

School of Psychology

**Applying a Cognitive-Emotional Model to
Nonsuicidal Self-Injury**

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Doctor of Philosophy
of
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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 March 2014. The proposed research study received human research ethics approval from the Curtin University Human Research Ethics Committee (EC00262): Approval numbers HRE2017-0048; HRE2017-0156; HRE2017-0649; and HRE2018-0536.

Signature:

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2. **Dawkins, J.**, Hasking, P., & Boyes, M. (2018). Interactions between self-efficacy and outcome expectancies when differentiating recent and past nonsuicidal self-injury. *International society for the study of self-injury, Conference presentation. (Belgium)*
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Summary/Abstract

People who self-injure most commonly report using self-injury to regulate their emotions. As such, much of our understanding of self-injury is based in the experience and regulation of emotion. However, previous models used to understand nonsuicidal self-injury (NSSI) do not consider the possible role of specific thoughts and beliefs about self-injury. The recently proposed Cognitive-Emotional Model of Nonsuicidal Self-Injury (Hasking, Whitlock, Voon and Rose, 2017) draws on Social Cognitive Theory (Bandura, 1986) to include the role of NSSI-related outcome expectancies and self-efficacy to resist NSSI in understanding nonsuicidal self-injury. The aim of this thesis was to explore the role of these specific thoughts and beliefs about self-injury, alongside emotional experience, in understanding NSSI. The six studies presented in this thesis use a variety of methodologies (i.e. quantitative, qualitative, and experimental) to address this aim.

The role of NSSI specific cognitions were explored in the first three studies using the Cognitive-Emotional Model of NSSI and Social Cognitive Theory as theoretical frameworks. In these studies, university students completed self-report measures online and the quantitative data were modelled using regression-based approaches. In study 1 ($n = 647$) NSSI-specific thoughts differentiated participants with different experiences of NSSI (no history, any history, self-injury in the past 12 months), and moderated relationships between emotional reactivity and history of NSSI. In the second study ($n = 516$), interactions between NSSI-related outcome expectancies and self-efficacy to resist NSSI were assessed. Self-efficacy to resist NSSI was negatively associated with NSSI and also moderated associations between outcome expectancies and history of NSSI. In the third study ($n = 669$) I drew on Social Cognitive Theory to explore possible origins of expectancy beliefs. I found that people who knew their parents had a history of self-injury were three times more likely to have a history of self-injury and this association was explained in part by NSSI related-outcome expectancies.

Across Studies 1-3 participants with a history of self-injury held stronger expectations that NSSI would result in affect regulation, while people without a history of NSSI expected self-injury to result in more pain and communication and care from other people. Self-efficacy to resist NSSI moderated these relationships, such that people who reported heightened emotional reactivity or affect regulation

outcome expectancies were only more likely to self-injure if they did not believe they could resist an urge to self-injure.

The fourth study describes the development and validation of a behaviour-specific measure of self-efficacy to resist NSSI (the Self Efficacy to Resist Self-Injury Scale). Qualitative methods were used to develop items through interviews with people with lived experience ($n = 10$) and people considered experts in the field of self-injury ($n = 9$). Factor analysis ($n = 650$) identified three contexts in which self-efficacy may vary: contexts in which it would be perceivably difficult to resist self-injury in (i.e. risk contexts); contexts in which it may be easier to resist self-injury (i.e. protective contexts); and contexts in which people are reminded of self-injury. Psychometric analyses established the internal consistency and validity of the new measure, and also established measurement invariance across individuals with and without a history of self-injury.

In the fifth study ($n = 501$), this new questionnaire was used to investigate how expectancies and self-efficacy work together in different contexts in predicting NSSI. Self-efficacy to resist NSSI in both “risk contexts” and “protective contexts” differentiated individuals with different histories of NSSI, and moderated associations between outcome expectancies and recent engagement in NSSI. For example, as might be expected, participants who did not believe self-injuring would elicit negative self-beliefs were more likely to have recently self-injured, but this was only the case at low levels of self-efficacy to resist NSSI when in “protective contexts”. Overall, the findings from Study 5 were consistent with those from Studies 1-3, with both outcome expectancies and context specific self-efficacy to resist self-injury identified as important correlates of NSSI history.

In the final study ($n = 150$), experimental methods are used to explore implicit NSSI-related outcome expectancies. Differences in implicit pain and affect regulation expectancies were observed between individuals with different histories of NSSI. Additionally, implicit affect regulation expectancies appear to be more sensitive than explicit expectancies in that they could differentiate participants with a recent history of self-injury from participants with any history of self-injury. To date, the self-report measure of outcome expectancies has not been able to distinguish these two groups.

Overall, results of the six studies suggest a role for specific NSSI-related cognitions in understanding self-injurious behaviour. Findings provide further

understanding of NSSI in the context of Social Cognitive Theory and the Cognitive-Emotional Model of NSSI. Future research exploring the Cognitive-Emotional Model of NSSI will be expanded through the use of the new measure of self-efficacy to resist NSSI and the availability of a measure of implicit NSSI-related outcome expectancies. In clinical settings, it is possible that both NSSI-related outcome expectancies and self-efficacy to resist NSSI could play an important role in prevention and intervention programs. Additionally, with future research could investigate whether change in self-efficacy to resist NSSI is useful in assessing treatment outcomes.

Author's note

This thesis is presented as a hybrid thesis which includes papers which 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 collaboratively at the end of the thesis to increase cohesiveness.

Chapter results are derived from four data sets. In Chapters 4 and 5 the same data set is used and in chapters 6 and 7 the same data set is used. Some differences in participant numbers and descriptive statistics across studies using the same data sets are a result removing participants who have not completed the related measures for the target study.

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Chapter 1: Introduction to Thesis

In this thesis I examine variables and relationships proposed within the Cognitive-Emotional Model of Nonsuicidal Self-Injury (Hasking et al., 2017). Hasking et al. (2017) draw on Social Cognitive Theory (Bandura, 1986; 1997) and emotion-oriented models of self-injury (e.g. Gross' Process Model, Emotional Cascade Model) to include self-injury-specific cognitions, alongside the experience and regulation of emotion, in understanding the onset, maintenance, and cessation of nonsuicidal self-injury (NSSI).

Given emotion regulation is the most commonly endorsed function of NSSI (Taylor et al., 2018), theoretical accounts of self-injurious behaviour have typically been grounded in understanding the experience and regulation of emotion (e.g. Gratz & Roemer, 2004; Gross, 1998). However, within Social Cognitive Theory, Bandura (1986) proposed several cognitive factors which may influence our motivation to engage in different behaviours. These include the anticipated consequences of a behaviour (outcome expectancies) and our belief in our ability to successfully engage in a behaviour (self-efficacy expectancies). According to Bandura we are more likely to engage in a behaviour if we believe it will result in a desirable outcome than if we anticipate an unwanted consequence. We are also more likely to engage in behaviour which we believe we will be successful in completing. Additionally, we can hold self-efficacy beliefs about resisting an unwanted behaviour (e.g., refusing an alcoholic drink). With regard to NSSI, we can consider how confident an individual is that they could resist engaging in self-injury given different situations.

In developing the Cognitive-Emotional Model of NSSI, Hasking et al. (2017) considered the experience and regulation of emotion as well as specific thoughts and beliefs about self-injury (i.e. NSSI-related outcome expectancies, self-efficacy to resist NSSI) in understanding NSSI. In line with Social Cognitive Theory (Bandura, 1986; 1997), the model suggests that people are more likely to engage in self-injury if they believe it will result in a desirable outcome and do not believe they can resist self-injury. This is supported by preliminary studies suggesting that people with a history of self-injury have stronger expectations that NSSI will result in affect regulation, weaker expectations of pain, and have less confidence that they could resist NSSI than people who have never engaged in the behaviour (Hasking, 2017; Hasking & Boyes, 2017; Hasking & Rose, 2016).

