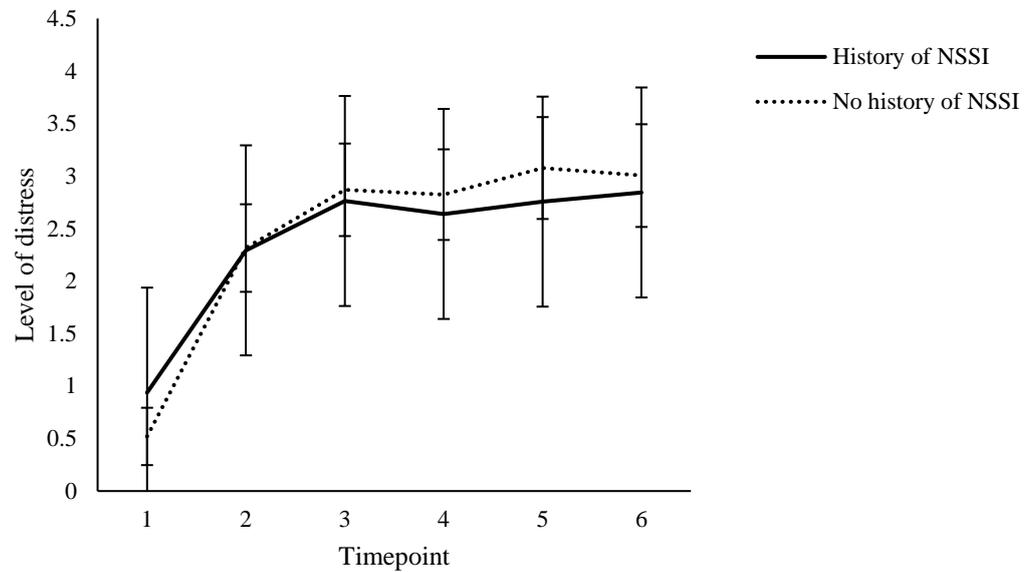
Table 7.3.

*Correlations between key EIT variables and Distress Ratings after controlling for gender*

	Distress Rating T1	Distress Rating T2	Distress Rating T3	Distress Rating T4	Distress Rating T5	Distress Rating T6
Distress Threshold Count	.17	.33***	.33***	.38***	.41***	.34***
Distress Escape Count	.10	.28**	.28**	.33***	.30**	.32***
Distress Threshold RT	-.13	-.34***	-.35***	-.37***	-.41***	-.35***
Distress Escape RT	.11*	.25	.12	.13	.12	.21
Distress Persistence	.04	.00	.01	-.03	.07	-.02

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

**Subjective ratings of distress.** Subjective distress ratings did not differ between individuals with and without a history of NSSI,  $F(1, .563) = .032, p = .858$ . There was a significant main effect of time on subjective distress ratings  $F(3.88, 64.35) = 42.402, p < .001, \eta_p^2 = .32$ , with participants reporting greater subjective distress over the duration of the task (Figure 7.1). Specifically, distress increased significantly after block 1 ( $t(1) = 9.56, p < .001$ ), and again after block 2 ( $t(1) = 4.24, p < .01$ ), and then remained stable for the final three blocks ( $p > .05$ ) The interaction between NSSI history and time was not significant,  $F(1, 5.126) = 2.340, p = .129$ .

**Figure 7.1.** Subjective distress ratings over time

***Distress Threshold Count.*** There was a significant main effect of NSSI history,  $F(1,579) = 5.10, p = .024$ , on the number of times distress was indicated. In general, participants with a history of NSSI indicated distress significantly less often than individuals who did not report a history of NSSI (Table 7.4). There was no significant main effect of time  $F(4,579) = 0.06, p = .99$ , and no interaction between NSSI history and time  $F(4,579) = 0.15, p = .96$ .

***Distress Escape Count.*** There was no significant main effect of NSSI history  $F(1,579) = 1.26, p = .26$ , or time  $F(4,579) = 0.55, p = .70$ , on the number of times a participant elected to escape an image after indicating distress (Table 7.4). The interaction between NSSI history and time was not significant  $F(4,579) = 0.56, p = .69$ .

***Average Distress Threshold Reaction Time.*** There was a significant main effect of NSSI history  $F(1,579) = 4.25, p = .04$ , on the average time taken to indicate distress. When distress was indicated, individuals reporting a history of NSSI took significantly longer to indicate distress relative to individuals with no history of NSSI (Table 7.4). There was no

significant main effect of time  $F(4,579) = 0.21, p = .94$ , and the interaction between NSSI history and time was not significant  $F(4,579) = 0.29, p = .88$ .

***Average Distress Escape Reaction Time.*** There was no significant main effect of NSSI history on the average time taken to escape an image  $F(1,342) = 0.03, p = .88$ , however there was a significant main effect of time  $F(4,342) = 4.55, p = .001$ . Specifically, individuals tended to skip images more quickly over time (Table 7.4). There was no significant interaction between NSSI history and time  $F(4,342) = 1.35, p = .25$ .

***Average Distress Persistence Reaction Time.*** There was no significant main effect of NSSI history  $F(1,521) = 0.01, p = .93$ , or time  $F(4,521) = 2.13, p = .77$ , on distress persistence reaction times (Table 7.4). The interaction between NSSI history and time was not significant  $F(4,521) = 0.46, p = .77$ .

Table 7.4.

*EIT task estimated marginal means (SD) disaggregated by history of NSSI*

		T1	T2	T3	T4	T5
Distress Threshold Count	No NSSI	2.50 (.10)	2.46 (.10)	2.48 (.10)	2.44 (.10)	2.48 (.09)
	NSSI	2.02 (.21)	2.05 (.19)	2.02 (.19)	2.05 (.20)	2.08 (.20)
Distress Escape Count	No NSSI	1.24 (.14)	1.37 (.13)	1.32 (.14)	1.30 (.14)	1.37 (.14)
	NSSI	1.12 (.18)	1.15 (.18)	1.09 (.20)	1.06 (.19)	1.00 (.20)
Average Distress Threshold Reaction Time (ms)	No NSSI	9783.11 (947.52)	9982.16 (924.92)	10327.50 (951.85)	10080.71 (973.18)	9896.64(926.53)
	NSSI	13508.20 (1704.15)	13556.38 (1582.97)	13258.76 (1627.25)	13837.46 (1661.23)	13220.62 (1653.46)
Average Distress Escape Reaction Time (ms)	No NSSI	4906.08(536.60)	4285.60 (524.98)	3991.23 (586.43)	3993.39 (512.36)	4289.90 (483.23)
	NSSI	5780.40 (1018.97)	4592.90 (714.41)	3770.10 (704.82)	4449.11 (737.20)	3581.12 (719.00)
Average Distress Persistence Reaction Time (ms)	No NSSI	12737.18 (910.56)	11350.31 (885.48)	11663.84 (893.06)	11067.79 (925.47)	11182.50(916.67)
	NSSI	13140.22 (1467.88)	10958 (1259.79)	10732.98 (1544.58)	11067.79 (1300.23)	12005.12 (1659.47)

## Discussion

The aim of this study was to compare individuals with a history of NSSI, and those with no such history, on the experience of subjective distress and the tolerance of emotional stimuli. This was achieved using an adapted version of the Emotional Image Tolerance task (Slabbert et al., in press), modified to include positive and neutral images. Findings indicate that the task successfully induced distress, with all participants reporting increased distress over time. Additionally, NSSI-related differences were observed on two key task variables; unexpectedly, individuals with a history of self-injury indicated distress less often and took longer to indicate distress when they did so.

Consistent with the findings from the initial development of the task (Veilleux et al., 2019), and the previous study (Slabbert et al., in press), the Emotional Image Tolerance task successfully induced distress, with all participants reporting heightened distress after viewing the first block of images, and again after the second block of images, before these elevated distress levels stabilised for the remainder of the task. Mirroring the pattern of distress established in the previous chapter, the task appears to reliably induce distress in a consistent pattern across blocks. Correlations between subjective distress ratings and four key task variables (i.e. the number of times distress was indicated, the number of images escaped, time taken to indicate distress, and time taken to escape an image) provide further support for within-task validity, as one's experience of distress appears related to their behavioural responses on the task. Additionally, significant associations between lower self-report distress tolerance (tolerance and appraisal subscales) and faster reaction times with regards to indicating distress and escaping images, as well as overall distress persistence, provides some evidence of construct validity.

In line with findings from previous chapters (Chapter 3, 4, 5, & 6) and prior research (Anestis et al., 2013; Horgan & Martin, 2016; Lin et al., 2018; Slabbert et al., 2018), a history

of NSSI was associated with less distress tolerance on the self-report measure. In contrast, we did not establish group differences in the ability to tolerate negatively-valenced stimuli, or in subjective distress throughout the experimental task. This finding is inconsistent with previous research that suggests individuals who self-injure tend to cease participation in distress-inducing tasks significantly earlier than individuals who do not self-injure (Gratz et al., 2006; Nock & Mendes, 2008).

Interestingly, we did detect NSSI-related differences in how often participants indicated distress. Contrary to our expectations, individuals who reported a prior history of self-injury indicated distress on negative images significantly less often than individuals who had never self-injured, and took significantly longer to do so. One possible explanation for these findings is that relative to individuals who have never self-injured, individuals with a history of self-injury are less emotionally reactive in the context of viewing IAPS images. This is evident in past research that shows individuals who self-injure rate negatively-valenced images as less negative compared to individuals with no history of self-injury after a stress induction (Tatnell et al., 2017). It may be that people who self-injure tend to experience greater levels of stress, as well as higher negative affect, on a day-to-day basis (Kiekens et al., 2020). Experiencing a heightened negative mood, or elevated levels of distress more frequently, may mean the presentation of these highly negative images may not elicit as strong a response relative to individuals without a history of NSSI, resulting in distress being indicated less often. This explanation is also consistent with that finding that individuals who self-injury view the images longer before reaching a point where they indicate distress. In future, researchers might consider incorporating physiological assessments (e.g. skin conductance, salivary cortisol, heart rate monitoring) to observe physiological reactivity in response to the distressing images and compare this to subjective distress ratings and behavioural responses on this task.

Whilst there were no differences in the ability to tolerate viewing negative IAPS images, it might be that NSSI-related differences in emotional experiences and tolerance of distress may be more salient in the context of personally relevant stimuli (i.e. negative feedback from participants' mother's; Hooley et al., 2008), or NSSI-specific stimuli (i.e. razor blades, images of cutting oneself; Plener et al., 2012). These forms of personal stimuli may induce distress that is more similar in nature to the real-time distress experienced prior to engaging in self-injury. Future research would benefit from exploring NSSI-related differences in the tolerance of emotion elicited by these forms of emotional stimuli.

Another possible explanation for these findings may be that individuals who self-injure experience greater difficulties identifying their emotions, and therefore take longer to process their emotional response to the images and in turn, express it. This is consistent with the role of alexithymia in NSSI (Greene et al., 2019), whereby individuals who self-injure report experiencing greater difficulties identifying and describing their emotions than individuals who do not self-injure (Greene et al., 2020). Such difficulties might explain the slower reaction time to indicate distress and the reduced frequency of indicating distress relative to individuals with no history of NSSI. Future research using the adapted version of the Emotional Image Tolerance task would benefit from testing whether levels of alexithymia moderate the relationship between behavioural responses on the task and history of NSSI to better explore this relationship.

Finally, these behavioural differences may reflect an unwillingness to disclose or express distress. Whilst subjective distress ratings inform us that participants felt equally distressed, individuals with a history of self-injury may have been less willing to express this distress when provided with the opportunity within the task. NSSI-related differences in the tendency to suppress the behavioural expression of an emotional response has been established in Chapter 5, as well as in previous research (Jeffries et al., 2016; Najmi et al.,

2007; Richmond et al., 2017). This tendency to suppress emotional expression may explain individuals with a history of NSSI indicating distress less often on the task and taking longer to do so relative to individuals who do not self-injure.

In line with this, the appraisal aspect of trait distress tolerance appears particularly salient in NSSI behaviour (Chapter 4 & 5), such that individuals who self-injure tend to feel more ashamed of their distress, and believe they are worse at tolerating it than others. Holding these negative perceptions may impact one's willingness to communicate distress. More broadly, this may have implications for help-seeking behaviour, particularly given feelings of shame have been identified as a key barrier to the disclosure of NSSI (Rosenrot & Lewis, 2020). Given disclosure is an important step in the recovery process, and positive disclosure experiences are associated with help-seeking and improved coping (Hasking et al., 2015), targeting both the self-acceptance and communication of distress may facilitate better NSSI-related outcomes.

Whilst these postulations are important to consider, they are speculative and there are several limitations that require consideration. First, as stated at the beginning of this chapter, the disruption to data collection as a result of the COVID-19 pandemic resulted in the inclusion of data from the previous study. The exploratory findings derived from this combined sample highlight the promising utility of this task in its capacity to capture differences in the tolerance of negative-valenced images between individuals with and without a history of NSSI. However, replication of these findings is required in larger samples of university students, as well as in other populations including adolescents and clinical samples. Additionally, subjective ratings of distress and behavioural indices of tolerance are limited in the sense that they require participants to be open and forthcoming in sharing their true experience of distress, which may not always be the case (particularly if they hold negative beliefs about the experience of distress itself). Therefore, including

physiological measures of reactivity (e.g. skin conductance, heart rate, salivary cortisol) may provide greater insight into NSSI-related differences in reported subjective distress and the experience of viewing and tolerating emotional stimuli.

In conclusion, whilst exploratory in nature, the findings from this study suggest the adapted version of the Emotional Image Tolerance task may prove useful in assessing NSSI-related differences in the tolerance of emotionally-valenced images under controlled laboratory conditions. The results indicate that whilst there appear to be differences in the perceived ability to tolerate distress between individuals who do and do not self-injure, these individuals do not differ in their ability to tolerate experimentally elicited distress using the Emotional Image Tolerance task. Future research should consider exploring NSSI-related differences in the tolerance of distress using personally-relevant or NSSI-specific stimuli, and using physiological measures to allow for comparisons to be made between reported distress and physiological indicators of distress.

## **Chapter 8: General Discussion**

### **Introduction to General Discussion**

In this chapter, the primary objectives of the doctoral thesis are restated, and the key findings across studies are synthesized. The clinical implications and limitations of the findings are discussed, and directions for future research are explored.

### **Summary of Aims and Results**

The overarching aim of this research project was to explore the role of distress tolerance (both self-reported and as assessed under controlled laboratory conditions) in non-suicidal self-injury. This was achieved in five studies. In Study 1, I evaluated the factor structure of the self-report Distress Tolerance Scale, and concluded that the four-factor model comprising the four subscales was the optimal factor structure to employ in NSSI-related research. I also established that the structure of this scale was invariant across individuals with and without a history of NSSI, instilling confidence in the use of this scale to assess differences in self-report distress tolerance between people who do and do not self-injure (Slabbert et al., 2021). After providing support for the utility of this measure, I employed the Distress Tolerance Scale in Study 2 to assess the relationship between the different elements of trait distress tolerance and NSSI. I established that the appraisal and absorption aspects of trait distress tolerance differentiated individuals with a recent history (past 12 months), lifetime history, and no history of NSSI. I also provided support for the assessment of valence-specific affect in the context of NSSI, with positive and negative affect being uniquely related to NSSI. Additionally, appraisal and absorption worked together with positive affect to predict a history of self-injury (Slabbert et al., 2020).

Building on this, Study 3 provided further support for the salience of the appraisal and absorption facets of distress tolerance in differentiating between NSSI history, as well as how the tolerance and regulation facets work together with emotion regulation strategies, namely

expressive suppression, in predicting NSSI. Specifically, a tendency to suppress emotional responses, coupled with the perception of being unable to handle distress, was associated with recent NSSI relative to lifetime NSSI. Additionally, greater use of expressive suppression was associated with recent NSSI, but only among individuals who do not tend to behave in ways that help them alleviate distress (i.e. high distress tolerance).

Moving from trait to behavioural distress tolerance, in Study 4a I made several minor modifications to the Emotional Image Tolerance task (Veilleux et al., 2019) to improve its utility in assessing behavioural tolerance of negative emotion. I also adapted the task to include positive and neutral images in order to ascertain whether individuals respond to the negative valence of the images, or simply their intense nature (Study 4b). Both versions of the Emotional Image Tolerance task successfully induced distress and gender differences were observed on both versions of the task, with females generally indicating more distress than males (Slabbert et al., in press).

The adapted version of the task showed promising evidence of validity and was used in Study 5 to assess NSSI-related differences in behavioural distress tolerance. The findings from Study 5 suggest individuals with and without a history of NSSI do not differ in their ability to withstand distress, however there appear to be differences with regards to the frequency and speed of expressing distress. Specifically, individuals with a history of self-injury tended to indicate distress on negative images less frequently and took longer to do so, relative to individuals without a history of NSSI. The key findings from the thesis and their implications are discussed below.

## **Key Findings and Implications**

### **Measuring distress tolerance**

Distress tolerance is a transdiagnostic construct that is frequently associated with both NSSI and psychopathology (Allan et al., 2014; Anestis et al., 2013; Anestis et al., 2007;

Brown et al., 2005; Kang et al., 2018; Leyro et al., 2010). Reviewing the methods by which we measure distress tolerance is crucial in reliably and accurately drawing conclusions regarding the nature of these relationships. One of the key contributions of this thesis is reviewing the utility of the commonly used self-report Distress Tolerance Scale (Simons & Gaher, 2005), and the novel Emotional Image Tolerance task (Veilleux et al., 2019) designed to assess behavioural distress tolerance.

The findings in Chapter 3 support the use of the Distress Tolerance Scale to assess individual differences in trait distress tolerance between people with and without a history of NSSI. Assessing trait distress tolerance from a multi-dimensional perspective, appears to be the most conceptually and statistically sound use of the scale, as opposed to a more global perspective that has dominated much of the prior literature (Anestis et al., 2013; Kang et al., 2018; Laposa et al., 2015; Peterson et al., 2014). However, to the best of my knowledge, this is the first study to explicitly test this and more work of this nature is warranted. Importantly, using the four subscales of the Distress Tolerance Scale as independent predictors of psychological outcomes offers a more distinct and unique lens through which to observe different elements of distress tolerance and their relation to NSSI and psychopathology more broadly. Given the reliance on the global distress tolerance score both in NSSI research and more broadly (Anestis et al., 2013; Anestis et al., 2007; Brown et al., 2005; Kang et al., 2018; Laposa et al., 2015; Peterson et al., 2014; Veilleux & Skinner, 2019), these findings might encourage researchers to implement the four subscales as unique predictors of NSSI, as well as psychopathology, as it is possible particular elements of distress tolerance may be differentially related to these outcomes. This notion is supported in Study 2 and Study 3 where the appraisal and absorption subscales are the two dimensions of self-report distress tolerance consistently associated with NSSI (these findings are explored in more detail later in the discussion).

Identifying the most salient aspects of distress tolerance in NSSI behaviour can inform prevention and intervention programs, which may be more effective in targeting specific elements of distress tolerance as opposed to distress tolerance in general. Arguably even more importantly, in establishing that the four factor model of the Distress Tolerance Scale is invariant across individuals with and without a history of NSSI, we can confidently conclude that the same construct is being assessed across groups and that differences identified using this scale likely reflect true, meaningful differences in the perceived ability to tolerate distress, and are not artefacts of measurement. These findings lend weight to the selection and implementation of the Distress Tolerance Scale in future research investigating distress tolerance and NSSI.

With regard to behavioural assessment of distress tolerance, Chapter 6 evaluates the utility of the recently developed Emotional Image Tolerance task (Veilleux et al., 2019), which is the first behavioural task designed to explicitly assess tolerance of negative emotion. Modifying the original task to include a blank screen that appears after an image is escaped, is likely to reduce the chance of participants responding in a way that helps them finish the task more quickly, and consequently increases the likelihood participants will respond in a way that reflects their true ability to tolerate distress. The inclusion of subjective distress ratings allows researchers to observe patterns of distress over the course of the task, adding value to the functionality of the task that assesses tolerance of negatively valenced images (Slabbert et al., in press). Importantly, the task successfully induced distress that increased in the beginning of that task before plateauing for the remainder of the task. The development of a new version of this task, comprising positive and neutral images, as well as negative images, is also a notable contribution to the assessment of distress tolerance. Not only does this version of the task also successfully induce distress (to a lesser degree than the original version due to a potential buffering effect of positive images), it also demonstrates

associations with self-report distress tolerance, providing promising evidence for validity. Our preliminary findings provide a solid foundation for the use of this task in both NSSI-related research as well as research exploring behavioural distress tolerance more broadly.

### **The role of trait distress tolerance in NSSI**

Converging evidence across the self-report studies in Chapter 4 and 5 indicates two facets of trait distress tolerance are particularly important in differentiating people based on their history of NSSI. One's subjective appraisal of their distress differentiated between people based on their history of NSSI. Relative to individuals with no history of NSSI (Chapter 4 & 5), and a lifetime history of NSSI (Chapter 5), individuals who self-injured in the past 12 months perceive themselves as having more difficulty accepting distress, experience greater feelings of shame regarding their distress, and perceive themselves as being inferior to other in terms of their coping abilities. How intensely one thinks about their distress also differentiates people based on their NSSI history. In Chapter 4 and 5, individuals who had recently engaged in self-injury were more likely to report being unable to stop thinking about their distress and feeling consumed by it. The findings reflect similar results in a previous study whereby both of these subscales differentiated between people based on their history of self-injury (Horgan & Martin, 2016). Taken together, these results highlight how the appraisal of distress, and the attentional capture of this, appear to be particularly important in differentiating between people who do and do not self-injure.

In terms of theoretical implications, the Experiential Avoidance Model (Chapman et al., 2006), the Emotional Cascade Model (Selby et al., 2008), and the Cognitive Emotional Model (Hasking et al., 2017), all articulate a role for 'low distress tolerance' in self-injurious behaviour. Examining distress tolerance as a global construct may prove useful in many research contexts, however it only provides an idea of 'greater difficulties' vs 'less difficulties' in tolerating distress, and does not allow researchers to pinpoint which particular

aspects of this multidimensional construct underpin behaviours such as NSSI. As such, taking a global approach may in fact mask important information that may be pertinent to increasing our understanding of the relationship between distress tolerance and self-injury. Our findings suggest that breaking down these constructs into their components may be particularly useful from a theoretical perspective, and assist in our prediction of self-injury. Explicitly outlining the associations between the appraisal and absorption aspects of distress tolerance and self-injury in emotion regulation accounts of NSSI may encourage researchers to explore the appraisal and absorption elements more extensively.

An important extension of this research would be to explore these relationships using real-time assessments such as Ecological Momentary Assessment, which are commonly used to assess momentary fluctuations in constructs such as affect preceding NSSI (Kiekens et al., 2020; Muehlenkamp et al., 2009). For example, with regards to the relationship between appraisal and NSSI, it could be that one's feelings of shame associated with distress are more salient in the moments prior to NSSI than the comparisons made between one's coping ability and others', despite both being captured in the appraisal subscale. Assessing which aspect of appraisal is a stronger driver of NSSI behaviour in the moment would be useful. Similarly with regards to the attentional aspect of distress tolerance (absorption) and NSSI, is it the experience of distress that increases the frequency of thoughts about distress and consequently the amount of attention consumed by distress, or is the attentional deployment that results in the elevation of distress? Alternatively, it may be that other aspects of distress tolerance not captured in Distress Tolerance Scale underpin NSSI and may come to light when assessing momentary tolerance of emotion.

With regards to the other constructs that form the emotion regulation models of NSSI, findings from Study 3 and 4 (Chapter 5 & Chapter 6) indicate the appraisal and absorption facets also work together with affect and emotion regulation strategies to predict NSSI.

Specifically, appraisals of distress, and attention consumed by distress, are impacted by one's self-reported experience of positive emotion and this interplay between the two, is associated with self-injury. This highlights the potential 'buffering' role positive affect plays against self-injury for individuals who hold negative beliefs about their distress, as well as those whose attention is not as consumed by their distress. Future research exploring the role of affect in NSSI should consider assessing valence-specific affect as both negative affect (Boyes et al., 2019; Hasking et al., 2018; Horgan & Martin, 2016; Najmi et al., 2007), and positive affect (Hasking et al., 2018; Kiekens et al., 2020; Muehlenkamp et al., 2009; Slabbert et al., 2020) seem to be uniquely associated with NSSI. Another interesting finding was the relationship between expressive suppression and both the tolerance and regulation facets of distress tolerance in predicting NSSI. Whilst the absorption and appraisal aspects are directly related to NSSI, the interactions between the other two dimensions of distress tolerance and expressive suppression is an important reminder to not neglect the potential role they might play, but rather continue to unpack this in future research. Together, the interactions between positive affect and expressive suppression with the distress tolerance subscales highlight the need to consider how an inability to tolerate distress is impacted by other variables, which can either increase or reduce the likelihood of engaging in NSSI.

Reflecting on the relationship between distress tolerance and other variables in emotion regulation accounts of NSSI, one theoretical issue that warrants consideration is the potential conceptual overlap between these constructs. For example, the absorption facet of distress tolerance, which refers to how much attention is consumed by one's distress, is conceptually similar to that of rumination, defined as repetitive negative thinking. Both distress tolerance and rumination are key constructs in these theories of NSSI, which raises the questions, to what degree is there conceptual overlap between different elements of these theories? This question has been raised more broadly by Juarascio et al. (2020), with regards

to the potential overlap in the measurement of avoidance and intolerance of negative emotions. The extent to which several frequently assessed constructs (including anxiety sensitivity, distress tolerance, negative urgency, experiential avoidance, and difficulties in emotion regulation) reflect truly distinct constructs rather than a common, underlying construct of affect avoidance and affect intolerance was tested (Juarascio et al., 2020). The authors concluded that similar language across measures, and moderate-to-large positive correlations ( $r = 0.24\text{--}0.67$ ) between the aforementioned constructs, suggests the field's ability to assess distinct facets of avoidance/intolerance of negative emotional states and associated psychological outcomes may be limited.

However, whilst high correlations between variables may be problematic, these variables are similar by nature and just because they are correlated, does not mean that do not offer unique variance in predicting particular outcomes. For example, in one study, over and above anxiety sensitivity and negative affectivity, lower distress tolerance predicted greater engagement in expressive suppression (Jeffries et al., 2016). Additionally in chapter 5, emotion regulation difficulties and expressive suppression were uniquely associated with NSSI, over and above the four facets of distress tolerance. Nonetheless, conceptual overlaps between constructs should be considered, and future research may want to examine these potential overlaps in emotion regulation accounts of NSSI.

### **The role of behavioural distress tolerance in NSSI**

Whilst Chapter 3 and 4 focused on the relationship between trait distress tolerance and NSSI, Chapter 7 utilised the modified version of the Emotional Image Tolerance task to assess NSSI-related differences in the ability to withstand experimentally-elicited negative emotion. Interestingly, although there were no differences between individuals with and without a history of NSSI in the subjective experience of distress throughout the task, individuals who had previously engaged in self-injury indicated distress less often, and when

they did, took longer to do so. Possible explanations for these findings were explored in Chapter 7, and included group differences in emotional reactivity in response to IAPS images (with recommendations for the use of personally-relevant stimuli in future research), individual differences in alexithymia, or an unwillingness to express distress among individuals who self-injure. Importantly though, after indicating distress, there were no differences in the ability to tolerate distress elicited by the task. This is in contrast to group differences in self-report distress tolerance established in the same study (Chapter 7) as well as in Chapter 4 and 5.

Taken together, there appears to be a discrepancy between the role of trait and behavioural distress tolerance in NSSI. Despite perceiving themselves as experiencing greater difficulties tolerating distress (Chapter 4, 5, & 7), individuals with a history of self-injury do not differ in their behavioural ability to tolerate distress elicited by the negative images in the Emotional Image Tolerance task (Chapter 7). This is an important distinction that suggests how one perceives their distress and their ability to tolerate it, as well as how often they think about it, may be more salient in predicting NSSI than one's actual capacity to tolerate distress, at least as induced by the Emotional Image Tolerance task.

Recent research using ecological momentary assessment data, explored the relationship between momentary willpower self-efficacy (the belief in one's ability to exert control) and momentary distress tolerance among college students with varying borderline features (Veilleux et al., 2021). Findings indicate that among these individuals, lower willpower self-efficacy was associated lower distress tolerance, even after controlling for affect. This suggests individuals who hold particular beliefs about their willpower (i.e. "I've got no willpower") are more likely to form judgments regarding their ability to tolerate distress (e.g. "I'm not capable of handling this distress) which may increase the likelihood of them engaging behaviours such as NSSI to escape their distressing experience. This requires

further research, but it is possible this may partly be fuelled by individuals with a history of self-injury referencing their engagement in NSSI as evidence that they are unable to tolerate distress. However, when exposed to the same laboratory stressor, they are as capable of withstanding distress as individuals who have never self-injured, and in fact indicate distress less often and less quickly than these individuals. These findings highlight the need to consider the role of self-efficacy in relation to distress tolerance, and further research regarding this relationship in the context of NSSI is necessary.