Aims and Outline of the Thesis

The overarching objective of this research program is to examine the proposed role of specific cognitions about NSSI (i.e. NSSI-related outcome expectancies, self-efficacy to resist NSSI) in understanding NSSI, as theorised within the Cognitive-Emotional Model of Nonsuicidal Self-Injury (Hasking et al., 2017). To understand these cognitions I worked within a Social Cognitive Theory (Bandura, 1986; 1997) framework to further knowledge about how NSSI-related outcome expectancies and self-efficacy to resist NSSI relate to each other, and how they may be associated with social learning. The secondary aim was to enhance the measurement of NSSI-related outcome expectancies and self-efficacy to resist NSSI. To do this, a behaviour-specific measure of self-efficacy to resist NSSI was developed and implicit associations with NSSI-related outcome expectancies assessed. In total this thesis comprises nine chapters (including this introductory chapter) which are summarised here:

Chapter 2 is a literature review, which introduces and outlines each of the key concepts addressed in this thesis. First, an overall summary of NSSI, its prevalence, and functions is presented. Second, models used to explain NSSI are described and the evidence supporting these is synthesised. Third, a summary of Social Cognitive Theory (Bandura, 1986; 1997) is provided with a focus on expectancy beliefs (i.e. outcome expectancies, self-efficacy) and how they apply to NSSI. Finally, a summary of the Cognitive-Emotional Model of NSSI (Hasking et al., 2017) is provided as the framework for how NSSI-specific cognitions may develop our understanding of NSSI. This forms the theoretical framework for the empirical chapters that follow.

Chapter 3 presents the first study: *Applying a cognitive-emotional model to nonsuicidal self-injury* which addressed the overarching aim by testing an initial proposal of the Cognitive-Emotional Model of NSSI (Hasking et al., 2017) that the relationship between emotional reactivity and history of NSSI differs depending on participants' NSSI-related outcome expectancies, self-efficacy to resist NSSI, emotion regulation strategies, and rumination.

Chapter 4 comprises the second study: *Thoughts and Beliefs about nonsuicidal self-injury: An application of Social Cognitive Theory*. To further understanding of NSSI-specific cognitions I focussed on the assertion of Social Cognitive (Bandura, 1986) that outcome expectancies and self-efficacy beliefs work

together in predicting behaviour. In this chapter, interactions between NSSI-specific cognitions (i.e. NSSI outcome expectancies, self-efficacy to resist NSSI) are examined. Specifically, the aim was to explore whether the relationships between NSSI-related outcome expectancies and NSSI history differed depending on the strength of people's self-efficacy to resist NSSI.

Chapter 5 includes the third study: *Knowledge of parental self-injury in young people who self-injure: The mediating role of outcome expectancies*. Within this study I drew on Social Cognitive literature related to the intergenerational transference of behaviours such as risky drinking behaviour. Previous studies identified that parents' engagement in a behaviour, as well as their behaviour-specific outcome expectancies and self-efficacy beliefs, were associated with their child's outcome expectancy and self-efficacy beliefs, and in turn whether their child engages in the behaviour (Campbell & Oei, 2010b; Dowling et al., 2018). In this study I assessed whether knowledge of a parent engaging in self-injury was associated with a history of self-injury among young adults, and whether this relationship was mediated by NSSI-related outcome expectancies.

Chapter 6 details the fourth study: *Development and validation of the Self-Efficacy to Resist NSSI Scale*. Within the previous chapters, an adapted measure of self-efficacy to resist suicide was used to broadly assess self-efficacy to resist NSSI. Bandura stressed the importance of developing behaviour-specific measures that tap into related contexts which may influence self-efficacy. In this study I address the secondary aim of the thesis by detailing the development and validation of a behaviour-specific measure of self-efficacy to resist NSSI. The resulting measure assesses three contexts in which self-efficacy to resist NSSI may vary: contexts in which it is difficult to resist self-injury; contexts in which it is easier to resist self-injury; and contexts where people are reminded of NSSI.

Chapter 7 presents the fifth study: *Applying Social Cognitive Theory to nonsuicidal self-injury: Interactions between expectancy beliefs*. Within this chapter I applied the new measure of self-efficacy to resist NSSI developed in Chapter 6 to the overarching aim of examining the roles of NSSI-related outcome expectancies and self-efficacy to resist NSSI in understanding self-injury. Building on Chapter 4, this chapter assesses how self-efficacy to resist NSSI, across contexts, moderates the relationships between NSSI-related outcome expectancies and self-injurious thoughts and behaviours. In this study, differences were examined across people with no

history of NSSI, people who had experienced NSSI ideation, people who had self-injured but not in the past 12 months, and people who had recently self-injured (in the past 12 months).

Chapter 8 includes the sixth study: *Implicit assessment of self-injury related outcome expectancies: A comparison of three behavioural tasks*. In the final study, I turn to implicit measures of NSSI-related outcome expectancies which allows access to beliefs participants may not have insight into, and minimises social desirability bias. I assessed three measures of implicit NSSI-related outcome expectancies, adapted from the alcohol and learning literatures.

Chapter 9 concludes the thesis with a general discussion of the findings of the thesis, implications for theory, research, and clinical practice, limitations and future research, finishing with an overall conclusion.

Chapter 2: Literature review

In chapter two I review literature related to the major topics examined in this thesis. The chapter begins with background into nonsuicidal self-injury (NSSI) and the models used to explain the behaviour. Then Social Cognitive Theory (Bandura, 1986) is explored with particular attention to two cognitive processes (i.e. self-efficacy and outcome expectancies) relevant to NSSI. Finally, the chapter concludes with a summary of the proposed Cognitive-Emotional Model of NSSI (Hasking et al., 2017).

Nonsuicidal self-injury

What is NSSI?

Self-injurious thoughts and behaviours include thinking about and engaging in behaviours that cause damage to oneself with or without intending to suicide (Nock & Favazza, 2009). Likewise the terms “self-harm” and “deliberate self-harm” refer to both suicidal and non-suicidal behaviours. Nonsuicidal self-injury (NSSI) specifically refers to the intentional and direct self-inflicted damage to one’s own body without suicidal intent (International Society for the Study of Self-Injury [ISSS], 2020). Cutting is the most commonly reported method of self-injury (Bresin & Schoenleber, 2015), but NSSI includes other behaviours such as burning, biting, pinching, scratching, and wound interference (Swannell, Martin, Page, Hasking, & St John, 2014). Many people who self-injure report using multiple methods to injure themselves (Swannell et al., 2014).

To be considered NSSI, an injury must result from a deliberate behaviour engaged in with the intent to cause physical harm (ISSS, 2020). It does not include behaviours which result in accidental injury or risk taking behaviours which are likely to cause harm, such as reckless driving. The damage resulting from the behaviour must also be direct (e.g. cutting or burning the skin), and not harm which builds up over time, such as the harm caused by cigarette smoking. The extent of the inflicted harm can vary significantly between individuals but the behaviour must be engaged in without the expectation or intention to suicide. Culturally or religiously sanctioned body modification, such as body piercing or tattooing, are not considered self-injury (ISSS, 2020). NSSI also does not include behaviours which are considered a symptom of another diagnosis such as trichotillomania or excoriation. Likewise, stereotypic self-injurious behaviours seen among individuals with

developmental or neuropsychiatric disorders (e.g. autism spectrum disorder, Lesch-Nyhan syndrome) are not considered NSSI (Nock & Favazza, 2009).

NSSI differs from suicidal behaviours in intent, method, severity, and function (Muehlenkamp & Gutierrez, 2004). Primarily they are differentiated by suicidal intent, however there is often difficulty in differentiating NSSI from a suicide attempt (Andover, Morris, Wren, & Bruzzese, 2012). While suicide attempts generally do not occur frequently, NSSI often occurs more frequently, using multiple methods which are low in lethality (Muehlenkamp & Gutierrez, 2004). The function of the behaviours also differ, as NSSI is often engaged in as a way to “get through” a distressing situation, resulting in a feeling of relief, while suicide and suicide attempt are associated with feelings of hopelessness and thoughts of death or dying. Although NSSI is a distinct behaviour from suicidal behaviour, it is associated with future suicidal ideation and suicide attempts (Hamza & Willoughby, 2016; Kiekens et al., 2018a; Whitlock et al., 2013).

Initially NSSI was solely considered as a diagnostic criteria for Borderline Personality Disorder (Selby, Bender, Gordon, Nock, & Joiner, 2012). However, NSSI is prevalent in many diagnoses including mood disorders, post-traumatic stress disorder, eating disorders, and anxiety disorders (Bentley, Cassiello-Robbins, Vittorio, Sauer-Zavala, & Barlow, 2015; Cipriano, Cella, & Cotrufo, 2017; Kiekens et al., 2018b). Considering the transdiagnostic nature of NSSI, Nonsuicidal Self-Injury Disorder (NSSI-D) has been included in the Diagnostic and Statistical Manual of Mental Disorders 5th Edition, as a Condition Requiring Further Study (American Psychiatric Association, 2013). The proposed criteria for NSSI-D include having engaged in NSSI on five or more days in the past 12 months and NSSI being engaged in with an expectation of fulfilling an interpersonal or intrapersonal function.

Prevalence of NSSI

In clinical samples, up to 60% of adolescents (Glenn & Klonsky, 2013), and 18% of adults (Polanco-Roman, Tsypes, Soffer & Miranda, 2014) report a history of self-injury. However, NSSI is also prevalent in non-clinical samples; approximately 5% of adults, 13% of young adults and 17% of adolescents report a history of NSSI (Swannell et al., 2014). The typical age of NSSI onset is between 13-16 years old, with earlier onset being linked to more severe and frequent NSSI (Ammerman, Jacobucci, Kleiman, Uyeji, & McClonsky, 2017; Muehlenkamp, Xhunga, &

Brausch, 2019). A recent study of NSSI across cohorts has indicated a significant rise in reported lifetime history of NSSI and recent engagement in self-injury over a seven year period (Wester, Trepal, & King, 2017). When considering gender differences in the prevalence of NSSI, results have been inconsistent. In their meta-analysis, Bresin and Schoenleber (2015) reported that females are more likely to report engaging in self-injury than males. The gender difference was found to be larger in clinical populations (OR 1.5) than community samples (OR 1.2). Bresin and Schoenleber (2015) also found gender differences in the prevalence of NSSI methods. Cutting was the most commonly reported method of self-injury for males and females however, females were more likely to engage in cutting, biting, scratching, wound interference, and pulling hair than males, with similar prevalence rates for other NSSI methods.

NSSI among university students

Emerging adulthood is a unique life transition period with physical, social, and neurological changes coinciding with uncertainty about the future, and an increase in autonomy and responsibility (Arnett, 2000). University comes with the additional pressures of financial stress, academic concerns, and changes in social groups, making this a risk period for declines in wellbeing and mental health in university students (Kwan, Arbour-Nicitopoulos, Duka, & Faulkner, 2016). Among university students, prevalence rates of NSSI between 5-47% have been reported with a pooled estimate of 20% indicating that university students may be more likely to self-injure than young adults who do not attend university (Swannell et al., 2014). While the typical age of NSSI onset is around 14 years old, recent research has found a second peak age of onset at around 20-24 years (Gandhi et al., 2018). Kiekens et al (2019) also found that approximately 15% of university students begin to engage in NSSI during the first two years of enrolment with almost half of these students engaging in NSSI repetitively (>5 times per year). People who persistently engage in NSSI throughout university are at increased risk of experiencing negative psychosocial and academic outcomes compared to their peers (Bruffaerts et al., 2018; Hamza & Willoughby, 2014; Kiekens et al., 2016). Additionally, among university students, a history of self-injury is a significant predictor of subsequent suicidal thoughts and behaviours, over and above the effect of any mental illness diagnoses (Kiekens et al., 2018). The prevalence and onset of NSSI in university students, and

the negative outcomes associated with NSSI, highlight the need for further research within this population.

Functions of NSSI

Considering the perplexing nature of nonsuicidal self-injury it is important to understand what functions these behaviours can serve. Nock and Prinstein (2004) initially identified four primary functions of self-injury which fell along two dimensions: implications (intrapersonal or interpersonal) and reinforcement (positive or negative; Figure 2.1). Intrapersonal negative reinforcement is using NSSI to reduce an aversive emotional or arousal state. Intrapersonal positive reinforcement includes engaging in NSSI to elicit feelings or sensations such as when individuals use NSSI as a method of anti-dissociation. Interpersonal negative reinforcement includes engaging in self-injury to avoid an undesirable social situation whereas interpersonal positive reinforcement is engaging in self-injury to elicit a response (e.g. care, help) from another person.

	Intrapersonal (automatic)	Interpersonal (social)
Positive reinforcement	e.g. Anti-dissociation	e.g. Eliciting care from other people
Negative reinforcement	e.g. Regulate unwanted emotional experiences	e.g. avoid social situations

Figure 2.1. The Four Function Model of Nonsuicidal Self-Injury.

In a review of the literature Klonsky (2007) identified seven functions of NSSI: affect regulation; anti-dissociation; anti-suicide; interpersonal boundaries; interpersonal influence; self-punishment; sensation-seeking, with varying amounts of empirical evidence. Klonsky and Glenn (2009) identified an additional five more functions from discussions with experts and review of online content from people who self-injure. Consistent with Nock and Prinstein's (2004) initial

conceptualisation, these 13 identified functions have fit into a two factor structure: intrapersonal functions (e.g. affect regulation, anti-dissociation) and interpersonal (e.g. interpersonal influence, peer bonding; Bentley, Nock, & Barlow, 2014; Klonsky, Glenn, Styer, Olinio, & Washburn, 2015).

People who have engaged in self-injury often report using self-injury for different functions at different times (Klonsky & Glenn, 2009; Nock & Prinstein, 2004). Recently Taylor et al. (2018) conducted a meta-analysis of the prevalence of NSSI functions. Intrapersonal functions were found to be reported by 66%-81% of individuals. Among intrapersonal functions, affect regulation was the most commonly reported function (66-81%) with sensation seeking and self-punishment less endorsed but still reported by around 50% of participants. Interpersonal functions such as increasing social support or influencing the behaviour of others were found to be less common (32-56%). Of the interpersonal functions, the communication of distress was most commonly reported and engaging in NSSI as an act of revenge was the least often reported interpersonal function.

As affect regulation is the most commonly reported reason for engaging in NSSI there has been a great body of research exploring the role of emotions and emotion regulation in NSSI. Empirical evidence indicates that difficulties with emotion regulation (Gratz & Roemer, 2004; 2008) and the use of specific emotion regulation strategies (e.g. expressive suppression, cognitive reappraisal; Hasking, Momeni, Swannell, & Chia, 2008; Williams & Hasking, 2010) is associated with NSSI history. Considering these well established relationships, models used to explain the onset and maintenance of NSSI are primarily emotion focussed.

Current models used to explain NSSI

There are several emotion focussed models which have been applied to NSSI or developed specifically to explain self-injury. Due to the common emotion regulation function of NSSI, emotion focussed models such as Gross' (1998) Process Model of Emotion Regulation and Gratz and Roemer's (2004) Difficulties with Emotion Regulation Model have been used to explain NSSI. Other models designed to explain dysregulated behaviours (Experiential Avoidance Model; Chapman, Gratz, & Brown, 2006) and the development of borderline personality disorder (Emotional Cascade Model; Selby et al., 2008) have also been applied to NSSI. These models have been used to help understand the onset, maintenance, and cessation of NSSI.

Here, the constructs which comprise each model will be described and the evidence presented.

Gross' process model

Gross' Process Model of Emotion Regulation was built on the Modal Model of Emotion (Gross, 1998). According to the Modal Model of Emotion, emotions are elicited when there is a *situation* (internal or external) which is *attended* to by the individual that is *appraised* to have meaning or consequence for their goals and this informs the *response*. An emotional response is likely to impact the situation which elicited it, perhaps eliciting a change in appraisal and a future response. According to Gross' Process Model each step in the Modal Model is a potential target for emotion regulation (Figure 2.2). There are five types of emotion regulation strategies that can be used across the situation-attention-appraisal-response sequence to increase or decrease negative or positive emotions: selection of the situation; modification of the situation; choosing what to attend to; changing cognitions; and modulating the response.

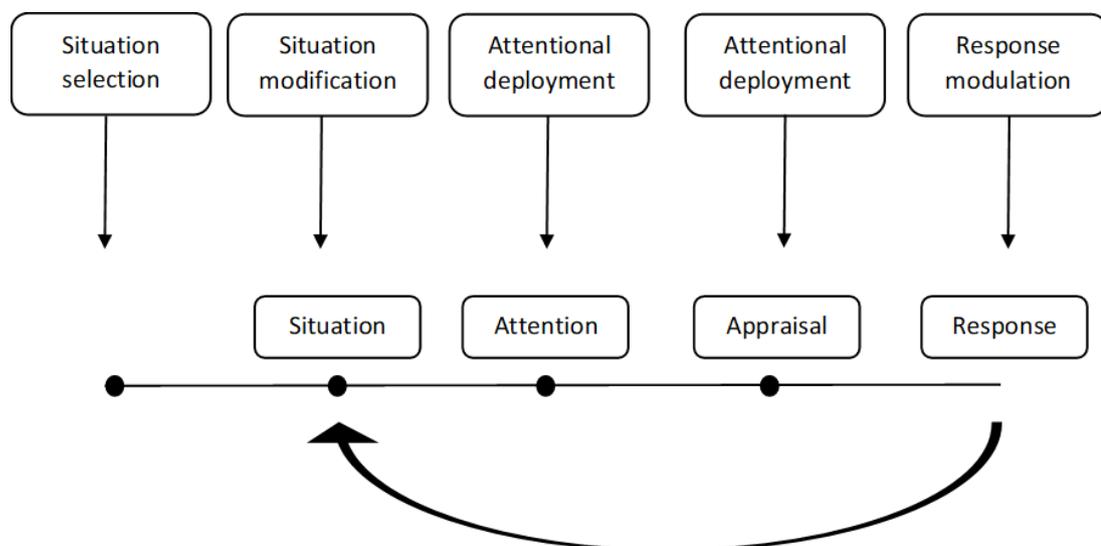


Figure 2.2. Process model of emotion regulation.