### **Clinical Implications**

Consistently, the appraisal and absorption aspects of distress tolerance differentiated between people according to their history of NSSI (Horgan & Martin, 2016; Chapter 4; Chapter 5). This suggests these two elements of distress tolerance may be future targets for intervention. Dialectical Behaviour Therapy (DBT; Linehan, 1993) is a multicomponent cognitive-behavioural treatment, initially developed to treat borderline personality disorder, which has proven effective in treating a range of dysregulated behaviours including substance use, eating disorders, and NSSI (Prada et al., 2018). DBT-skills training is a group-centred form of DBT where individuals are trained in skills relating to mindfulness, distress tolerance, emotion regulation, and interpersonal skills (Zeifman et al., 2020). The mindfulness skills taught in DBT are thought to be an essential element in improving distress tolerance (Lineman et al., 2007). These acceptance-oriented skills are designed to assist individuals to view their distress in a non-judgmental manner, rather than from a negative and critical perspective that seems to be captured in the appraisal subscale of the distress tolerance scale (Kabat-Zinn, 2009). Mindfulness also improves individuals' attentional control (Hölzel et al., 2011; Teper et al., 2013) which has been found to help individuals shift attention away from negative emotions (Ellenbogen et al., 2002). This component of DBT is likely to directly impact the absorption facet of distress tolerance.

There is evidence to support the use of DBT to treat NSSI among college students (Pistorello et al., 2012) and adolescents (Cook & Gorraiz, 2016). In particular, brief forms of Dialectical Behaviour Therapy have been found to significantly reduce both NSSI urges and NSSI behaviour, with extremely high program retention rates in comparison to other interventions for this population (Stanley et al., 2007). However, much of this research has been conducted with clinical samples comprising patients with Borderline Personality Disorder, and therefore further research is needed to assess the efficacy of such treatments in other populations such as university students or community adolescent samples.

Another important clinical target that could be derived from these findings is the experience of shame, captured in the appraisal facet of distress tolerance (Chapter 4 & 5). Perceiving emotional turmoil as shameful and drawing comparisons between one's coping abilities and others seems to play an important role in self-injury (Chapter 4 & 5), and may have implications for the communication of distress. Past research has repeatedly highlighted the relationship between core components of shame (i.e. negative self-representations, self-critical cognitive styles, and self-punitive tendencies) and NSSI (Claes et al., 2012), with the experience of shame consistently differentiating between individuals who do and do not self-injure (Schoenleber et al., 2014; VanDerhei et al., 2014) as well as individuals with ongoing NSSI and individuals who have ceased engaging in NSSI (Hack & Martin, 2018). Among emerging adults, Mahtani et al (2019) established that the relationships between perceived parental invalidation, evaluations regarding one's body and sense of alienation and loneliness from others, and psychological distress were all related to or mediated by shame-proneness and/or internalizing shame coping.

These findings highlight the importance of assisting individuals in their regulation of shame, as well as to alter unhelpful shame-related patterns in thinking and behaving (Mahtani et al., 2019), particularly given that shame has also been established as a barrier to the

disclosure of NSSI (Rosenrot & Lewis, 2020). Several techniques have been previously proposed for addressing shame in a therapeutic context, including assisting individuals in the process of recognizing and acknowledging their shame, as well as regulating shame through the development of skills such as self-soothing and self-compassion (Tangney & Dearing, 2011). Self-compassion based therapy (Gilbert, 2009) is an intervention that has shown promise in treating NSSI (Van Vliet & Kalnins, 2011) and may effectively target these negative perceptions of distress and consequently allow individuals to feel more able to communicate their distress to others.

An important finding across this doctoral project is the discrepancy between NSSI-related differences in self-report distress tolerance, and behavioural tolerance of negatively-valenced images. One's perception of their ability to tolerate distress seems to be more salient in NSSI behaviour than one's actual ability to withstand distress. Clinically, this suggests that rather than simply focusing on improving one's skills to handle distress in the moment, an equally important clinical target may be challenging the intrinsic belief that individuals are unable to, or are 'worse' at tolerating distress than others. In this sense, improving one's self-efficacy to tolerate distress, which refers to one's confidence in their ability to behave in a way that produces a desirable outcome (Bandura, 1977), may be crucial in treating NSSI.

This mirrors earlier research exploring the role of self-efficacy in pain tolerance using the Cold Pressor Task (Litt, 1988). The researchers manipulated participants' beliefs regarding their performance on the cold-pressor task to either undermine or enhance their self-efficacy. Consequently, individuals who received positive feedback (enhanced self-efficacy) performed better in subsequent trials, whereas as individuals who received negative feedback (reduced self-efficacy) performed more poorly on the task. This highlights that self-efficacy expectations are malleable, at least in an experimental setting, and is promising in a

clinical sense as it suggests people's beliefs about their ability to tolerate distress/pain can be enhanced.

Importantly, the direct impact these beliefs had on task behaviour suggests a strong link between self-efficacy and behavioural tolerance. Extrapolating these results in an NSSI context, enhancing one's self-efficacy expectations regarding their ability to tolerate emotional distress may reduce the likelihood of them engaging in NSSI to escape this distress, and increase the likelihood of them persisting through intense emotional experiences by building their confidence and belief in their ability to do so. If it is indeed the case that one's perceived ability to tolerate distress is more important in NSSI than one's actual ability to tolerate distress, the findings from this doctoral research offer a promising and important contribution to the future clinical treatment of self-injury.

The potential protective effect of positive affect on the odds of engaging in NSSI is an important consideration for future prevention and intervention programs. Whilst targeting the regulation of negative affect is a primary component of most clinical treatments, cultivating positive emotional experiences also appears to be important as this may provide a buffer against a low tolerance for distress, as suggested in our findings in Chapter 4. Developing strategies that allow individuals to foster and savour positive emotional experiences may promote better psychological well-being and decrease the likelihood of engaging in NSSI. Positive psychology principles and strategies have shown promising utility in the reduction of depressive symptoms (Mak et al., 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 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.

### **Limitations and Future Directions**

The primary limitations of this research are addressed in each chapter, and include the cross-sectional nature of the studies and retrospective reporting of NSSI in Chapter 3 and 4. Although the results from these studies provide valuable information about the relationships under examination, we cannot draw conclusions regarding the temporal nature of these relationships. As suggested, future research should implement both longitudinal study designs and ecological momentary assessment methods to provide further insight into the nature of these relationships over time, and in real-time experience of these constructs and their relationship to self-injury. Understanding what aspects of distress tolerance precede NSSI behaviour, and whether these are impacted post-NSSI engagement would provide greater clarity around the momentary relationship between distress tolerance and self-injury. Additionally, whilst university students are a population of interest given the high prevalence of NSSI within these samples (Swannell et al., 2014) and the negative outcomes documented for these students (Hamza et al., 2012; Kiekens et al., 2016), these findings cannot be generalised to adolescent or clinical populations, and therefore it is necessary to explore whether we find similar or different patterns in populations other than university students.

### **Conclusion**

This thesis has significantly contributed to the assessment of distress tolerance, and our understanding regarding the way in which one's ability to tolerate distress is related to self-injury. The findings from these doctoral studies highlight the importance of assessing perceived distress tolerance from a multi-dimensional perspective and how subjective appraisals of distress and the attentional capture of this might be stronger underlying mechanisms of self-injury than the actual ability to tolerate distress. Although future research

in the context of personally-relevant distress is required, it is possible that people who self-injure are equally capable of withstanding distress, but hold an intrinsic belief that they are not. Challenging this belief by enhancing one's self-efficacy to withstand distress may play an important role in reducing the likelihood of engaging in self-injury.

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## Appendices

### Appendix A

#### *Ethics approval letter (Chapter 3, Chapter 4, Chapter 5 dataset 1)*



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20-Aug-2018

Name: Penelope Hasking  
Department/School: School of Psychology  
Email: Penelope.Hasking@curtin.edu.au

Dear Penelope Hasking

**RE: Ethics approval**

**Approval number: HRE2018-0536**

Thank you for submitting your application to the Human Research Ethics Office for the project **Social, emotional, and cognitive factors associated with health risk behaviours**.

Your application was reviewed by the Curtin University Human Research Ethics Committee at their meeting on **07-Aug-2018**.

The review outcome is: **Approved**.

Your proposal meets the requirements described in National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research (2007)*.

Approval is granted for a period of one year from **20-Aug-2018** to **20-Aug-2019**. Continuation of approval will be granted on an annual basis following submission of an annual report.

Personnel authorised to work on this project:

Name	Role
Dawkins, Jessica	Student
Hasking, Penelope	CI
Boyes, Mark	Co-Inv
Slabbert, Ashley	Student
Tonta, Kate	Student
Greene, Danyelle	Student
Howell, Joel	Co-Inv

**Standard conditions of approval**

1. Research must be conducted according to the approved proposal
2. Report in a timely manner anything that might warrant review of ethical approval of the project including:
  - proposed changes to the approved proposal or conduct of the study
  - unanticipated problems that might affect continued ethical acceptability of the project
  - major deviations from the approved proposal and/or regulatory guidelines
  - serious adverse events
3. Amendments to the proposal must be approved by the Human Research Ethics Office before they are implemented (except where an amendment is undertaken to eliminate an immediate risk to participants)
4. An annual progress report must be submitted to the Human Research Ethics Office on or before the anniversary of approval and a completion report submitted on completion of the project
5. Personnel working on this project must be adequately qualified by education, training and experience for their role, or supervised
6. Personnel must disclose any actual or potential conflicts of interest, including any financial or other interest or affiliation, that bears on this project
7. Changes to personnel working on this project must be reported to the Human Research Ethics Office
8. Data and primary materials must be retained and stored in accordance with the [Western Australian University Sector Disposal Authority \(WAUSDA\)](#) and the [Curtin University Research Data and Primary Materials policy](#)
9. Where practicable, results of the research should be made available to the research participants in a timely and clear manner
10. Unless prohibited by contractual obligations, results of the research should be disseminated in a manner that will allow public scrutiny; the Human Research Ethics Office must be informed of any constraints on publication
11. Ethics approval is dependent upon ongoing compliance of the research with the [Australian Code for the Responsible Conduct of Research](#), the [National Statement on Ethical Conduct in Human Research](#), applicable legal requirements, and with Curtin University policies, procedures and governance requirements
12. The Human Research Ethics Office may conduct audits on a portion of approved projects.

#### **Special Conditions of Approval**

**This letter constitutes ethical approval only.** This project may not proceed until you have met all of the Curtin University research governance requirements.

Should you have any queries regarding consideration of your project, please contact the Ethics Support Officer for your faculty or the Ethics Office at [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au) or on 9266 2784.

Yours sincerely



Professor Peter O'Leary  
Chair, Human Research Ethics Committee

## Appendix B

*Example of the information sheet, consent, and questionnaires used in Chapter 3, 4 and 5 (dataset 1)*

**Information sheet and consent**

**PARTICIPANT INFORMATION STATEMENT**

HREC Project Number:	HRE2018-0536
Project Title:	Social, Cognitive, and Emotional Factors Associated with Health Risk Behaviours
Principal Investigator:	Associate Prof. Penelope Hasking
Co-investigators:	Dr. Mark Boyes, Dr. Joel Howell, Jessica Dawkins, Danyelle Greene, Ashley Slabbert, & Kate Tonta
Version Number:	1
Version Date:	21/05/2018

**What is the Project About?**

Health risk behaviours such as alcohol use and nonsuicidal self-injury (e.g. cutting, burning, punching walls, without suicidal intent) are prevalent in university populations. How people understand, express, and regulate their emotions can play a critical role in their psychological health outcomes including whether they engage in health risk behaviours such as drinking alcohol and engaging in self-injurious behaviours. In this study, we will explore how multiple social, cognitive, and emotional factors are related to these behaviours and how they might be used to regulate emotional experiences.

**Please read this information sheet fully before consenting to participate in the study.**

**Who is doing the Research?**

This study is being conducted by a group of researchers at Curtin, including several PhD students being supervised by A/Prof Penelope Hasking, Dr Mark Boyes and Dr Joel Howell. All PhD students are funded by the Australian Government through the Research Training Program. This project is funded by Curtin University.

**Who can participate?**

You can participate in this study if you are aged 18-25 and currently studying at an Australian University.

**What does participation involve?**

If you agree to participate, you will be asked to answer an online survey at a time and place convenient for you. The survey includes questions about your social connections as well as how you cope with and deal with emotions and your experience with alcohol. If you have ever engaged in self-injury you will be asked about these experiences.

The survey will take around 60 minutes to complete. You do not have to complete the study in one sitting. Once you begin the questionnaire you will have one week to complete the study. You can log back in as many times as you like within a week.

**Are there any benefits to being in the research project?**

There may be no direct benefit to you from participating in this research. However, the current study will add to scientific knowledge about factors related to self-injury and alcohol use in university students. This knowledge may also benefit people in the future by informing prevention and treatment.

If you are completing the study for course credits at Curtin University you will receive 4 SONA points. If you are not participating for credit points you will be placed in the draw to win an iPad or 1 of 10 \$25 Coles/Myer gift cards.

**Are there any risks, side-effects, discomforts or inconveniences from being in the research project?**

Participating in this survey is unlikely to have any risks beyond everyday living. However, it is possible that some questions in the survey may trigger upsetting thoughts and memories for some individuals. Remember that taking part in this study is voluntary and you are not obliged to participate. If you do consent to participate but change your mind at any point in the survey, you can withdraw by simply closing the survey. However, any questions you have answered prior to closing the survey may be used in the overall analysis.

We suggest taking a break or stopping the survey if you become upset whilst answering the questions. You will

be provided with a list of counselling services and resources at the bottom of this information sheet and again upon completion of the questionnaire.

**Confidentiality and data access**

You will be asked for your name and student ID if you are participating for course credits at Curtin University. This will allow us to match your responses to your record on SONA, so we can award you points. However, at the end of the semester when your grades have been finalised all identifying information will be removed from the data, making the data anonymous from that point on.

For other participants, we will ask for your name and email address to contact you if you win a prize. Once the prizes are drawn all identifying information will be removed making your responses unidentifiable from that point on.

The following people will have access to the information we collect in this research: the research team and, in the event of an audit or investigation, staff from the Curtin University Office of Research and Development. The information in this research is electronic and will be stored on a password-protected computer. Anonymous data may be stored in an open access repository if required by a journal. The data we collect in this study will be kept under secure conditions at Curtin University for 7 years after the research has ended and then it will be destroyed.

#### Will you tell me the results of the research?

The results from this study may be presented at a conference or published in a journal but you will not be identifiable in any publications or presentations. If you wish to have a copy of the final results or have any questions, please contact us:

Penelope Hasking: Penelope.Hasking@curtin.edu.au  
 Mark Boyes: Mark.Boyes@curtin.edu.au  
 Joel Howell: Joel.Howell@curtin.edu.au  
 Danyelle Greene: Danyelle.greene@postgrad.curtin.edu.au  
 Jessica Dawkins: Jessica.C.Dawkins@postgrad.curtin.edu.au  
 Ashley Slabbert: Ashley.Slabbert@postgrad.curtin.edu.au  
 Kate Tonta: Kate.Tonta@postgrad.curtin.edu.au

Self injury fact sheet  
 Alcohol fact sheet  
 Useful resources

If you decide to take part in this research tick the consent box at the start of the Qualtrics survey. By doing this you indicate you have understood the information provided here in the information sheet.

Curtin University Human Research Ethics Committee (HREC) has approved this study (HRE2018-0536). Should you wish to discuss the study with someone not directly involved, in particular, any matters concerning the conduct of the study or your rights as a participant, or you wish to make a confidential complaint, you may contact the Ethics Officer on (08) 9266 9223 or the Manager, Research Integrity on (08) 9266 7093 or email hrec@curtin.edu.au.

I have received information regarding this research and had an opportunity to ask questions. I believe I understand the purpose, extent and possible risks of my involvement in this project and I voluntarily consent to take part.

- I agree  
 I do not agree

#### Demographics

Are you a Curtin student participating for SONA points?

- Yes  
 No

What is your date of birth? (dd/mm/yyyy)

What is your sex?

- Male  
 Female  
 Another gender, please specify?  
  
 Prefer not to say

**Do you consider yourself to be:**

- Heterosexual
- Homosexual
- Bisexual
- Another orientation, please specify?
- Prefer not to say

**What is your postcode?****What country were you born in?****Do you identify as Aboriginal or Torres Strait Islander?**

- Yes
- No

**Which Australian university are you currently enrolled in?****What course are you currently studying?****At what level are you currently studying?**

- Associate Degree
- Bachelor Degree
- Graduate Certificate
- Graduate Diploma
- Master Degree
- Doctoral Degree

**Have you ever been diagnosed with a mental disorder?**

- Yes (please specify)
- No

**NSSI****Nonsuicidal Self-Injury**

This questionnaire asks about a variety of nonsuicidal self-injury behaviours.

**Nonsuicidal self-injury is defined as the deliberate physical self-damage or self-harm that is not accompanied by suicidal intent or ideation. Although cutting is one of the most well-known nonsuicidal self-injury behaviours, it can take many forms including but not limited to biting, burning, scratching, self-bruising or swallowing dangerous substances if undertaken with intent to injure oneself.**

**Have you ever thought about engaging in self-injury?**

- Yes

No

**Have you ever engaged in nonsuicidal self-injury?**

Yes  
 No

**How many times have you self-injured in the last year?**

None      Once      Twice      Three times      Four times      5 or more times

**Please estimate the number of times in your life you have intentionally (i.e., on purpose) performed each type of non-suicidal self-injury (e.g., 0, 10, 100, 500):**

	Click to write
Cutting	<input type="text"/>
Biting	<input type="text"/>
Burning	<input type="text"/>
Carving	<input type="text"/>
Pinching	<input type="text"/>
Pulling hair	<input type="text"/>
Severe scratching	<input type="text"/>
Banging or hitting yourself	<input type="text"/>
Interfering with wound healing	<input type="text"/>
Rubbing skin against rough surface	<input type="text"/>
Sticking yourself with needles	<input type="text"/>
Swallowing dangerous substances	<input type="text"/>
Other	<input type="text"/>

**If you feel that you have a *main* form of self-injury, please indicate from the list below the behaviour you consider to be your main form of self-injury**

- Cutting
- Biting
- Burning
- Carving
- Pinching
- Pulling hair
- Severe scratching
- Banging or hitting yourself
- Interfering with wound healing
- Rubbing skin against rough surface
- Sticking yourself with needles
- Swallowing dangerous substances
- Other

**At what age did you (please write a number):**

	Click to write
First injure yourself?	<input type="text"/>
Most recently injure yourself?	<input type="text"/>

**Do you experience physical pain during self-injury?**

Yes

Sometimes

No

**When you self-injure are you alone?**

Yes

Sometimes

No

**Typically, how much time elapses from the time you have the urge to self-injure until you act on the urge?**

<1 hour

1-3 hours

3-6 hours

6-12 hours

12-24 hours

>1 day

**Do/did you want to stop self-injuring?**

Yes

No

**This inventory was written to help us better understand the experience of nonsuicidal self-injury. Below is a list of statements that may or may not be relevant to your experience of self-injury. Please identify the statements that are most relevant for you.**

**When I self-injure I am...**

	Not relevant	Somewhat relevant	Very relevant
calming myself down	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
creating a boundary between myself and others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
punishing myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
giving myself a way to care for myself (by attending to the wound)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
causing pain so I will stop feeling numb	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
avoiding the impulse to attempt suicide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
doing something to generate excitement or exhilaration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
bonding with peers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
letting others know the extent of my emotional pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
seeing if I can stand the pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
creating a physical sign that I feel awful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
getting back at someone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ensuring I am self-sufficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
releasing emotional pressure that has built up inside of me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
demonstrating that I am separate from other people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
expressing anger towards myself for being worthless or stupid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
creating a physical injury is easier to care for than my emotional distress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
trying to feel something (as opposed to nothing) even if it is physical pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
responding to suicidal thoughts without actually attempting suicide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
entertaining myself or others by doing something extreme	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
fitting in with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
seeking care or help from others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
demonstrating I am tough or strong	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
proving to myself that emotional pain is real	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
getting revenge against others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
demonstrating that I do not need to rely on others for help	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
reducing anxiety, frustration, anger, or other overwhelming emotions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
establishing a barrier between myself and others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
reacting to feeling unhappy with myself or disgusted with myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
allowing myself to focus on treating the injury, which can be gratifying or satisfying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not relevant	Somewhat relevant	Very relevant
making sure I am alive when I don't feel real	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
putting a stop to suicidal thoughts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
pushing my limits in a manner akin to skydiving or other extreme activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
creating a sign of friendship or kinship with friends or loved ones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
keeping a loved one from leaving or abandoning me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
proving I can take the physical pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
signifying the emotional distress I'm experiencing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
trying to hurt someone close to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
establishing that I am autonomous/independent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**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
I would feel less frustrated with the world	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My friends would be disgusted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I could make people do things for me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel physical pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel like a failure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel better about myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My friends would not approve of me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would be easier to get what I want from others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would hurt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel ashamed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel calm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My family would be disgusted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people would notice and offer sympathy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would not be aware of my physical pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel numb	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The future would seem more optimistic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My parents would be angry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel that it would be easier to open up and express my feelings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would not feel any pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel emotionally drained	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel relieved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people would notice and think I was a freak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would get care from others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The pain would be intense	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would hate myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please answer 3 to this question.**

	1	2	3	4	5
	<input type="radio"/>				

**Below is a list of contexts in which people may or may not find it difficult to resist engaging in NSSI. Please rate how confident you are that you could resist the urge to self-injure given the situation below. Some items are repetitive however please respond to all statements.**

1/14/2020

Qualtrics Survey Software

	Not at all confident	Somewhat confident	Moderately confident	Extremely confident
1. When I feel angry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. When I feel sad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. When I feel depressed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. When I feel worthless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. When I feel hopeless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. When I feel ashamed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. When I feel lonely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. When I feel embarrassed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. When I feel guilty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. When I feel frustrated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. When I feel like everything I do is pointless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. When I feel fed up	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. When I feel in control of my situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. When I feel calm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. When I feel relaxed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. When I feel nothing at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. When I feel alienated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. When I feel different from everyone else	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. When I feel numb	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. When I feel disconnected from my body	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. When I feel connected to my body	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. After having an argument with a friend	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. After arguing with a family member/s	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. When someone reassures me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. When I know I can talk to a friend about my problem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. When I feel abandoned	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27. When a friend abandons me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. When someone I love is angry with me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. When someone I love is there to support me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. When I am by myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. When I am at home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. When I am in the shower	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. When I am in the bathroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. When I am out with friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35. When I am in a group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36. When I know no one will find out	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37. When other people are around	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38. When it's the middle of the night and I can't sleep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
39. When I think I am not good enough	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40. When I think I am a burden to someone else	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
41. When I think I am not loveable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42. When I have no control over a situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43. When I have no other option	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44. When I feel powerless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45. When other people don't understand me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
46. When I don't want to live	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
47. When I think I have no other options	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
48. When I think I have a better way to cope	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
49. When I keep busy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
50. When I have been crying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
51. When I have been drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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	Not at all confident	Somewhat confident	Moderately confident	Extremely confident
52. When I am drunk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
53. When I am motivated to resist self-injury	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
54. When I have been thinking about self-injury for a long time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
55. When I have been trying to resist the urge for a long time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
56. When I have been avoiding suicidal thoughts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
57. When I have been taking drugs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
58. When I withdraw myself from others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
59. When I have just engaged in self-injury	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
60. When I am feeling pressure from work/school/university	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
61. When I have hurt someone I care about	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
62. When I cannot help someone I care about	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
63. When I feel I have control over a situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
64. When I feel like others aren't listening to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
65. When others don't take my opinion seriously	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
66. When I am worried other people will see my scars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
67. When I have seen someone else has self-injury scars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
68. When I have seen a post online about self-injury	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
69. When I am having trouble with my friends/parents/partner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
70. When I have no viable means to self-injure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
71. When I believe I can resist the urge to self-injure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
72. If I have other coping strategies I can use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
73. When I focus on my inner strength	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
74. When I reach out for support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
75. If I feel alone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
76. When I have other coping strategies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
77. When I have someone I can talk to	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
78. When I do not have the preferred means to do so	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
79. When I can't think of any other strategies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
80. When I have a strong urge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
81. When I am in a supportive environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
82. When I have a supportive person available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
83. When I want to feel a sense of belonging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
84. When I consider self-injury a part of who I am	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
85. When I am distracted by other things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
86. When I am watching T.V.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
87. When I can't stop going over and over things in my mind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
88. When it has become a ritual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
89. When I am reminded of self-injury through a video or song	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
90. When I see images of self-injury	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
91. When I feel a sense of control over my self-injury	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
92. When I feel I have no control over my self-injury	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
93. When I want to distract myself from my emotional pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
94. If I started a new job/school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
95. When I want to show someone else that I am in pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
96. When I have no privacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
97. When I need comfort	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
98. When it seems like no one cares about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
99. When I overthink a situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
100. When I am in my bedroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
101. When I am at work/school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
102. When I feel anxious	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all confident	Somewhat confident	Moderately confident	Extremely confident
103. When I feel scared	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
104. When I feel nervous	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
105. When I am worried	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
106. After arguing with people at work/school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
107. After arguing with a romantic partner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
108. When someone I love is disappointed in me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
109. When I am out in public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
110. In the morning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
111. In the afternoon	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
112. In the evening	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
113. Late at night	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
114. When I feel bored	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
115. When I am high	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
116. When I am worried other people will see my injuries/wounds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
117. When I see someone else has self-injury wounds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
118. When I have access to means to self-injure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
119. When I hate myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
120. When I want to punish myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
121. When I see a reminder of a past time I self-injured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
122. When I see my own scars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
123. Before social situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
124. After social situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
125. When I see my own injuries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please read each of the statements below carefully and select the answer which best fits how certain you are about how you would act in each of the following situations.**

	uncertain	Very		Very certain	
How certain are you that you will not self-injure in the future?	<input type="radio"/>				
If at some point in the future you had self-injurious thoughts, how certain are you that you could resist self-injury?	<input type="radio"/>				
If at some point in the future you had self-injurious thoughts, how certain are you that you could resist self-injury if you were using alcohol or other drugs?	<input type="radio"/>				
How certain are you that you could control future thoughts of self-injury if you were experiencing physical pain?	<input type="radio"/>				
How certain are you that you could control future self-injurious thoughts if you lost an important relationship?	<input type="radio"/>				
How certain are you that you could control future self-injurious thoughts if you lost a job, could not find employment, or suffered a financial crisis?	<input type="radio"/>				

**Are you aware of either of your parents having engaged in self-injury?**

Yes  No

**Which parent/s have engaged in self-injury?**

Mother  Father  Both parents

**At what age did your parent/s engage in self-injury?**

If you were born at the time, what age were you when your parent/s engaged in self-injury?

**Alcohol**

The following questions are related to your use of alcohol.



This guide contains examples of one standard drink. A full strength can or stubbie contains one and a half standard drinks.

Because alcohol use can affect health and interfere with certain medications and treatments, it is important that we ask you some questions about your use of alcohol. Your answers will remain confidential, so please be as accurate as possible. Try to answer the questions in terms of 'standard drinks'.

	never	monthly or less	2-4 times a month	2-3 times a week	4 or more times a week
1. How often do you have a drink containing alcohol?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	1-2	3-4	5-6	7-9	10 or more
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	never	less than monthly	monthly	weekly	daily or almost daily
3. How often do you have six or more drinks on one occasion?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. How often during the last year have you found that you were not able to stop drinking once you had started?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. How often in the last year have you failed to do what was normally expected of you because of drinking?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	No	Yes, but not in the last year		Yes, during the last year	

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	No	Yes, but not in the last year	Yes, during the last year
9. Have you or someone else been injured because of your drinking?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The purpose of these questions is to find out about YOUR thoughts, feelings and beliefs about drinking. Please select the most appropriate response.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I do not need alcohol to help me unwind after a hard day or week at work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Little things annoy me less when I'm drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking makes me feel outgoing and friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking alcohol makes me tense	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have more self-confidence when I am drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking makes me more sexually responsive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am anxious or tense I do not feel the need for alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking makes the future brighter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I drink alcohol because it's a habit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking makes me bad tempered	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am more aware of what I say and do if I am drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that drinking hinders me in getting along with other people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel restless when drinking alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am more sullen and depressed when drinking alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I cannot always control my drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am less concerned about my actions when I am drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I am drinking it is easier to express my feelings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often feel sexier after I've been drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking does not help to relieve any tension I feel about recent concerns and interests	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking increases my aggressiveness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking makes me feel like a failure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking helps me to be more mentally alert	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking alcohol removes most thoughts of sex from my mind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to adopt a "who cares" attitude when I'm drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am addicted to alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking brings out the worst in me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel less shy when I am drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking makes me feel more violent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am less discreet if I drink alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am drinking it's easier to open up and express my feelings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am powerless in the face of alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am drinking I avoid other people or situations for fear of embarrassment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Drinking alcohol sharpens my mind	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel disappointed in myself when drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to avoid sex when drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I lose most feelings of sexual interest after I have been drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am clumsier when drinking alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



**Emotion**

**Emotion**

**Everyone gets confronted with negative or unpleasant events now and then and everyone responds to them in his or her own way. By the following questions you are asked to indicate what you generally think, when you experience negative or unpleasant events.**