The five emotion regulation strategies proposed in the model can be considered in terms of whether they occur before the emotional response (i.e. antecedent-focused; the first four strategies) or after the emotion is generated (i.e. response-focused; the final strategy response modulation; Gross, 1998). Situation selection occurs before engaging in a situation by choosing to engage in situations

which will avoid or elicit certain emotional responses. Once in a situation, emotions can be regulated through situation modification. Emotions can also be regulated through what individuals choose to pay attention to or move attention away from. Cognitive change involves reappraising the situation in a way that influences the emotional response. Once a response has been elicited, response modulation can be used to change or suppresses an emotion (e.g. not laughing when a child is misbehaving). Extending on the process model, Gross (2015) included three sub-steps of emotion regulation for each of the strategies: identification of an emotion needed to be regulated, selection of a strategy to regulate that emotion, and the implementation/evaluation of that strategy.

Research based on the process model has primarily focussed on two emotion regulation strategies: cognitive reappraisal (cognitive change) and expressive suppression (response modulation). Overall, the use of cognitive reappraisal to regulate emotions is associated with better psychological health and well-being than using expressive suppression (Gross & John, 2003; John & Gross, 2004). This could be because cognitive reappraisal is related to increased positive emotions, and reduced negative emotions and distress, while expressive suppression is associated with heightened physiological response (Gross, 1998). However, Gross (2014) also highlights that there are times when expressive suppression may be more adaptive than cognitive reappraisal due to the intensity of the emotion and the context. People generally find cognitive reappraisal useful in situations where emotions are less intense, whereas when emotional reactivity is more intense then cognitive appraisal is less useful and distraction or suppression may be more adaptive.

The Process Model of Emotion Regulation has been applied to NSSI in terms of how NSSI can be used as any of the five emotion regulation strategies proposed by the model (Andover & Morris, 2014; McKenzie & Gross, 2014). It is proposed that NSSI can be used in situation selection as a way to avoid unwanted situations. Self-injury can also be used to modulate a situation by eliciting a response from other people. With regard to attentional deployment, self-injury can be used as a way to distract from emotional pain. McKenzie and Gross (2014) suggest that the use of self-injury as self-punishment is a form of cognitive change as it allows individuals to relieve guilt by punishing themselves. Finally, NSSI can be used to modulate an emotional experience by relieving distress or eliciting a positive emotional response.

A meta-analysis exploring emotion regulation and NSSI which included multiple measures of emotion regulation, revealed that less use of cognitive reappraisal and more use of expressive suppression was associated with a history of NSSI (Wolff et al., 2019). Greater use of cognitive reappraisal is also associated with less severe and frequent NSSI over time (Voon, Hasking, & Martin, 2014a; 2014b). It is likely that trying to suppress negative emotions results in an increase in arousal at which point the use of behavioural regulation strategies such as NSSI may be used. Additionally, the relationship between psychological distress (i.e. depression, anxiety, stress) and engagement in NSSI is mediated by difficulties with cognitive reappraisal. The relationship between stress and history of NSSI was mediated by the use of expressive suppression (Richmond, Hasking, & Meaney, 2017). In an experimental study, Davis et al. (2014) found that people with a history of self-injury had lower ability to use cognitive reappraisal, as assessed through brain activation, when participants were instructed to reappraise while watching a sad film clip.

Difficulties in emotion regulation

Gratz and Roemer's (2004) model emphasises emotion regulation as a multidimensional concept which expands beyond modulating an emotional response. Drawing on previous research into the experience and regulation of emotion, Gratz and Roemer (2004) highlight that you need to be aware of and understand your emotions in order to regulate them. Likewise, the importance of acceptance of emotions, as opposed to trying to control them through suppression or avoidance, is seen as crucial in successful emotion regulation. Additionally, Gratz and Roemer (2004) suggest that having a variety of emotion regulation strategies available, that can be used flexibly dependent on the context, is a sign of adaptive emotion regulation. Finally, the importance of being able to simultaneously inhibit impulsive behaviour while engaging in goal directed behaviour through difficult emotional experiences is an important aspect of emotion regulation. According to Gratz and Roemer (2004), absence of any number of these factor indicates that an individual has difficulties with regulating their emotions.

Wolff et al. (2019) recently explored the extent to which a common measure of these constructs (Difficulties with Emotion Regulation Scale [DERS]; Gratz & Roemer, 2004) could differentiate people with and without a history of NSSI. NSSI was associated with overall difficulties with emotion regulation as well as each of the subscales of the DERS (i.e. lack of emotion awareness, lack of emotional clarity,

difficulties engaging in goal-directed behaviour, impulse control difficulties, non-acceptance of emotional responses, and limited access to emotion regulation strategies; Wolff et al., 2019). Having limited regulation strategies available and having negative responses to unpleasant emotional experiences (non-acceptance of emotions) had the strongest associations with NSSI (Wolff et al., 2019). Zerkowicz, Cole, Han, and Tomarken (2016) found that when assessing the relationship between emotion regulation measures and NSSI, the only component of emotion regulation which accounted for unique variance when predicting history of NSSI was the availability of emotion regulation strategies. This suggests having alternate strategies that can effectively be used to regulate emotions is most strongly associated with whether an individual uses NSSI in that situation. Arguably, having a limited availability of emotion regulation strategies makes NSSI a more viable option. This also aligns with findings that suggest that having multiple emotion regulation strategies is an important consideration in the treatment of NSSI (Perez, Venta, Garnaat, & Sharp, 2012). Fostering a range of emotion regulation strategies in clients increases their options when they want to regulate their emotional experience in different contexts.

The importance of emotional awareness, understanding, and acceptance of emotions in differentiating NSSI history is reflected in the relationship between alexithymia and NSSI (Greene, Hasking, & Boyes, 2020). Alexithymia comprises three components: difficulty identifying and differentiating between emotions; difficulties describing and communicating emotions; and externally orientated thinking (Bagby, Parker, & Taylor, 1994). These constructs closely reflect the awareness and understanding of emotion as proposed by Gratz and Roemer's (2004) the model. In a recent meta-analysis Greene et al. (2020) found that engagement in NSSI was associated with difficulty identifying and describing emotions but not externally oriented thinking. If an individual does focus on internal sensations, but has difficulty identifying and understanding the emotion associated with those sensations, it would be difficult to regulate that sensation and self-injury can be used to diminish the physiological response without needing to identify or communicate the emotion.

The association between NSSI and an inability to control impulsive behaviours, paired with difficulties engaging in goal directed behaviour when under emotional distress, is consistent with self-report studies that people with a history of

self-injury report being more impulsive than people with no history of NSSI (Hamza, Willoughby, & Heffer, 2015). However, experimental studies find no differences in impulse control between people with and without a history of NSSI (Hamza et al., 2015). Results from studies utilising self-report and experimental measures reflect these overall findings (Glenn & Klonsky, 2010; Janis & Nock, 2009). Janis and Nock (2009) suggest that this discrepancy may be due to individuals with a history of self-injury referencing their engagement in self-injury as evidence that they are impulsive. This may reflect the sometimes limited time spent considering NSSI before engaging in the behaviour (Fitzpatrick, Kranzler, Fehling, Lindqvist, & Selby, 2020; Nock, Prinstein, & Sterba, 2009).

Experiential Avoidance Model of Deliberate Self-Harm

One model developed specifically to understand dysregulated behaviours is the experiential avoidance model (EAM; Chapman et al., 2006). Chapman et al (2006) proposed that NSSI fits within a class of behaviours which are used to escape unwanted emotional experiences (e.g. drinking, substance use, thought suppression, binge eating). The EAM is a behavioural model developed on the premise that NSSI is maintained through negative reinforcement as it is used to reduce or escape unwanted emotional experiences (Figure 2.3). According to the model, everyone varies in the extent to which they wish to avoid negative emotional experiences (Chapman et al., 2006). People who self-injure are proposed to have a stronger desire to avoid such experiences. When assessing experiential avoidance, some studies measure engagement in other functionally equivalent behaviours. People with a history of self-injury are more likely to engage in other avoidant behaviour (e.g. thought suppression, drinking) with more behaviours engaged in being associated with more frequent engagement in NSSI (Howe-Martin, Murrell, & Guarnaccia, 2012). Self-reported tendency towards experiential avoidance is also associated with engagement in NSSI (Greene, Hasking, & Boyes, 2019; Howe-Martin et al., 2012). NSSI provides temporary relief from the emotional distress, leading to the behaviour being negatively reinforced and more likely to be engaged in next time a distressing emotional response is experienced.