(almost) Never	About half the Sometimes	Most of the time	(almost) Always	
I feel I am the one to blame for it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think of something nice instead of what has happened	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think about the mistakes others have made in this matter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that I must learn to live with it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to understand why I feel the way I do about what I have experienced	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I continually think how horrible the situation has been	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that am the only one who is responsible for what has happened	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that it all could have been much worse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I look for the positive sides to the matter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that other people go through much worse experiences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I dwell upon the feelings the situation had evoked in me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think of what I can do best	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that others are to blame for it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that I cannot change anything about it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often think that what I have experienced is the worst that could happen to a person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think about the mistakes I have made in this matter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that it hasn't been too bad compared to other things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think about pleasant experiences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that basically the cause must lie within myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I keep thinking about how terrible it is what I have experienced	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that I can learn something from the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that basically the cause lies with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tell myself that there are worse things in life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that others are responsible for what has happened	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that I have to accept that this has happened	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think of pleasant things that have nothing to do with it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think about how I can best cope with the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often think about how I feel about what I have experienced	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that I can become a stronger person as a result of what has happened	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think about how to change the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often think that what I have experienced is much worse than what others have experienced	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that I have to accept the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think of nicer things than what I have experienced	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think about a plan of what I can do best	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that the situation also has it's positive sides	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am preoccupied with what I think and feel about what I have experienced	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**In the last 30 days how often...**

	none of the time	a little of the time	some of the time	most of the time	all of the time
Did you feel tired out for no good reason.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you feel nervous.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	none of the time	a little of the time	some of the time	most of the time	all of the time
Did you feel so nervous that nothing could calm you down.	<input type="radio"/>				
Did you feel hopeless.	<input type="radio"/>				
Did you feel restless or fidgety.	<input type="radio"/>				
Did you feel so restless that you could not sit still.	<input type="radio"/>				
Did you feel depressed.	<input type="radio"/>				
Did you feel that everything is an effort.	<input type="radio"/>				
Did you feel so sad that nothing could cheer you up.	<input type="radio"/>				
Did you feel worthless.	<input type="radio"/>				

**These items deal with ways you've been coping with stress and problems in your life. There are many ways to try to deal with problems. These items ask what you've been doing to cope in general with problems in your life. Try to rate each item separately in your mind from others. Make your answers as true FOR YOU as you can.**

I haven't been doing	this at all	I've been doing this a little bit	I've been doing this a medium amount	I've been doing this a lot
I've been turning to work or other activities to take my mind off things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been concentrating my efforts on doing something about the situation I'm in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been saying to myself "this isn't real"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been using alcohol or other drugs to make myself feel better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been getting emotional support from others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been giving up trying to deal with it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been taking action to try and make the situation better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been refusing to believe that it has happened	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been saying things to let my unpleasant feelings escape	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been getting help and advice from other people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been using alcohol or drugs to get me through it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been trying to see it in a different light, to make it seem more positive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been criticizing myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been trying to come up with a strategy about what to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been getting comfort and understanding from someone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been giving up the attempt to cope	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been looking for something good in what is happening	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been making jokes about it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been doing something to think about it less, such as going to the movies, watching TV, reading, daydreaming, sleeping, or shopping	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been accepting the reality of the fact that it has happened	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been expressing my negative feelings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been trying to find comfort in my religion or spiritual beliefs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been trying to get advice or help from other people about what to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been learning to live with it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been thinking hard about what steps to take	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been blaming myself for the things that happened	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been praying or meditating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've been making fun of the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please read each statement carefully and indicate how closely it resembles you.**

	me	Not at all like me	Completely like me
When something happens that upsets me, it's all I can think about it for a long time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all like me				Completely like me
My feelings get hurt easily.	<input type="radio"/>				
When I experience emotions, I feel them very strongly/intensely.	<input type="radio"/>				
When I'm emotionally upset, my whole body gets physically upset as well.	<input type="radio"/>				
I tend to get very emotional very easily.	<input type="radio"/>				
I experience emotions very strongly.	<input type="radio"/>				
I often feel extremely anxious.	<input type="radio"/>				
When I feel emotional, it's hard for me to imagine feeling any other way.	<input type="radio"/>				
Even the littlest things make me feel emotional.	<input type="radio"/>				
If I have a disagreement with someone, it takes a long time for me to get over it.	<input type="radio"/>				
When I am angry/upset, it takes me much longer than most people to calm down.	<input type="radio"/>				
I get angry at people very easily.	<input type="radio"/>				
I am often bothered by things that other people don't react to.	<input type="radio"/>				
I am easily agitated.	<input type="radio"/>				
My emotions go from neutral to extreme in an instant.	<input type="radio"/>				
When something bad happens, my mood changes very quickly. People tell me I have a very short fuse.	<input type="radio"/>				
People tell me that my emotions are too intense for the situation.	<input type="radio"/>				
I am a very sensitive person.	<input type="radio"/>				
My moods are very strong and powerful.	<input type="radio"/>				
I often get so upset it's hard for me to think straight.	<input type="radio"/>				
Other people tell me I'm overreacting.	<input type="radio"/>				

Please answer 3 to this question.

Next we are interested in how you manage your emotions and how you cope with stress

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
When I want to feel more positive emotion (such as joy or amusement), I change what I am thinking about	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I keep my emotions to myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I want to feel less negative emotion (such as sadness or anger), I change what I think about	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am feeling positive emotions I am careful not to express them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am faced with a stressful situation, I make myself think about it in a way that helps me stay calm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I control my emotions by not expressing them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I want to feel more positive emotion I change the way I am thinking about the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I control my emotions by changing the way I think about the situation I am in	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am feeling negative emotions, I make sure not to express them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I want to feel less negative emotion, I change the way I am thinking about the situation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate below how often the following statements apply to you.

	almost never (0-10%)	sometimes (11-35%)	about half the time (36-65%)	most of the time (66-90%)	almost always (91-100%)
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	almost never (0-10%)	sometimes (11- 35%)	about half the time (36-65%)	most of the time (66-90%)	almost always (91-100%)
I am clear about my feelings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I pay attention to how I feel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I experience my emotions as overwhelming and out of control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have no idea how I am feeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have difficulty making sense out of my feelings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am attentive to my feelings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know exactly how I am feeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I care about what I am feeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confused about how I feel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I acknowledge my emotions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I become angry at myself for feeling that way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I become embarrassed for feeling that way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I have difficulty getting work done	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I become out of control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I believe that I will remain that way for a long time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I believe that I will end up feeling very depressed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I believe that my feelings are valid and important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I have difficulty focusing on other things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I feel out of control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I can still get things done	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I feel ashamed of myself for feeling that way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I know that I can find a way to eventually feel better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I feel like I am weak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I feel like I can remain in control of my behaviours	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I feel guilty for feeling that way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I have difficulty concentrating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I have difficulty controlling my behaviours	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I believe there is nothing I can do to make myself feel better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I become irritated at myself for feeling that way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I start to feel very bad about myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I believe that wallowing in it is all I can do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I lose control over my behaviour	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I have difficulty thinking about anything else	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, I take time to figure out what I'm really feeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, it takes me a long time to feel better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm upset, my emotions feel overwhelming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**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**

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Interested	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disinterested	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Excited	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upset	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Strong	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Guilty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scared	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Hostile	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enthusiastic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Proud	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Irritable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alert	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ashamed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inspired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Very slightly or not at all	A little	Moderately	Quite a bit	Extremely
Nervous	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Determined	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Attentive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jittery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Active	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Afraid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You have just completed a questionnaire which indicated how often you tend to have certain feelings or emotional experiences. In the following questionnaire you will be shown a list of the same feelings, but you are asked to make the following judgment:

When exposed to a situation that would make the “average” person experience this feeling, **how likely is it that you will experience this particular feeling?** Please rate this using the five options provided.

	Not at all likely	Slightly likely	Moderately likely	Very likely	Extremely likely
Interested	<input type="radio"/>				
Distressed	<input type="radio"/>				
Excited	<input type="radio"/>				
Upset	<input type="radio"/>				
Strong	<input type="radio"/>				
Guilty	<input type="radio"/>				
Scared	<input type="radio"/>				
	Not at all likely	Slightly likely	Moderately likely	Very likely	Extremely likely
Hostile	<input type="radio"/>				
Enthusiastic	<input type="radio"/>				
Proud	<input type="radio"/>				
Irritable	<input type="radio"/>				
Alert	<input type="radio"/>				
Ashamed	<input type="radio"/>				
Inspired	<input type="radio"/>				
	Not at all likely	Slightly likely	Moderately likely	Very likely	Extremely likely
Nervous	<input type="radio"/>				
Determined	<input type="radio"/>				
Attentive	<input type="radio"/>				
Jittery	<input type="radio"/>				
Active	<input type="radio"/>				
Afraid	<input type="radio"/>				

You have just completed a questionnaire which indicated how likely you are to have certain feelings or emotional experiences. In the following questionnaire you will be shown a list of the same feelings, but you are asked to make the following judgment:

**When you are experiencing a situation that does make you feel this way, how intense is the feeling compared to how other people feel?**

	Not at all intense	Slightly intense	Moderately intense	Very intense	Extremely intense
Interested	<input type="radio"/>				
Distressed	<input type="radio"/>				
Excited	<input type="radio"/>				
Upset	<input type="radio"/>				
Strong	<input type="radio"/>				
Guilty	<input type="radio"/>				
Scared	<input type="radio"/>				
	Not at all intense	Slightly intense	Moderately intense	Very intense	Extremely intense
Hostile	<input type="radio"/>				
Enthusiastic	<input type="radio"/>				
Proud	<input type="radio"/>				
Irritable	<input type="radio"/>				
Alert	<input type="radio"/>				
Ashamed	<input type="radio"/>				
Inspired	<input type="radio"/>				
	Not at all intense	Slightly intense	Moderately intense	Very intense	Extremely intense
Nervous	<input type="radio"/>				
Determined	<input type="radio"/>				
Attentive	<input type="radio"/>				
Jittery	<input type="radio"/>				
Active	<input type="radio"/>				
Afraid	<input type="radio"/>				

**You have just completed a questionnaire which indicated how likely you are to have certain feelings or emotional experiences. In the following questionnaire you will be shown a list of the same feelings, but you are asked to make the following judgment:**

**When you are experiencing a situation that does make you feel this way, how long is this feeling likely to persist? The longer a feeling lasts the more persistent it is. Please rate this using the five options provided.**

	Not at all persistent	Slightly persistent	Moderately persistent	Very persistent	Extremely persistent
Interested	<input type="radio"/>				
Distressed	<input type="radio"/>				
Excited	<input type="radio"/>				
Upset	<input type="radio"/>				
Strong	<input type="radio"/>				
Guilty	<input type="radio"/>				
Scared	<input type="radio"/>				
	Not at all persistent	Slightly persistent	Moderately persistent	Very persistent	Extremely persistent
Hostile	<input type="radio"/>				
Enthusiastic	<input type="radio"/>				
Proud	<input type="radio"/>				
Irritable	<input type="radio"/>				
Alert	<input type="radio"/>				
Ashamed	<input type="radio"/>				
Inspired	<input type="radio"/>				
	Not at all persistent	Slightly persistent	Moderately persistent	Very persistent	Extremely persistent
Nervous	<input type="radio"/>				
Determined	<input type="radio"/>				
Attentive	<input type="radio"/>				
Jittery	<input type="radio"/>				

Not at all persistent			Moderately Slightly persistent	persistent	Very persistent	Extremely persistent
Active	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Afraid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**In this section we are interested in your emotional well being**

**Read each statement tick which response best indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.**

	Never	Sometimes	Often	Almost Always
I found it hard to wind down	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was aware of dryness of my mouth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I couldn't seem to experience any positive feelings at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I experienced breathing difficulties (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I found it difficult to work up the initiative to do things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tended to over-react to situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I experienced trembling (e.g. in the hands)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt that I was using a lot of nervous energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was worried about situations in which I might panic and make a fool of myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt I had nothing to look forward to	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I found myself getting agitated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I found it difficult to relax	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt down-hearted and blue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was intolerant of anything that kept me from getting on with what I was doing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt I was close to panic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was unable to become enthusiastic about anything	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt I wasn't worth much as a person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt that I was rather touchy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt scared without any good reason	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt that life was meaningless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Think of times that you feel distressed or upset. Select the item from the options (strongly agree to strongly disagree) that best describes your beliefs about feeling distressed or upset**

	Strongly agree	Mildly agree	Agree and disagree equally	Mildly disagree	Strongly Disagree
Feeling distressed or upset is unbearable to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I feel distressed or upset, all I can think about is how bad I feel.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can't handle feeling distressed or upset.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My feelings of distress are so intense that they completely take over.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There's nothing worse than feeling distressed or upset.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly agree	Mildly agree	Agree and disagree equally	Mildly disagree	Strongly Disagree
I can tolerate being distressed or upset as well as most people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My feelings of distress or being upset are not acceptable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'll do anything to avoid feeling distressed or upset.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people seem to be able to tolerate feeling distressed or upset better than I can.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being distressed or upset is always a major ordeal for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Strongly agree	Mildly agree	Agree and disagree equally	Mildly disagree	Strongly Disagree

	Strongly agree	Mildly agree	Agree and disagree equally	Mildly disagree	Strongly Disagree
I am ashamed of myself when I feel distressed or upset.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My feelings of distress or being upset scare me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'll do anything to stop feeling distressed or upset.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I feel distressed or upset, I must do something about it immediately.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I feel distressed or upset, I cannot help but concentrate on how bad the distress actually feels.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Using the scale provided as a guide, indicate how much you agree or disagree with each of the following statements. Give only one answer for each statement.**

	Strongly disagree	Moderately disagree	Neither disagree nor agree	Moderately agree	Strongly agree
I am often confused about what emotion I am feeling.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is difficult for me to find the right words for my feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have physical sensations that even doctors don't understand.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to describe my feelings easily.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to analyze problems rather than just describe them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am upset, I don't know if I am sad, frightened, or angry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am often puzzled by sensations in my body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to just let things happen rather than to understand why they turned out that way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have feelings that I can't quite identify.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being in touch with emotions is essential.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find it hard to describe how I feel about people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People tell me to describe my feelings more.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't know what's going on inside me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often don't know why I am angry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer talking to people about their daily activities rather than their feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to watch "light" entertainment shows rather than psychological dramas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is difficult for me to reveal my innermost feelings, even to close friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can feel close to someone, even in moments of silence.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find examination of my feelings useful in solving personal problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Looking for hidden meanings in movies or plays distracts from their enjoyment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**This questionnaire asks about how you perceive and experience your emotions. Please score the following statements according to how much you agree or disagree that the statement is true of you.**

**Some questions mention bad or unpleasant emotions, this means emotions like sadness, anger, or fear. Some questions mention good or pleasant emotions, this means emotions like happiness, amusement, or excitement.**

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
1. When I'm feeling bad (feeling an unpleasant emotion), I can't find the right words to describe those feelings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. When I'm feeling bad, I can't tell whether I'm sad, angry, or scared.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I tend to ignore how I feel.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. When I'm feeling good (feeling a pleasant emotion), I can't find the right words to describe those feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. When I'm feeling good, I can't tell whether I'm happy, excited, or amused.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I prefer to just let my feelings happen in the background, rather than focus on them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
7. When I'm feeling bad, I can't talk about those feelings in much depth or detail.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. When I'm feeling bad, I can't make sense of those feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I don't pay attention to my emotions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. When I'm feeling good, I can't talk about those feelings in much depth or detail.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. When I'm feeling good, I can't make sense of those feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Usually, I try to avoid thinking about what I'm feeling.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. When something bad happens, it's hard for me to put into words how I'm feeling.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. When I'm feeling bad, I get confused about what emotion it is.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. I prefer to focus on things I can actually see or touch, rather than my emotions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. When something good happens, it's hard for me to put into words how I'm feeling.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. When I'm feeling good, I get confused about what emotion it is.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I don't try to be 'in touch' with my emotions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. When I'm feeling bad, if I try to describe how I'm feeling I don't know what to say.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. When I'm feeling bad, I'm puzzled by those feelings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. It's not important for me to know what I'm feeling.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. When I'm feeling good, if I try to describe how I'm feeling I don't know what to say.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. When I'm feeling good, I'm puzzled by those feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. It's strange for me to think about my emotions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please indicate the extent to which you agree or disagree with each of the following statements**

	Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree
The key to a good life is never feeling any pain.	<input type="radio"/>					
I'm quick to leave any situation that makes me feel uneasy.	<input type="radio"/>					
When unpleasant memories come to me, I try to put them out of my mind.	<input type="radio"/>					
I feel disconnected from my emotions.	<input type="radio"/>					
I won't do something until I absolutely have to.	<input type="radio"/>					
Fear or anxiety won't stop me from doing something important.	<input type="radio"/>					
I would give up a lot not to feel bad.	<input type="radio"/>					
I rarely do something if there is a chance that it will upset me.	<input type="radio"/>					
It's hard for me to know what I'm feeling.	<input type="radio"/>					
I try to put off unpleasant tasks for as long as possible.	<input type="radio"/>					
I go out of my way to avoid uncomfortable situations.	<input type="radio"/>					
One of my goals is to be free from painful emotions.	<input type="radio"/>					
I work hard to keep out upsetting feelings.	<input type="radio"/>					
If I have any doubts about doing something, I just won't do it.	<input type="radio"/>					
Pain always leads to suffering.	<input type="radio"/>					

**The following questions refer to emotional reactions to typical life events. Please indicate how YOU react to these events. Please base your answers on how YOU react, not on how you think others react or how you think a person should react**

	Never	Almost never	Occasionally	Usually	Almost always	Always
When I feel happiness, it is a quiet type of contentment.	<input type="radio"/>					

	Never	Almost never	Occasionally	Usually	Almost always	Always
When a person in a wheelchair can't get through a door, I have strong feelings of pity.	<input type="radio"/>					
I get upset easily.	<input type="radio"/>					
When I succeed at something, my reaction is calm contentment.	<input type="radio"/>					
I get really happy or really unhappy.	<input type="radio"/>					
I'm a fairly quiet person.	<input type="radio"/>					
When I'm happy, I feel energetic.	<input type="radio"/>					
Seeing a picture of some violent car accident in a newspaper makes me feel sick to my stomach.	<input type="radio"/>					
When I'm happy, I feel like I'm bursting with joy.	<input type="radio"/>					
I would be very upset if I got a traffic ticket.	<input type="radio"/>					
Looking at beautiful scenery really doesn't affect me much.	<input type="radio"/>					
The weather doesn't affect my mood.	<input type="radio"/>					
Others tend to get more excited about things than I do.	<input type="radio"/>					
I am not an extremely enthusiastic person.	<input type="radio"/>					
'Calm and cool' could easily describe me.	<input type="radio"/>					
When I'm feeling well it's easy for me to go from being in a good mood to being really joyful.	<input type="radio"/>					
When I worry, it is so mild that I hardly notice it.	<input type="radio"/>					
I get overly enthusiastic.	<input type="radio"/>					
My happy moods are so strong that I feel like I'm 'in heaven'.	<input type="radio"/>					
When something bad happens, others tend to be more unhappy than I.	<input type="radio"/>					

**Cognitions**

Indicate how true each of the following statements are of you.

	Not at all true	Hardly true	Moderately true	Exactly true
I can always manage to solve difficult problems if I try hard enough	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If someone opposes me, I can find the means and ways to get what I want	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy for me to stick to my aims and accomplish my goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I could deal efficiently with unexpected events	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thanks to my resourcefulness, I know how to handle unforeseen situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can solve most problems if I invest the necessary effort	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can remain calm when facing difficulties because I can rely on my coping abilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am confronted with a problem, I can usually find several solutions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I am in trouble, I can usually think of a solution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can handle whatever comes my way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In this section we are interested in understanding how you respond to distressing situations. Please recall how you tend to respond when you feel distressed or upset.

How true are each of these statements with respect to your experience when you are distressed or upset?

	Not at all true	Somewhat true	Very true
I have thoughts or images about all my shortcomings, failings, faults, mistakes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have thoughts or images about events that come into my head even when I do not wish to think about them again	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have thoughts or images that "I won't be able to do my job/work because I feel so badly."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have thoughts or images that are difficult to forget.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all true		Somewhat true		Very true
Once I start thinking about the situation, I can't stop	<input type="radio"/>				
I notice that I think about the situation.	<input type="radio"/>				
I have thoughts or images of the situation that I try to resist thinking about.	<input type="radio"/>				
I think about the situation all the time.	<input type="radio"/>				
I know I shouldn't think about the situation, but can't help it	<input type="radio"/>				
I have thoughts or images about the situation and wish it would go better.	<input type="radio"/>				

**How well can you?**

	Not at all well				Very well
Express joy when good things happen to you?	<input type="radio"/>				
Feel gratified over achieving what you set out to do?	<input type="radio"/>				
Rejoice over your successes?	<input type="radio"/>				
Express enjoyment freely at parties?	<input type="radio"/>				
Keep from getting dejected when you are lonely?	<input type="radio"/>				
Keep from getting discouraged by strong criticism?	<input type="radio"/>				
Reduce your upset when you don't get the appreciation you feel you deserve?	<input type="radio"/>				
Keep from getting discouraged in the face of difficulties?	<input type="radio"/>				
Manage negative feelings when reprimanded by your parents or significant others?	<input type="radio"/>				
Avoid getting upset when others keep giving you a hard time?	<input type="radio"/>				
Get over irritation quickly for wrongs you have experienced?	<input type="radio"/>				
Avoid flying off the handle when you get angry?	<input type="radio"/>				

**For each of the items below rate how accurately it describes you.**

	Very inaccurate	Mostly inaccurate	Somewhat inaccurate	Somewhat accurate	Mostly accurate	Very accurate	Neither accurate
I find that my mind often goes over things again and again	<input type="radio"/>						
When I have a problem, it will gnaw on my mind for a long time	<input type="radio"/>						
I find that some thoughts come to mind over and over throughout the day	<input type="radio"/>						
I can't stop thinking about some things	<input type="radio"/>						
When I am anticipating an interaction, I will imagine every possible scenario and conversation	<input type="radio"/>						
I tend to replay past events as I would have liked them to happen	<input type="radio"/>						
I find myself daydreaming about things I wish I had done.	<input type="radio"/>						
When I feel I have had a bad interaction with someone, I tend to imagine various scenarios where I would have acted differently.	<input type="radio"/>						
When trying to solve a complicated problem, I find that I just keep coming back to the beginning without ever finding a solution	<input type="radio"/>						
If there is an important event coming up, I think about it so much that I work myself up.	<input type="radio"/>						
I have never been able to distract myself from unwanted thoughts	<input type="radio"/>						
Even if I think about a problem for hours, I still have a hard time coming to a clear understanding	<input type="radio"/>						

Neither  
accurate

Very Mostly Somewhat nor Somewhat Mostly Very inaccurate inaccurate  
inaccurate inaccurate accurate accurate accurate

It is very difficult for me to come to a clear conclusion about some problems, no matter how much I think about it

Sometimes I realize I have been sitting and thinking about something for hours

<input type="radio"/>						
<input type="radio"/>						

Neither  
accurate

Very Mostly Somewhat nor Somewhat Mostly Very inaccurate inaccurate  
inaccurate inaccurate accurate accurate accurate

When I am trying to work out a problem, it is like I have a long debate in my mind where I keep going over different points

I like to sit and reminisce about pleasant events from the past

When I am looking forward to an exciting event, thoughts of it interfere with what I am working on

Sometimes even during a conversation, I find unrelated thoughts popping into my head

When I have an important conversation coming up, I tend to go over it in my mind again and again

If I have an important event coming up, I can't stop thinking about it.

<input type="radio"/>						
<input type="radio"/>						
<input type="radio"/>						
<input type="radio"/>						
<input type="radio"/>						

**For each of the items below, rate how often you experience the corresponding statement.**

Almost never      Sometimes      Often      Always

It's very hard for me to concentrate on a difficult task when there are noises around.

When I need to concentrate and solve a problem, I have trouble focusing my attention.

When I am working hard on something, I still get distracted by events around me.

My concentration is good even if there is music in the room around me.

When concentrating, I can focus my attention so that I become unaware of what's going on in the room around me.

When I am reading or studying, I am easily distracted if there are people talking in the same room.

When trying to focus my attention on something, I have difficulty blocking out distracting thoughts.

I have a hard time concentrating when I'm excited about something.

When concentrating I ignore feelings of hunger or thirst.

I can quickly switch from one task to another.

It takes me a while to get really involved in a new task.

It is difficult for me to coordinate my attention between the listening and writing required when taking notes during lectures.

I can become interested in a new topic very quickly when I need to.

It is easy for me to read or write while I'm also talking on the phone.

I have trouble carrying on two conversations at once.

I have a hard time coming up with new ideas quickly.

After being interrupted or distracted, I can easily shift my attention back to what I was doing before.

When a distracting thought comes to mind, it is easy for me to shift my attention away from it.

It is easy for me to alternate between two different tasks.

It is hard for me to break from one way of thinking about something and look at it from another point of view.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please read each statement carefully before answering. Indicate how often you behave in the stated manner, using the following scale.**

Almost never      Occasionally      About half of the time      Fairly often      Almost always

Almost never	About half of the				Almost always
	Occasionally	time	Fairly often		
I try to be understanding and patient towards those aspects of my personality I don't like.	<input type="radio"/>				
I'm kind to myself when I'm experiencing suffering.	<input type="radio"/>				
When I'm going through a very hard time, I give myself the caring and tenderness I need.	<input type="radio"/>				
I'm tolerant of my own flaws and inadequacies.	<input type="radio"/>				
I try to be loving towards myself when I'm feeling emotional pain.	<input type="radio"/>				
When I see aspects of myself that I don't like, I get down on myself.	<input type="radio"/>				
When times are really difficult, I tend to be tough on myself.	<input type="radio"/>				
I can be a bit cold-hearted towards myself when I'm experiencing suffering.	<input type="radio"/>				
I'm disapproving and judgmental about my own flaws and inadequacies.	<input type="radio"/>				
I'm intolerant and impatient towards those aspects of my personality I don't like.	<input type="radio"/>				
When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.	<input type="radio"/>				
I try to see my failings as part of the human condition.	<input type="radio"/>				
When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am.	<input type="radio"/>				
When things are going badly for me, I see the difficulties as part of life that everyone goes through.	<input type="radio"/>				
When I fail at something that's important to me I tend to feel alone in my failure.	<input type="radio"/>				
When I think about my inadequacies it tends to make me feel more separate and cut off from the rest of the world.	<input type="radio"/>				
When I'm feeling down I tend to feel like most other people are probably happier than I am.	<input type="radio"/>				
When I'm really struggling I tend to feel like other people must be having an easier time of it.	<input type="radio"/>				
When something upsets me I try to keep my emotions in balance.	<input type="radio"/>				
When I'm feeling down I try to approach my feelings with curiosity and openness.	<input type="radio"/>				
When something painful happens I try to take a balanced view of the situation.	<input type="radio"/>				
When I fail at something important to me I try to keep things in perspective.	<input type="radio"/>				
When something upsets me I get carried away with my feelings.	<input type="radio"/>				
When I'm feeling down I tend to obsess and fixate on everything that's wrong.	<input type="radio"/>				
When something painful happens I tend to blow the incident out of proportion.	<input type="radio"/>				
When I fail at something important to me I become consumed by feelings of inadequacy.	<input type="radio"/>				

**You will find below a series of statements which describe how people may react to the uncertainties of life. Please use the scale below to describe to what extent each item is characteristic of you.**

	Not at all characteristic of me		Somewhat characteristic of me		Entirely characteristic of me
Uncertainty stops me from having a firm opinion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being uncertain means that a person is disorganised.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Uncertainty makes life intolerable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It's unfair having no guarantees in life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My mind can't be relaxed if I don't know what will happen tomorrow.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Uncertainty makes me uneasy, anxious, or stressed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all characteristic of me		Somewhat characteristic of me		Entirely characteristic of me
Unforeseen events upset me greatly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It frustrates me not having all the information I need.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Uncertainty keeps me from living a full life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
One should always look ahead so as to avoid surprises.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A small unforeseen event can spoil everything, even with the best planning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When it's time to act, uncertainty paralyzes me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being uncertain means that I am not first rate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am uncertain, I can't go forward.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am uncertain, I can't function very well.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unlike me, others seem to know where they are going with their lives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Uncertainty makes me vulnerable, unhappy, or sad.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always want to know what the future has in store for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can't stand being taken by surprise.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The smallest doubt can stop me from acting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I should be able to organize everything in advance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being uncertain means that I lack confidence.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it's unfair that other people seem to be sure about their future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Uncertainty keeps me from sleeping soundly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I must get away from all uncertain situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The ambiguities in life stress me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can't stand being undecided about my future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**When things go wrong for me...**

	Not at all like me				Extremely like me
I am easily disappointed with myself	<input type="radio"/>				
There is a part of me that puts me down	<input type="radio"/>				
I am able to remind myself of positive things about myself	<input type="radio"/>				
I find it difficult to control my anger and frustration at myself	<input type="radio"/>				
I find it easy to forgive myself	<input type="radio"/>				
There is a part of me that feels I am not good enough	<input type="radio"/>				
I feel beaten down by my own self-critical thoughts	<input type="radio"/>				
I still like being me	<input type="radio"/>				
I have become so angry with myself that I want to hurt or injure myself	<input type="radio"/>				
I have a sense of disgust with myself	<input type="radio"/>				
I can feel lovable and acceptable	<input type="radio"/>				
I stop caring about myself	<input type="radio"/>				
I find it easy to like myself	<input type="radio"/>				
I remember and dwell on my failings	<input type="radio"/>				
I call myself names	<input type="radio"/>				
I am gentle and supportive with myself	<input type="radio"/>				
I can't accept failures and setbacks without feeling inadequate	<input type="radio"/>				
I think I deserve my self-criticism	<input type="radio"/>				
I am able to care and look after myself	<input type="radio"/>				
There is a part of me that wants to get rid of the the bits I don't like	<input type="radio"/>				
I encourage myself for the future	<input type="radio"/>				
I do not like being me	<input type="radio"/>				

**I get critical and angry at myself...**

	not at all like me    Extremely like me				
To make sure I keep up my standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To stop myself being happy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To show I care about my mistakes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Because if I punish myself I feel better	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To stop me being lazy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To harm part of myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To keep myself in check	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To punish myself for my mistakes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To cope with feelings of disgust with myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To take revenge on part of myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To stop me getting over confident	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To stop me being angry with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To destroy a part of me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To make me concentrate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To gain reassurance from others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To stop me becoming arrogant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To prevent future embarrassments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To remind me of my past failures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To keep me from making minor mistakes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To remind me of my responsibilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To get at the things I hate in myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Social/Personality**