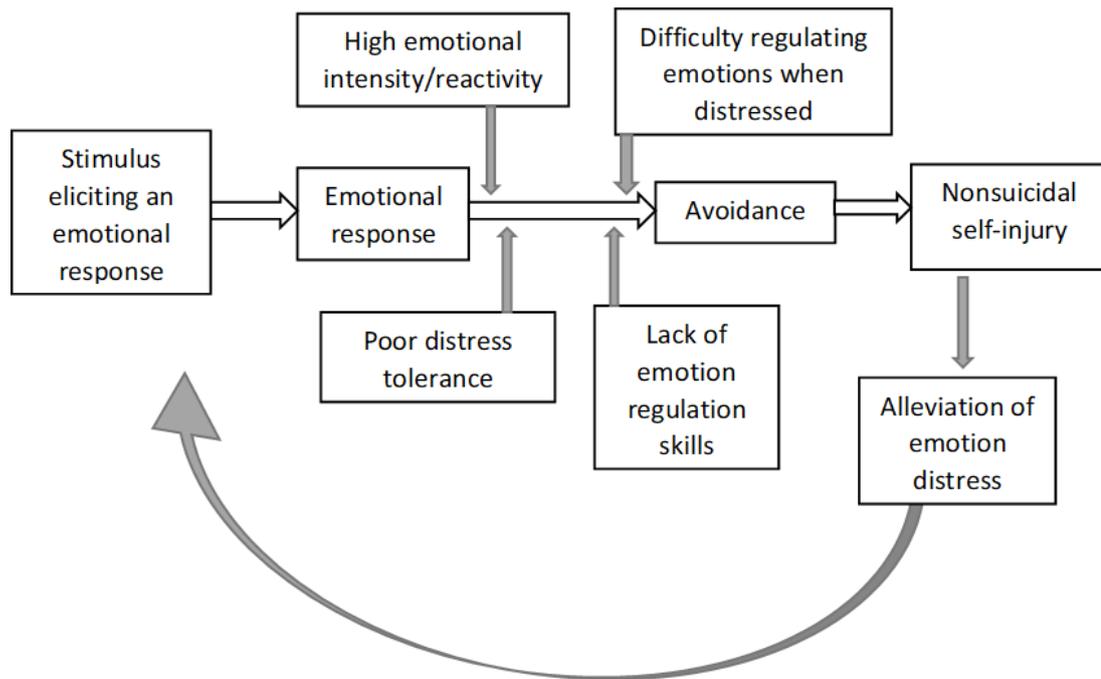


Figure 2.3. Experiential avoidance model (Chapman et al., 2006).

The EAM proposes that the experience and regulation of emotion underlies the tendency for experiential avoidance (Chapman et al., 2006). Heightened emotional intensity, difficulty regulating emotions, and poor distress tolerance are thought to increase the likelihood of engaging in a range of behaviours, including NSSI, to escape emotional experience. Similar to Gratz and Roemer (2004), Chapman et al (2006) suggest that limited emotion regulation skills are associated with engagement in NSSI. It is proposed that heightened emotional reactivity (i.e. increased intensity of and sensitivity to emotions) increases the likelihood of experiential avoidance due to the difficulty associated with regulating more intense emotions. Experiencing more intense emotions has been associated with increased experiential avoidance and a history of engaging in NSSI (Glenn, Blumenthal, Klonsky, & Hajcak, 2011; Najmi, Wegner & Nock, 2007; Nock, Wedig, Holmberg, & Hooley, 2008). Self-report measures indicate that people who self-injure have heightened emotional reactivity compared to people with no history of NSSI (Nock et al., 2008; Glenn et al., 2011). However, while some experimental studies have found that people who self-injure experience heightened emotional reactivity (Nock & Mendes, 2008), many find no difference in emotional reactivity between people

with and without a history of self-injury (Davis et al., 2014; Glenn et al., 2011; Nock & Mendes, 2008).

Chapman et al. (2006) also propose that rather than heightened emotional reactivity, it may be that people who self-injure have less ability to tolerate distress. An inability to withstand aversive emotions (i.e. low distress tolerance) has been found to underlie dysregulated behaviour (e.g. disordered eating, smoking; Anestis, Selby, Fink, & Joiner, 2007; Brown, Lejuez, Kahler, & Strong, 2002). This supports the proposal of the model that individuals who have difficulty tolerating emotional experiences are more likely to use behaviours to avoid distress. Self-report and experimental studies show that people who self-injure demonstrate lower levels of distress tolerance than people with no history of self-injury (Gratz, Rosenthal, Tull, Lejuez, & Ginderson, 2006; Nock & Mendes, 2008; Slabbert, Hasking, & Boyes, 2018). Additionally, experimental studies have shown that people who self-injure disengage from distressing tasks quicker than people who do not self-injure demonstrating both distress tolerance and experiential avoidance (Gratz et al., 2006; Nock & Mendes, 2008).

Emotional Cascade Model.

The Emotional Cascade Model of Dysregulated behaviours was developed by Selby et al (2008) on the basis of Linehan's work with people diagnosed with Borderline Personality Disorder. Central to the model are emotional cascades which are thought to increase vulnerability to engaging in behavioural emotion regulation strategies known as dysregulated behaviours (e.g. drinking, extreme reassurance seeking, NSSI), through a positive feedback loop of negative affect and rumination. Rumination is a thinking style which is repetitive, recurrent, intrusive, and perceivably uncontrollable, in response to a stressor (Brinker & Dozois, 2009). Rumination may initially be an attempt to problem solve, however ruminating on the consequences, thoughts and feelings associated with a stressor increases the negative affective experience, which in turn increases ruminative thought. According to the Emotional Cascade Model, people experiencing emotional cascades may engage in a behaviour, such as self-injury or binge eating, as a way to distract from the increasing cascades by allowing the person to focus on the physical and emotional sensation associated with the behaviour.

Supporting this model, people who engage in NSSI report significantly more rumination than people who have not engaged in NSSI (Hoff & Muehlenkamp,

2009). Additionally, rumination has been found to mediate the relationship between depression, anxiety, and self-injury and moderate the relationship between negative affect, and NSSI suggesting it plays a role in facilitating NSSI engagement (Arbuthnott, Lewis, & Bailey, 2014; Arney & Crowther, 2008; Hoff & Muehlenkamp, 2009). In a study using Ecological Momentary Assessment (EMA), Selby, Franklin, Carson-Wong, and Rizvi (2013) found that although persistent rumination was related to engagement in NSSI, instability of rumination better explained the relationship between rumination and NSSI. Specifically, intense rumination in response to a situation or event was associated with engaging in self-injury. In line with Emotional Cascade Model fluctuations in rumination interacted with negative emotion to predict daily engagement in NSSI.

Model commonalities

Within the four models described above there are several common elements. Each has some representation of a triggering or stressful situation, which may be generated internally or externally. Within each model the situation is seen to elicit an emotional response. According to the Experiential Avoidance Model (Chapman et al., 2006) and the Emotional Cascade Model (Selby et al., 2008), the response is influenced by how emotionally reactive an individual is and/or their ability to tolerate distress. People are suggested to be more likely to engage in NSSI if they experience heightened emotional reactivity and have difficulty tolerating distress. Several models indicate that having emotion regulation strategies available to be used in appropriate contexts is an important factor, as people who are using NSSI to regulate emotions report having limited access to alternate strategies and increased use of strategies which increase emotional intensity. While the majority of models focus is on the experience and regulation of emotion, cognitions and cognitive processes are also seen to play a role in understanding NSSI. Rumination as highlighted in the Emotional Cascade Model (Selby et al., 2008), and thought suppression as described in Gross's (1998) Process Model and the Experiential Avoidance Model (Chapman et al., 2006), heighten emotional arousal (Selby et al., 2013). However, there has been little consideration of how specific thoughts and beliefs about NSSI may play a role in facilitating NSSI. Recently, it has been argued that to further understand NSSI the roles of core cognitions relating to self-injury need to be considered (Hasking et al., 2017).

Social Cognitive Theory

Prior to the development of Social Cognitive Theory psychological theories emphasised the influence of internal factors (psychodynamic theories) or the environment (behavioural theories) on behaviour. Within Social Cognitive Theory Bandura (1986; 1989) proposed that personal factors (i.e. cognitions, affect), behaviours, and environment influence each other through triadic reciprocal determinism. Behaviour can be influenced by the physical and social environment while also altering the environment (Bandura, 1989). Personal factors such as expectations, affect, and beliefs can be influenced by the social environment (e.g. modelling, social persuasion). Simultaneously, a person's physical characteristics (e.g. age, race, gender) can influence the reactions of other people, as can their social role and status, and beliefs partially shape their behaviour. In turn the outcomes of behaviour may influence thoughts and feelings, self-perception, and expectations.

In developing Social Cognitive Theory, Bandura (1986) drew on expectancy theories of motivation which posit that whether someone engages in a behaviour is determined by what they expect the outcome to be and whether that outcome is perceived as desirable (Atkinson, 1964; Feather & Newton, 1982; Vroom, 1964). Bandura (1997) highlights three types of outcome expectancy: physical, social, and self-concept related. For each, a perceivably positive outcome encourages behaviour and a perceivably negative outcome discourages behaviour. A positive physical expectancy would be expecting a pleasurable sensory experience, while a negative expectancy may include aversive physical sensations and pain that is perceived as negative. Social expectations relate to the responses of others. Expecting praise or social support may be considered a positive outcome while social rejection or the disapproval of others may be considered a negative expectation. In addition to external consequences Bandura (1997) highlighted the influence of self-evaluation as an expected outcome. People are not simply products of their environment; they develop self-concept and personal standards that guide their behaviour. Behaviours which lead to feelings of pride, self-satisfaction, and self-worth are more likely to be engaged in while behaviours which lead to self-devaluation or self-dissatisfaction are avoided. Outcome expectancies can be influenced by directly experiencing the consequences of a behaviour ourselves (Bandura, 1986). However, observing the consequences of other people's behaviour also influences what we believe would happen if we were to engage in the behaviour ourselves. Our cognitive capabilities

also allow us to imagine what would happen if we were to engage in a behaviour, which means we do not need to have engaged in a behaviour or observed the consequences of other's behaviours to hold outcome expectancies about them.

The functions of a behaviour are differentiated from outcome expectancies as people who have never engaged in a behaviour still hold expectations about what would happen if they did (Hasking & Boyes, 2017). Although individual may hold expectations that a behaviour will serve a function (e.g. expecting NSSI to result in affect regulation), outcome expectancies also include beliefs about possible negative outcomes that do not reinforce the behaviour (e.g. upsetting friends and family; Hasking & Boyes, 2017). People's beliefs about their own behaviour can be positive or negative (Sandel et al., 2020), however are based on their direct experience and therefore cannot be measured in people who have never engaged in the behaviour. Comparing thoughts and beliefs held by people who have and have not engaged in a behaviour can indicate patterns in cognitions which may highlight patterns that increase the risk or possibly reduce the likelihood of future engagement in a behaviour. In the alcohol literature patterns in outcome expectancies have provided insight into targets for intervention such as expectancy challenges (Labbe & Maisto, 2011).

Even if someone expects a positive outcome of a behaviour they are unlikely to engage in the activity if they do not believe they can complete it successfully (Bandura, 1986). Perceived self-efficacy, whether a person believes that they have the ability to be successful in a specific situation, is central to whether or not they will engage in a behaviour (Bandura, 1986). Whether someone holds strong self-efficacy is not determined by their actual capabilities, but their beliefs of whether they can be successful (Bandura, 1986). Self-efficacy is also determined by the context in which the person is considering the behaviour. Refusal self-efficacy refers to the perception that you have the capacity to *resist* engaging in a specific behaviour (such as drinking or smoking) given a specific situation. For example, it may be perceived that refusing alcohol at 9am on a work day would be easier than refusing alcohol at 9pm on a Friday night while at a party. If an individual believes they are capable of successfully achieving a specific behaviour with a desired outcome they are more likely to engage in the behaviour (Bandura, 1989, 2001).

Patterns of efficacy and expectancy beliefs.

Bandura (1997) highlighted the need to consider both outcome expectancies and self-efficacy when predicting behaviour because they can contradict each other. Someone holding strong beliefs in their ability to successfully complete a task while predicting a positive outcome is likely to engage in the activity. However, it is possible to hold opposing beliefs. You may believe you have the ability to successfully complete a task but expect that it will result in an unpleasant outcome, reducing the likelihood of engaging in that behaviour. Alternatively, you may believe that a behaviour will result in a positive outcome, but have little confidence in your abilities to obtain that outcome, again reducing the likelihood of engaging in the behaviour. Finally you may hold a belief that a behaviour will result in a negative outcome, but if you have little belief in your ability to resist the behaviour in your current situation, you may still engage in it.

Applying Social Cognitive Theory to specific behaviours

Social Cognitive Theory has been applied to engagement in a variety of behaviours. Self-efficacy beliefs and outcome expectancies have been associated with health behaviours such as nutrition (Anderson, Winett, & Wojcik, 2007) and physical activity (Young, Plotnikoff, Collins, Callister, & Morgan, 2014). In applying Social Cognitive Theory to health risk behaviours, holding positive outcome expectancies is related to substance use and high-risk sexual behaviour (Cohen & Fromme, 2006). Positive smoking outcome expectancies and low self-efficacy to quit smoking are predictive of smoking relapse within three weeks of quitting (Van Zundert, Nijhof, & Engels, 2009). Alcohol-related outcome expectancies and drinking refusal self-efficacy predict volume and frequency of alcohol consumption (Hasking & Oei, 2007). Drinking refusal self-efficacy is also predictive of relapse of drinking behaviour (Kadden & Litt, 2011), with weaker self-efficacy to abstain from drinking increasing the likelihood of drinking in the future. Overall, there is evidence that outcome expectancies and self-efficacy beliefs are useful in predicting behaviour and have been identified as targets for intervention.

Expectancy beliefs and NSSI

In relation to NSSI, outcome expectancies and self-efficacy to resist NSSI are predicted to play crucial roles in determining whether an individual will engage in self-injury as opposed to other emotion regulation strategies (Hasking, 2017). For example, people who anticipate positive outcomes from self-injury (e.g. reduced

tension) and believe they cannot resist NSSI in certain conditions (e.g. when alone) are more likely to self-injure than others who do not hold these ideas (Hasking & Rose, 2016). Conversely, people who anticipate negative consequences from self-injury (e.g. friends or family being upset) and believe they can resist it in a wide range of circumstances (e.g. when distressed) will be more likely to opt for other emotion regulation strategies.

Preliminary studies have indicated that NSSI-specific outcome expectancies differentiate people who currently engage in NSSI, people who have engaged in NSSI in the past, and people who have never engaged in NSSI (Hasking & Boyes, 2017; Hasking & Rose, 2016). In developing the NSSI Expectancy Questionnaire, Hasking and Boyes (2017) identified five common anticipated outcomes of engaging in self-injury: affect regulation; physical pain; communication and care from other people; negative self-beliefs; and negative social outcomes. People with a history of self-injury held stronger expectations that self-injury would result in affect regulation while people with no history of self-injury expected more physical pain and communication and care from other people (Hasking & Boyes, 2017). With regards to self-efficacy beliefs, an initial study found that people with a history of engaging in self-injury report weaker self-efficacy to resist NSSI than people who have never self-injured (Hasking & Rose, 2016). Additionally, among people who have self-injured, more frequent self-injury was associated with weaker self-efficacy beliefs (Hasking & Rose, 2016).

Cognitive-Emotional Model of Non-Suicidal Self-Injury

The Cognitive-Emotional Model of NSSI (Hasking et al., 2017) has drawn on emotion-oriented models, and Social Cognitive Theory (Bandura, 1989; 1997), to include the role of NSSI-specific cognitions (i.e. NSSI outcome expectancies and self-efficacy to resist NSSI) in explaining the initiation, maintenance, reduction, and cessation of NSSI (Figure 2.4; Hasking et al., 2017). According to the model, an individual brings their propensity to be emotionally reactive, their self-concept, representations of NSSI, and any NSSI-specific cognitions to any situation. As in Social Cognitive Theory, these components have a bidirectional influence on each other (Bandura, 1986; 1989; Hasking et al., 2017). After an emotionally volatile situation is perceived, an individual's emotion regulation capacities will influence the response. The Cognitive-Emotional Model of NSSI proposes that people are at a higher risk of engaging in NSSI when faced with a perceived emotionally volatile

situation if they: are highly emotionally reactive, believe that engaging in NSSI will result in a desirable outcome (i.e., outcome expectancies), believe that they are unable to resist NSSI in the given situation (i.e., self-efficacy beliefs), and do not have more adaptive emotion regulation strategies. While there is evidence for the role each of the model components play in facilitating NSSI engagement, the aim of this thesis is to explore the specific pathways proposed by the model.