**Social/Personality**

**Rate yourself on each item, on a scale from 1 (almost never true) to 7 (almost always true).**

Almost never	Less than half						Almost always true
	true	Rarely true	the time true	Neutral	More than half the time true	Often true	
Defends own beliefs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Independent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Assertive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Strong personality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Forceful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Have leadership abilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Willing to take risks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Dominant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Willing to take a stand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				
Aggressive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>				

**We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.**

	Very Strongly Disagree	Strongly Disagree	Mildly Disagree	Neutral	Mildly Agree	Strongly Agree	Very Strongly Agree
There is a special person who is around when I am in need.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a special person with whom I can share joys and sorrows.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My family really tries to help me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I get the emotional help and support I need from my family.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Very Strongly	Disagree	Disagree	Disagree	Neutral	Strongly Mildly Agree	Mildly Agree	Strongly Agree	Very Strongly Agree
I have a special person who is a real source of comfort to me.	<input type="radio"/>							
My friends really try to help me.	<input type="radio"/>							
I can count on my friends when things go wrong.	<input type="radio"/>							
I can talk about my problems with my family.	<input type="radio"/>							
I have friends with whom I can share my joys and sorrows.	<input type="radio"/>							
There is a special person in my life who cares about my feelings.	<input type="radio"/>							
My family is willing to help me make decisions.	<input type="radio"/>							
I can talk about my problems with my friends.	<input type="radio"/>							

**Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.**

	Strongly Disagree	Disagree	Agree	Strongly Agree
On the whole I am satisfied with myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At times I think I am no good at all.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I have a good number of qualities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to do things as well as most other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel I do not have much to be proud of.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I certainly feel useless at times.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I'm a person of worth, at least on equal plane with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wish I could have more respect for myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
All in all, I am inclined to feel that I am a failure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take a positive attitude towards myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Below are a number of statements about how various topics affect your personal beliefs. There are no right or wrong answers. For every item there are a large number of people who agree and disagree. Could you please put in the appropriate bracket the choice you believe to be true? Answer all the questions.**

	Strongly disagree	Generally disagree	Somewhat disagree	Somewhat agree	Generally agree	Strongly agree
I can anticipate difficulties and take action to avoid them.	<input type="radio"/>					
A great deal of what happens to me is probably just a matter of chance.	<input type="radio"/>					
Everyone knows that luck or chance determines one's future.	<input type="radio"/>					
I can control my problem(s) only if I have outside support.	<input type="radio"/>					
When I make plans, I am almost certain that I can make them work.	<input type="radio"/>					
My problem(s) will dominate me all my life.	<input type="radio"/>					
My mistakes and problems are my responsibility to deal with.	<input type="radio"/>					
Becoming a success is a matter of hard work, luck has little or nothing to do with it.	<input type="radio"/>					
My life is controlled by outside actions and events.	<input type="radio"/>					
People are victims of circumstance beyond their control.	<input type="radio"/>					
To continually manage my problems I need professional help.	<input type="radio"/>					
When I am under stress, the tightness in my muscles is due to things outside my control.	<input type="radio"/>					
I believe a person can really be the master of his fate.	<input type="radio"/>					

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	Strongly disagree	Generally disagree	Somewhat disagree	Somewhat agree	Generally agree	Strongly agree
It is impossible to control my irregular fast breathing when I am having difficulties.	<input type="radio"/>					
I understand why my problem(s) varies so much from one occasion to the next.	<input type="radio"/>					
I am confident of being able to deal successfully with future problems.	<input type="radio"/>					
In my case maintaining control over my problem(s) is mostly due to luck.	<input type="radio"/>					

**Please consider each statement and select the corresponding number which best reflects your agreement with the statement. Please be sure to read each statement carefully.**

### Over the past month...

	Not at all	Some of the time	Most of the time	All of the time
Have you pushed yourself really hard to meet your goals?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you tended to focus on what you have achieved, rather than on what you have not achieved?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you been told your standards are too high?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you felt a failure as a person because you have not succeeded in meeting your goals?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you been afraid that you might not reach your standards?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you raised your standards because you thought they were too easy?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you judged yourself on the basis of your ability to achieve high standards?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you done just enough to get by?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you repeatedly checked how well you are doing at meeting your standards (for example, by comparing your performance with that of others)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think that other people would have thought of you as a "perfectionist"?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you kept trying to meet your standards, even if this has meant that you have missed out on things?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you avoided any tests of your performance (at meeting your goals) in case you failed?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**For the following statements, please indicate to what extent you agree or disagree with the statement. Please be sure to read each statement carefully.**

	Strongly disagree	Disagree	Neither agree not disagree	Agree	Strongly agree
If I fail at work/school, I am a failure as a person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If someone does a task at work/school better than me, then I feel like I failed at the whole task	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I do not do well all the time, people will not respect me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The fewer mistakes I make, the more people will like me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I set higher goals for myself than most people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have extremely high goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people seem to accept lower standards from themselves than I do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect higher performance in my daily tasks than most people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Read each of the following statements carefully and indicate how characteristic it is of you according to the scale.**

	Not at all characteristic of me	Slightly characteristic of me	Moderately characteristic of me	Very characteristic of me	Extremely characteristic of me
I worry about what other people will think of me even when I know it doesn't make any difference.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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	Not at all characteristic of me	Slightly characteristic of me	Moderately characteristic of me	Very characteristic of me	Extremely characteristic of me
I am unconcerned even if I know people are forming an unfavourable impression of me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am frequently afraid of other people noticing my shortcomings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rarely worry about what kind of impression I am making on someone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am afraid others will not approve of me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am afraid that people will find fault with me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people's opinions of me do not bother me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am talking to someone, I worry about what they may be thinking about me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am usually worried about what kind of impression I make.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I know someone is judging me, it has little effect on me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sometimes I think I am too concerned with what other people think of me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often worry that I will say or do the wrong things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**IPIP-short**

**How much do you agree with each statement about you as you generally are now, not as you wish to be in the future?**

	Strongly agree	Neither agree nor disagree	Strongly disagree
Am the life of the party.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sympathize with others' feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Get chores done right away.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have frequent mood swings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have a vivid imagination.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Don't talk a lot.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am not interested in other people's problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Often forget to put things back in their proper place.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am relaxed most of the time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am not interested in abstract ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talk to a lot of different people at parties.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel others' emotions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Like order.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Get upset easily.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have difficulty understanding abstract ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Keep in the background.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am not really interested in others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make a mess of things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seldom feel blue.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do not have a good imagination.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

It is important for research that only valid responses are used. Would you recommend that your responses be used for this research? There will be no consequence for answering no to this question, because it is most important the data is valid

- Yes  
 No

**Contact details**

Please enter your name and student ID so we can award you points in SONA. These details will be removed from the data set after grades are ratified at the end of semester, at which point your responses to this survey will be anonymous.

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 Student ID

**Please enter your name and email address so we can contact you if you win a prize. These details will be removed from the data set after prizes are drawn.**

 Name: Email:

**Thank you for taking the time to complete this survey. We realize some of the questions might have raised some uncomfortable memories for some people. You might find the following resources helpful.**

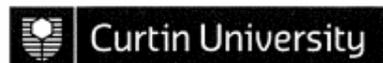
[Self injury fact sheet](#)

[Alcohol fact sheet](#)

[Stress management](#)

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## Appendix C

*Ethics approval letter (Chapter 5 dataset 2)***MEMORANDUM**

To:	Penelope Hasking School of Psychology and Speech Pathology
CC:	
From:	Dr Catherine Gangell, Manager Research Integrity
Subject	Ethics approval Approval number: RDHS-236-15
Date:	13-Oct-15

Office of Research and  
Development  
Human Research Ethics Office

TELEPHONE 9266 2784  
FACSIMILE 9266 3793  
EMAIL hrec@curtin.edu.au

Thank you for your application submitted to the Human Research Ethics Office for the project: 6455  
The experience and regulation of emotion

Your application has been approved through the low risk ethics approvals process at Curtin University.

Please note the following conditions of approval:

1. Approval is granted for a period of four years from **13-Oct-15** to **13-Oct-19**
2. Research must be conducted as stated in the approved protocol.
3. Any amendments to the approved protocol must be approved by the Ethics Office.
4. An annual progress report must be submitted to the Ethics Office annually, on the anniversary of approval.
5. All adverse events must be reported to the Ethics Office.
6. A completion report must be submitted to the Ethics Office on completion of the project.
7. Data must be stored in accordance with WAUSDA and Curtin University policy.
8. The Ethics Office may conduct a randomly identified audit of a proportion of research projects approved by the HREC.

Should you have any queries about the consideration of your project please contact the Ethics Support Officer for your faculty, or the Ethics Office at hrec@curtin.edu.au or on 9266 2784. All human research ethics forms and guidelines are available on the ethics website.

Yours sincerely

Dr Catherine Gangell  
Manager, Research Integrity

## Appendix D

: Example of the information sheet and consent used in Chapter 5 (dataset 2)

## PARTICIPANT INFORMATION SHEET

HREC Project Number:	<b>RDHS-236-15</b>
Project Title:	The experience and regulation of emotion
Principal Investigator:	Associate Professor Penelope Hasking Dr Mark Boyes
Version Number:	V2.0
Version Date:	August 2017

How we experience and regulate emotions is thought to play a crucial role in both psychological distress and mental health. The experience of emotion depends on the probability that an emotion is elicited in any given situation (reactivity), the intensity with which an emotion is felt (intensity) and how long the emotion is felt (perseveration). However there are no published studies exploring these different aspects of emotion in relation to outcomes such as self-injury or general psychological distress. In the current study we will explore these relationships to better understand how people experience and regulate emotion.

You are invited to take part in this study. Please read this Information Sheet in full before making a decision.

#### Why were you chosen for this research?

All undergraduate students enrolled in the Curtin University Psychology and Speech Pathology Undergraduate Participant Pool are eligible to participate.

#### What does the research involve?

You are invited to complete a questionnaire online that can be completed whenever you like. If you agree to participate, you will be asked questions about any experiences you have had with self-injury, and your general psychological wellbeing. You will also be asked about your belief in your ability to cope with stress and how you experience and regulate emotions.

Most people complete the questionnaire in between 45-60 minutes. It does not all need to be completed at once. You may come back to finish the questionnaire anytime within a 1 week period. After 1 week your responses will be lost and you will need to start the questionnaire again.

#### Possible benefits

While you may not personally benefit from participating in this study the results will help us further the theoretical understanding of emotion and emotion regulation, as well as emotion-related outcomes such as self-injury. This knowledge may identify potential targets for future intervention efforts.

Curtin students will be awarded 4 credit points if you answer at least 80% of the questions in the survey.

#### Possible risks

It is unlikely that participating in this study will incur any risks beyond normal day-to-day living. However some of the questions asked could trigger upsetting thoughts and memories for some people. Being in this study is voluntary and you are under no obligation to consent to participate. If you do consent to participate but later change your mind, you may withdraw from further participation by simply closing your browser. However data you have entered prior to closing the browser may still be used in the overall analyses.

If you do become upset at any stage while completing the questionnaire we suggest you take a break or stop the questionnaire. A list of useful resources is provided at the bottom of this information sheet, and at the end of the questionnaire.

#### Confidentiality

We will ask for your name and student ID number to allow us to match your responses to your record in SONA, allowing us to award you course credit. However after the grades have been ratified at the end of semester all identifying information will be removed from the data and we will no longer be able to identify any individual responses. From this point all data will be anonymous.

De-identified data may be placed in a public repository in future, made available to other researchers, or included

as material supplementary to published reports. No information that could identify any participant will ever be released to a third party or made public in any way.

#### Storage of data

Data collected will be stored in accordance with Curtin University regulations, kept on University premises, in a password protected file for 7 years. A report of the study may be submitted for publication, and data may be used to support student research projects (e.g. theses), but individual participants will not be identifiable in any report or student thesis.

#### Results

If you would like to be informed of the aggregate research finding, please contact Penelope.Hasking@curtin.edu.au in December 2018.

All research in Australia involving humans is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this research project have been approved by the Curtin University HREC. This project will be carried out according to the National Statement on Ethical Conduct in Human Research (2007). If you have any concerns and/or complaints about the project, the way it is being conducted or your rights as a research participant, and would like to speak to someone independent of the project, please contact: The Curtin University Ethics Committee by telephoning 9268 2784 or by emailing hrec@curtin.edu.au.

Below you will find some resources you might find helpful in managing stress or learning more about alcohol use and self-injury.

#### [Useful resources](#)

[Stress management](#)

[Alcohol fact sheet](#)

[Self injury fact sheet](#)

[A guide for young people](#)

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I have received information regarding this research and had an opportunity to ask questions. I believe I understand the purpose, extent and possible risks of my involvement in this project and I voluntarily consent to take part.

- I agree
- I do not agree

## Appendix E

*Ethics approval letter (Chapter 6 & 7)***Research Office at Curtin**

GPO Box U1987  
Perth Western Australia 6845

Telephone +61 8 9266 7863  
Facsimile +61 8 9266 3793  
Web [research.curtin.edu.au](http://research.curtin.edu.au)

18-Feb-2019

Name: Mark Boyes  
Department/School: School of Psychology  
Email: [Mark.Boyes@curtin.edu.au](mailto:Mark.Boyes@curtin.edu.au)

Dear Mark Boyes

**RE: Ethics approval**

**Approval number: HRE2019-0068**

Thank you for submitting your application to the Human Research Ethics Office for the project **The role of distress tolerance in non-suicidal self-injury**.

Your application was reviewed by the Curtin University Human Research Ethics Committee at their meeting on **05-Feb-2019**.

The review outcome is: **Approved**.

Your proposal meets the requirements described in National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research (2007)*.

Approval is granted for a period of one year from **18-Feb-2019** to **18-Feb-2020**. Continuation of approval will be granted on an annual basis following submission of an annual report.

Personnel authorised to work on this project:

Name	Role
Slabbert, Ashley	Student
Boyes, Mark	CI
Hasking, Penelope	Co-Inv

**Standard conditions of approval**

1. Research must be conducted according to the approved proposal
2. Report in a timely manner anything that might warrant review of ethical approval of the project including:
  - proposed changes to the approved proposal or conduct of the study
  - unanticipated problems that might affect continued ethical acceptability of the project
  - major deviations from the approved proposal and/or regulatory guidelines

- serious adverse events
3. Amendments to the proposal must be approved by the Human Research Ethics Office before they are implemented (except where an amendment is undertaken to eliminate an immediate risk to participants)
  4. An annual progress report must be submitted to the Human Research Ethics Office on or before the anniversary of approval and a completion report submitted on completion of the project
  5. Personnel working on this project must be adequately qualified by education, training and experience for their role, or supervised
  6. Personnel must disclose any actual or potential conflicts of interest, including any financial or other interest or affiliation, that bears on this project
  7. Changes to personnel working on this project must be reported to the Human Research Ethics Office
  8. Data and primary materials must be retained and stored in accordance with the [Western Australian University Sector Disposal Authority \(WAUSDA\)](#) and the [Curtin University Research Data and Primary Materials policy](#)
  9. Where practicable, results of the research should be made available to the research participants in a timely and clear manner
  10. Unless prohibited by contractual obligations, results of the research should be disseminated in a manner that will allow public scrutiny; the Human Research Ethics Office must be informed of any constraints on publication
  11. Ethics approval is dependent upon ongoing compliance of the research with the [Australian Code for the Responsible Conduct of Research](#), the [National Statement on Ethical Conduct in Human Research](#), applicable legal requirements, and with Curtin University policies, procedures and governance requirements
  12. The Human Research Ethics Office may conduct audits on a portion of approved projects.