Conclusion

Many models of emotion regulation have been applied to self-injury to assist in understanding the behaviour. In developing the Cognitive-Emotional Model of NSSI Hasking et al. (2017) drew on emotion regulation models and Social Cognitive Theory to understand self-injury. The inclusion of NSSI-related outcome expectancies and self-efficacy to resist NSSI are unique to this model and require further research to understand how they may play a role, alongside emotions and emotion regulation, in understanding NSSI.

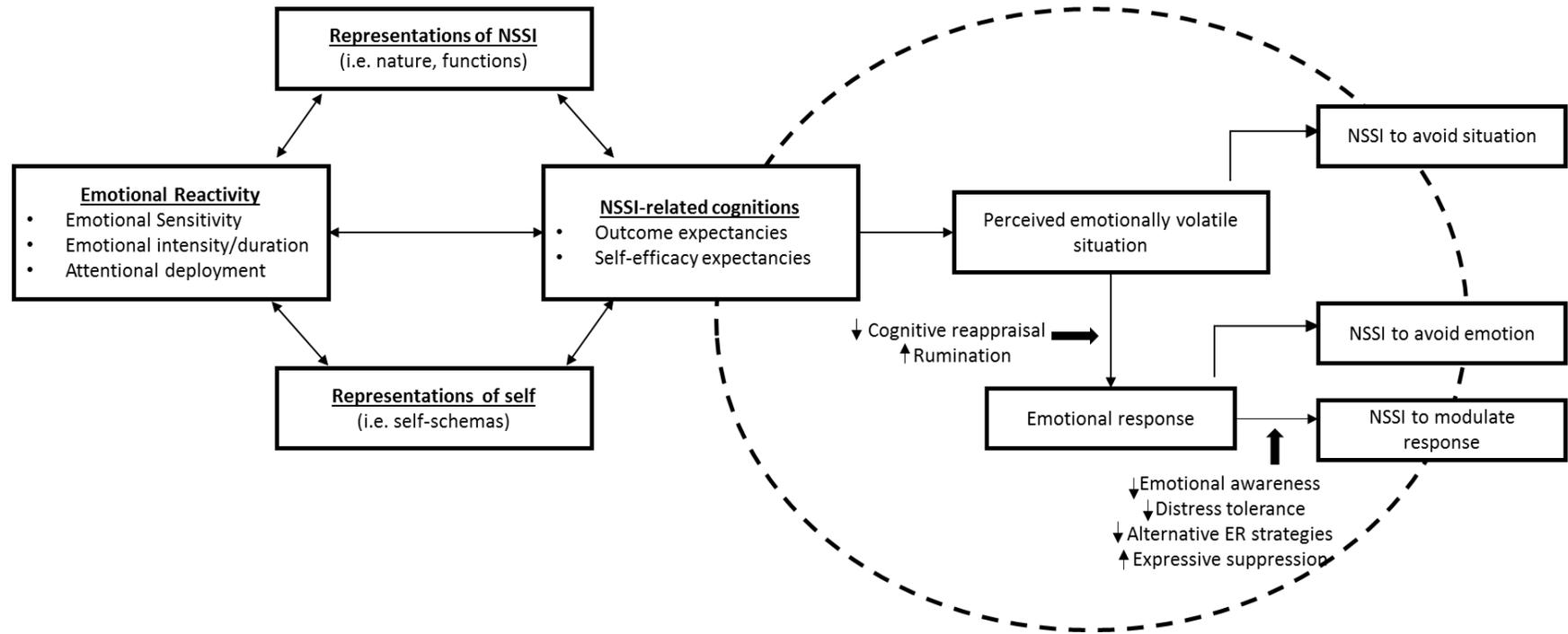


Figure 2.4. The Cognitive-Emotional Model of Nonsuicidal Self-Injury.

Chapter 3: Applying a Cognitive Emotional Model to NSSI

Introduction to Chapter 3

In the first study I explore the role of NSSI-related outcome expectancies and self-efficacy to resist NSSI within the context of the Cognitive Emotional Model of NSSI. Specifically, I tested a proposal of the Cognitive-Emotion Model of NSSI that the relationship between emotional reactivity and participants' history of NSSI is moderated by specific thoughts about self-injury (i.e. outcome expectancies and self-efficacy), emotion regulation strategies, and rumination.

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Jessica Dawkins	Development of research question, data management, data analysis, interpretation of results and discussion, manuscript preparation	
Penelope Hasking	Assisted with development of research question, data analysis, interpretation, and manuscript preparation	
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Abstract

The recently proposed Cognitive-Emotional Model of Nonsuicidal Self-Injury draws on emotion regulation models and Social Cognitive Theory to understand the onset, maintenance, and cessation of nonsuicidal self-injury (NSSI). We tested the prediction of the model that the relationship between emotional reactivity and NSSI is moderated by specific cognitions about self-injury (i.e. self-efficacy to resist NSSI, NSSI outcome expectancies), emotion regulation, and rumination. A sample of 647 university students aged 17-25 ($M = 19.92$, $SD = 1.78$) years completed self-report measures of the constructs of interest. As expected, we found that emotional reactivity was positively related to NSSI, particularly for people who had weak self-efficacy to resist NSSI. Unexpectedly, the reverse was true for people who were less likely to use expressive suppression to regulate emotion. Implications for the theoretical understanding of NSSI are discussed.

Nonsuicidal self-injury (NSSI) is the intentional and direct damage to one's own body tissue without suicidal intent (e.g. cutting, burning or severe scratching), excluding culturally sanctioned body modification such as body piercing or tattooing (Nock 2009). NSSI is most commonly reported as being used as a coping strategy for people who experience heightened emotional responses to stress (Chapman et al, 2006; Nock, 2009). In non-clinical samples, approximately 5% of adults, 13% of young adults and 17% of adolescents report a history of NSSI (Swannell et al., 2014). In university students, prevalence rates between 5-47% have been reported with a pooled estimate of 20%, indicating that students may be more likely to self-injure than the general population (Swannell et al., 2014). People who persistently engage in NSSI throughout university are at increased risk of experiencing negative psychosocial and academic outcomes compared to their peers, highlighting the need for further research within this population (Bruffaerts et al., 2018; Hamza & Willoughby, 2014; Kiekens et al., 2016). Although self-injury is performed without suicidal intent, it is significantly associated with suicidal ideation and suicide attempts later in life (Hamza & Willoughby, 2016). Research into NSSI is critical in the effort to reduce the negative impact of these behaviours and assist the development of suicide prevention and early intervention programs.

The majority of theoretical models of NSSI highlight the importance of emotional experience, and the ability to regulate emotions, in the onset and maintenance of NSSI (e.g., Experiential Avoidance Model, Chapman et al., 2006; Emotional Cascade Theory, Selby & Joiner, 2009). These models propose people who engage in NSSI have heightened emotional reactivity, including heightened sensitivity to emotions, experiencing more intense emotions, and taking longer to recover from an emotional response (Linehan, Bohus & Lynch, 2007). Consistent with this, people who self-injure report experiencing heightened levels of emotional reactivity compared to people who do not self-injure (Glenn et al., 2011; Najmi et al., 2007; Nock et al, 2008).

Although people self-injure for a variety of reasons, most often people report using NSSI to help regulate these intense or unwanted emotional experiences (Guerry & Prinstein, 2009; Nock & Prinstein, 2004). This is supported by empirical evidence that difficulties with emotion regulation (Gratz & Roemer, 2004; 2008) and the use of emotion regulation strategies that fail to address the underlying issue (e.g., expressive suppression) differentiate people who self-injure from those who do not

(Hasking et al., 2008; Williams & Hasking, 2010). Additionally, ecological momentary assessment of affective experience pre and post NSSI engagement have revealed reductions in negative affect and increases in positive affect after NSSI engagement, further supporting the role of emotion regulation in the maintenance of NSSI (Hamza & Willoughby, 2015).