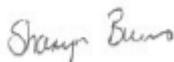
#### Special Conditions of Approval

Dear Sharyn, the researchers have responded and uploaded the approval document - it is good to go.

**This letter constitutes ethical approval only.** This project may not proceed until you have met all of the Curtin University research governance requirements.

Should you have any queries regarding consideration of your project, please contact the Ethics Support Officer for your faculty or the Ethics Office at [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au) or on 9266 2784.

Yours sincerely



Associate Professor Sharyn Burns  
Chair, Human Research Ethics Committee

## Appendix F

*Example of information sheet, consent, and questionnaires used in Chapter 6 and Chapter 7*



*Experiencing emotion and tolerating distress*

**PARTICIPANT INFORMATION STATEMENT**

<b>HREC Project Number:</b>	HRE2019-0068
<b>Project Title:</b>	<i>The experience of emotion and tolerating distress</i>
<b>Chief Investigator:</b>	<i>Dr Mark Boyes</i>
<b>Co-Investigators:</b>	<i>Associate Professor Penelope Hasking, Ashley Slabbert</i>
<b>Version Number:</b>	1
<b>Version Date:</b>	16/01/2019

**What is the Project About?**

Emotional experiences and the ability to tolerate distress, play a crucial role in psychological health. The aim of our study is to develop a task that assesses how people tolerate distress, and investigate how distress tolerance, as measured by this task, relates to mental health.

In this study, we will ask you to complete a survey about your mental health and the way you experience and manage emotions. We will also ask you to complete a computer task during which we will show you highly distressing images, including pictures of starving children, war scenes and other images of this nature. Example images are attached to this information sheet.

Please read this information sheet fully before consenting to participate in the study.

**Who is doing the Research?**

The project is being conducted by PhD student Ashley Slabbert who is supervised by Dr Mark Boyes and A/Prof Penelope Hasking. The results of this research project will be used by Ashley Slabbert to obtain a Doctor of Philosophy at Curtin University and is funded by the University. There will be no costs to you for participating in this project.

**What does participation involve?**

This is a two part study. Both parts will be completed at the same time in the PERL-C labs at Curtin University.

Part 1: If you agree to participate, you will first be asked to complete a series of online questionnaires about your emotional experiences. This will include questions about your belief in your ability to tolerate distress and how you experience and regulate emotions. We will also ask you about any experiences you have had with self-injury.

Part 2: After completing the online survey, you will be asked to complete a computer task. This task involves you viewing negative emotional images that can be distressing. Your task is to

### *Experiencing emotion and tolerating distress*

indicate when you first feel distress or discomfort when viewing the images (by pressing p on the keyboard) and if the distress becomes too much, to skip the image (by pressing q on the keyboard). After completing this task, you will be asked to view a humorous video. This study will take approximately 1 hour to complete.

#### **Are there any benefits' to being in the research project?**

You will receive \$15 for your participation in this study. Additionally, your participation in the current study will add to our knowledge about distress tolerance and how it might relate to self-injury. This knowledge may also benefit people in the future by informing prevention and treatment programs. It will also help us to produce a task that can be used by many researchers interested in assessing distress tolerance.

#### **Are there any risks, side-effects, discomforts or inconveniences from being in the research project?**

It is possible that some questions in the survey may trigger upsetting thoughts and memories for some individuals. Additionally, the task is designed to be distressing as it provides us with important information about how people tolerate distress. An important part of the task is the option to skip an image when you feel it is too distressing to continue viewing. Remember that taking part in this study is voluntary and you are not obliged to participate. If you do consent to participate but change your mind at any point, you can withdraw by simply closing the survey or calling the researcher when completing the computer task. However, any data collected prior to you withdrawing may be used in the overall analysis.

You will be provided with a list of counselling services and resources at the end of the study.

#### **Confidentiality and data access**

You will be provided with an ID number by the researcher. Therefore, all data will non-identifiable. The following people will have access to the information we collect in this research: the research team and, in the event of an audit or investigation, staff from the Curtin University Office of Research and Development. The information in this research is electronic and will be stored on a password-protected computer. Data in hard copy format will be stored in a locked filing cabinet, accessible only by the researchers. Anonymous data may be stored in an open access repository if required by a journal. The data we collect in this study will be kept under secure conditions at Curtin University for at least 7 years after the research has ended.

#### **Will you tell me the results of the research?**

The results from this study may be presented at a conference or published in a journal but you will not be identifiable in any publications or presentations. Non identifiable data may be placed in an open-access repository if this is a requirement by journals for publication. If you wish to have a copy of the final results or have any questions, please contact us after the 25/11/2019:

Ashley Slabbert: [Ashley.Slabbert@postgrad.curtin.edu.au](mailto:Ashley.Slabbert@postgrad.curtin.edu.au)

Mark Boyes: [Mark.Boyes@curtin.edu.au](mailto:Mark.Boyes@curtin.edu.au)

Penelope Hasking: [Penelope.Hasking@curtin.edu.au](mailto:Penelope.Hasking@curtin.edu.au)

Curtin University Human Research Ethics Committee (HREC) has approved this study (HRE2019-0068). Should you wish to discuss the study with someone not directly involved, in particular, any matters concerning the conduct of the study or your rights as a participant, or you wish to make a confidential complaint, you may contact the Ethics Officer on (08) 9266 9223 or the Manager, Research Integrity on (08) 9266 7093 or email [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au).

**Example images are presented on the next page.**

*Experiencing emotion and tolerating distress*

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Example Images



## Appendix G

*Mean image distress ratings from Study 4a (Chapter 6)**Mean image distress ratings from Study 4a*

IAPS image number	Mean distress rating
2095	3.1714
2352.2	4.7895
2800	3.3611
3000	6.5
3001	5.6053
3005.1	5.4872
3015	5.6216
3051	4.5128
3053	6.0769
3063	6.4872
3064	5.5
3080	5.8718
3100	5.2632
3102	5.6923
3120	4.7632
3140	4.3158
3150	5.9744
3170	4.575
3191	4.1471
3261	5.3684
3266	5.1026
3301	3.7297

3530	2.7879
6021	3.3611
6022	4
6350	2.9394
6415	5.7632
6540	2.4667
6560	2.5806
6563	2.3429
9040	4.2895
9075	3.8333
9181	4.25
9183	5
9187	5.1389
9301	2.8485
9325	4.1935
9405	5.0811
9410	5.2821
9412	3.2778
9443	3.8333
9570	4.2368
9635.1	3.8205
9921	3.6389
9940	2.6296

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## Appendix H

*Study 4a Distress Ratings across Time (T) Disaggregated by Gender**Study 4a Distress Ratings across Time (T) Disaggregated by Gender*

	Female		Male		<i>t</i>
	<i>M [95% CI]</i>	<i>SD</i>	<i>M [95% CI]</i>	<i>SD</i>	
VAS Distress Rating					
T1 <sup>a</sup>	1.08 [.58-1.58]	.25	.68[.18-1.18]	.25	1.20
VAS Distress Rating					
T2	3.48[2.70-4.26]	.39	2.36[1.58-3.14]	.39	2.03*
VAS Distress Rating					
T3	3.92[3.1-4.73]	.40	2.88[2.08-3.69]	.40	1.84
VAS Distress Rating					
T4	4.16[3.30-5.02]	.43	3.08[2.22-3.94]	.43	1.79
VAS Distress Rating					
T5	4.60[3.70-5.50]	.45	3.00[2.10-3.90]	.45	2.52*
VAS Distress Rating					
T6	4.52[3.63-5.41]	.44	3.20[2.31-4.09]	.44	2.10*

<sup>a</sup>T1: Prior to completing the EIT

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

## Appendix I

*Study 4a Visual Analogue Scale Distress Ratings Pairwise Comparisons**Study 4a Visual Analogue Scale Distress Ratings Pairwise Comparisons*

Time (I)	Time (J)	Mean Difference (I-J)	Std. Error	Sig.
1	2	-2.040	.239	.000
	3	-2.520	.267	.000
	4	-2.740	.290	.000
	5	-2.920	.290	.000
	6	-2.980	.292	.000
2	1	2.040	.239	.000
	3	-.480	.151	.038
	4	-.700	.179	.004
	5	-.880	.200	.001
	6	-.940	.231	.003
3	1	2.520	.267	.000
	2	.480	.151	.038
	4	-.220	.097	.417
	5	-.400	.156	.199
	6	-.460	.177	.188
4	1	2.740	.290	.000
	2	.700	.179	.004
	3	.220	.097	.417
	5	-.180	.138	1.000
	6	-.240	.148	1.000
5	1	2.920	.290	.000

	2	.880	.200	.001
	3	.400	.156	.199
	4	.180	.138	1.000
	6	-.060	.132	1.000
6	1	2.980	.292	.000
	2	.940	.231	.003
	3	.460	.177	.188
	4	.240	.148	1.000
	5	.060	.132	1.000

## Appendix J

*Study 4a Individual Differences Disaggregated by Gender**Study 4a Individual Differences Disaggregated by Gender*

	Female		Male		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Distress Tolerance	3.42	.59	3.55	.64	-.71
Intolerance of Uncertainty	63.24	14.73	56.24	15.56	1.63
Cognitive Reappraisal	5.35	.55	5.19	.80	.80
Expressive Suppression	3.50	1.34	3.95	1.25	-1.22
Difficulties in Emotion					
Regulation	71.95	12.77	74.92	15.29	-.75
Emotion Reactivity	51.16	13.93	42.29	14.55	2.20*
Experiential Avoidance	42.24	10.00	40.96	9.82	.46
Rumination	30.20	8.60	28.12	7.87	.89
Depression (DASS)	9.61	2.42	9.61	2.40	.00
Anxiety (DASS)	10.36	3.58	9.51	2.18	1.01
Stress (DASS)	13.00	3.87	11.84	2.30	1.29

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

## Appendix K

*Study 4b Task Stimulus Set**Study 4b Task Stimulus Set*

IAPS image number	Valence
1650	Positive
2216	Positive
3000	Negative
3001	Negative
3005.1	Negative
3015	Negative
3053	Negative
3063	Negative
3064	Negative
3080	Negative
3100	Negative
3102	Negative
3150	Negative
3261	Negative
4597	Positive
5130	Neutral
6415	Negative
7002	Neutral
7009	Neutral
7010	Neutral
7025	Neutral
7031	Neutral

7045	Neutral
7059	Neutral
7060	Neutral
7186	Neutral
7217	Neutral
7224	Neutral
7405	Positive
7502	Positive
7595	Neutral
7650	Positive
7950	Neutral
8030	Positive
8080	Positive
8116	Positive
8179	Positive
8185	Positive
8470	Positive
8492	Positive
8499	Positive
8501	Positive
9187	Negative
9260	Neutral
9405	Negative

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## Appendix L

*Study 4b Visual Analogue Scale (VAS) Distress Ratings across Time (T) Disaggregated by Gender*

*Study 4b Visual Analogue Scale (VAS) Distress Ratings across Time (T) Disaggregated by Gender*

	Female		Male		<i>t</i>
	<i>M</i> [95% <i>CI</i> ]	<i>SD</i>	<i>M</i> [95% <i>CI</i> ]	<i>SD</i>	
VAS Distress Rating					
T1 <sup>a</sup>	.56[.27-.85]	.15	.32[.03-.61]	.15	1.62
VAS Distress Rating					
T2	2.60[1.90-3.30]	.35	1.88[1.18-2.58]	.35	1.47
VAS Distress Rating					
T3	2.96[2.25-3.67]	.35	2.68[1.97-3.39]	.35	.57
VAS Distress Rating					
T4	2.96[2.37-3.55]	.30	2.32[1.73-2.91]	.30	1.53
VAS Distress Rating					
T5	3.16[2.38-3.94]	.39	2.68[1.90-3.46]	.39	.88
VAS Distress Rating					
T6	2.92[2.16-3.69]	.38	2.64[1.88-3.41]	.38	.52

<sup>a</sup>T1: Prior to completing the EIT

## Appendix M

*Study 4b Visual Analogue Scale Distress Ratings Pairwise Comparisons**Study 4b Visual Analogue Scale Distress Ratings Pairwise Comparisons*

Time (I)	Time (J)	Mean Difference (I-J)	Std. Error	Sig.
1	2	-1.800	.237	.000
	3	-2.380	.233	.000
	4	-2.200	.204	.000
	5	-2.480	.278	.000
	6	-2.340	.266	.000
2	1	1.800	.237	.000
	3	-.580	.175	.027
	4	-.400	.206	.872
	5	-.680	.216	.043
	6	-.540	.257	.609
3	1	2.380	.233	.000
	2	.580	.175	.027
	4	.180	.173	1.000
	5	-.100	.214	1.000
	6	.040	.218	1.000
4	1	2.200	.204	.000
	2	.400	.206	.872
	3	-.180	.173	1.000
	5	-.280	.202	1.000
	6	-.140	.181	1.000
5	1	2.480	.278	.000
	2	.680	.216	.043
	3	.100	.214	1.000

	4	.280	.202	1.000
	6	.140	.229	1.000
6	1	2.340	.266	.000
	2	.540	.257	.609
	3	-.040	.218	1.000
	4	.140	.181	1.000
	5	-.140	.229	1.000

## Appendix N

*Study 4b Individual Differences Disaggregated by Gender**Study 4b Individual Differences Disaggregated by Gender*

	Female		Male		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Distress Tolerance	3.58	.57	3.64	.68	-.35
Intolerance of Uncertainty	59.12	20.07	55.72	16.52	.65
Cognitive Reappraisal	5.09	.51	5.28	1.08	-.80
Expressive Suppression	3.44	1.19	4.45	1.41	-2.75*
Difficulties in Emotion Regulation	76.32	18.17	79.29	17.12	-.60
Emotion Reactivity	49.51	13.44	47.79	16.33	.41
Experiential Avoidance	43.12	8.87	43.40	11.97	-.09
Rumination	27.08	9.10	29.80	7.83	-1.13
Depression (DASS)	9.52	2.71	10.12	3.37	-.69
Anxiety (DASS)	8.93	2.60	10.12	2.62	-1.61
Stress (DASS)	11.48	3.03	12.92	3.17	-1.64

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