According to Emotional Cascade Theory (Selby & Joiner, 2009) the tendency to ruminate, a thinking style which is repetitive, recurrent, intrusive, and perceivably uncontrollable, exacerbates negative emotional experiences, further increasing risk of NSSI where other emotion regulation strategies are unavailable or unsuccessful (Brinker & Dozois, 2009). Theoretically, rumination increases vulnerability to NSSI through emotional cascades, a positive feedback loop of negative affect and rumination (Selby et al., 2008). It is proposed that NSSI is used to distract from the emotional cascade (Ehring & Ehlers, 2014; Selby & Joiner, 2009). Supporting this, people who engage in NSSI report significantly more rumination than those with no history of NSSI (Hoff & Muehlenkamp, 2009). Additionally, rumination mediates the relationships between depression, anxiety, and NSSI and moderates the relationship between negative affect, and NSSI suggesting it plays a role in facilitating NSSI engagement (Arbuthnott et al., 2014; Arney & Crowther, 2008; Hoff & Muehlenkamp, 2009).

The relationships between emotional reactivity, emotion regulation, and NSSI are reflected in the models currently used to explain the aetiology and maintenance of NSSI. However, recently, it has been argued that for a more complete understanding of NSSI, the role of core cognitions such as beliefs and thoughts relating to self-injury need to be considered (Hasking et al., 2017).

Social Cognitive Theory

Social Cognitive Theory (Bandura, 1986; 1989) proposes that personal factors (i.e. cognitions, affect), behaviours, and environment influence each other in bidirectional relationships. Most relevant to NSSI are the roles of cognitions (i.e. outcome expectancies and self-efficacy) in the learning and maintenance of behaviours (Hasking et al., 2017). Outcome expectancies are an individual's consideration of possible consequences of their behaviour, influencing the likelihood of engaging in that behaviour (Bandura, 1989). Perceived self-efficacy, whether a person believes that they have the ability to be successful in a specific situation, is also central to whether or not they will engage in a behaviour (Bandura, 1986). If an

individual believes they are capable of successfully achieving a specific behaviour with a desired outcome they are more likely to engage in the behaviour (Bandura, 1989, 1997). Refusal self-efficacy refers to the perception that you have the capacity to *resist* engaging in a specific behaviour (such as drinking or smoking) in a variety of situations.

In relation to NSSI, outcome expectancies and self-efficacy to resist NSSI are predicted to play crucial roles in determining whether an individual will engage in self-injury (Hasking, 2017). For example, people who anticipate favourable outcomes from self-injury (e.g. reduced tension) and believe they cannot resist NSSI in certain conditions (e.g. when distressed or alone) are more likely to self-injure than others who do not hold these ideas. Conversely, people who anticipate negative consequences from self-injury (e.g. pain, negative reactions from others) and believe they can resist it in a wide range of circumstances (e.g. when distressed, when in a social situation) will be more likely to use other emotion regulation strategies.

Preliminary studies have indicated that NSSI-specific outcome expectancies differentiate people who currently engage in NSSI, those who have engaged in NSSI in the past, and those who have never engaged in NSSI (Hasking & Boyes, 2017; Hasking & Rose, 2016). These studies show that individuals with a history of NSSI are more likely to expect NSSI to result in emotional relief, while people with no history of NSSI have stronger expectancies regarding resulting pain (Hasking & Boyes, 2017).

Low self-efficacy to resist NSSI, after onset, may increase likelihood of future self-injury (Hasking & Rose, 2016), and increase the odds of engaging in NSSI rather than another strategy such as alcohol use (Hasking, 2017). However, we do not know how self-efficacy interacts with emotional experience and emotion regulation in relation to NSSI. Further research into the role of self-efficacy to resist NSSI in maintaining the behaviour will provide an evidence base to develop treatment and clinical plans focussed on specific NSSI cognitions and beliefs.

Cognitive-Emotional Model of Non-Suicidal Self-Injury

The Cognitive-Emotional Model of NSSI has drawn on theories of emotion regulation (i.e. Chapman et al., 2006; Gratz and Roemer, 2004; Selby and Joiner, 2009), and Social Cognitive Theory (Bandura, 1989; 1997), to include the role of NSSI-specific cognitions (i.e. NSSI outcome expectancies and self-efficacy to resist NSSI) in explaining the initiation and maintenance of NSSI (see Hasking et al.,

2017). According to the model, an individual brings their propensity to be emotionally reactive, and any NSSI-specific cognitions to any situation. After an emotionally volatile situation is perceived, an individual's emotion regulation capacities will influence the response. The Cognitive-Emotional Model of NSSI proposes that people are at a higher risk of engaging in NSSI when faced with a perceived emotionally volatile situation if they also: are highly emotionally reactive, believe that engaging in NSSI will result in a desirable outcome (i.e., outcome expectancies), believe that they are unable to resist NSSI in the given situation (i.e., self-efficacy beliefs), have a propensity to ruminate and do not have more adaptive emotion regulation strategies. As such, these cognitive-emotional variables are proposed to moderate the relationships between predisposing factors, such as a tendency toward emotional reactivity, and NSSI.

The Current Study

The aim of this study is to empirically test the prediction of the Cognitive-Emotional Model of NSSI that the association between emotional reactivity and NSSI is moderated by NSSI-specific cognitions (i.e. NSSI outcome expectancies and self-efficacy to resist NSSI), as well as emotion regulation and rumination. It is expected that people who report high levels of emotional reactivity will be more likely to have engaged in NSSI if they also hold positive NSSI outcome expectancies, have low self-efficacy to resist NSSI, have a propensity to ruminate, and use less adaptive emotion regulation strategies.

Method

Participants

Participants were 656¹ university students aged 17-25 years ($M = 19.97$, $SD = 1.84$); 486 (74.1%) were female and 170 (25.9%) male. Seven (1.1%) participants identified as Aboriginal or Torres Strait Islander. The majority (98.5%) were in undergraduate studies with 92% studying full-time. As is typical in Australia, most participants lived at home with their parents (77.3%) or with flatmates (11.3%). One-hundred and eighteen (18%) participants had engaged in NSSI in the past 12 months and 121 (18.4%) had engaged in NSSI but not in the past 12 months.

¹ Sample size calculations suggested a sample size of 566. This was conducted using Peduzzi, Concato, Kemper, Holford, and Feinstein (1996) for logistic regression taking into account the suggested 10:1 participant to predictor ratio and the expected 30% probability of NSSI being present.

Measures

Nonsuicidal Self-Injury. Section I of the Inventory of Statements about Self-Injury (ISAS; Klonsky & Glenn, 2009) was used to measure NSSI. Participants were given a definition of NSSI and asked whether they had ever engaged in self-injury and, if they had, how many times they had self-injured in the past 12 months. Participants were also asked to estimate their lifetime frequency of 12 methods of NSSI (e.g. cutting, burning), specifically being directed to only endorse behaviours that were engaged in directly and deliberately. This scale was used to determine the three comparison groups: those who have never engaged in NSSI; those with a history of engaging in NSSI but have not engaged in the past 12 months; and those who have engaged in NSSI the last 12 months. To ensure reported NSSI engagement was consistent with our definition, participants were not classified as self-injuring if they did not report the methods of self-injury used or only endorsed “other”, “hair pulling”, or “swallowing substances” as a method of self-injury. Data for these participants ($n = 3$) were removed prior to conducting analyses. The ISAS is one of the more frequently used measures of NSSI, and test-retest reliability has been previously established ($r = .85$; Klonsky & Olino, 2008).

Emotion Reactivity. The Emotional Reactivity Scale developed by Nock et al. (2008), comprises 21 items used to assess participant’s experience of emotional reactivity. Each item (e.g. I tend to get emotional very easily) is responded to on a scale of 0 (not at all like me) to 4 (completely like me), with possible total scores between 0-84. Internal consistency has previously been reported with a Cronbach’s alpha of .94. Construct validity has also been evidenced through convergent and discriminant correlations with related measures (Nock et al., 2008). In this sample the Cronbach’s alpha was .96.

NSSI Outcome Expectancies. The Nonsuicidal Self-Injury Expectancies Questionnaire (NEQ; Hasking & Boyes, 2017) consists of 25-items comprising 5 subscales relating to possible outcomes of engaging in NSSI. Participants respond on a 4-point Likert scale from 1 (not at all likely) to 4 (extremely likely), how likely they believe it is that the consequences of them engaging in NSSI would transpire, if they were to self-injure in the future. The five factors reflect: affect regulation expectancies (e.g., I would feel relieved), anticipated negative social outcomes (e.g., My friends would be disgusted), anticipated communicative function of NSSI (e.g., Other people would notice and offer sympathy), pain expectancies (e.g., It would

hurt), and negative self-beliefs (e.g., I would feel like a failure). Validation of the measure revealed strong criterion-related validity, discriminant validity, and internal consistency across the five subscales (affect regulation $\alpha = .86$, negative social experiences $\alpha = .78$, communication $\alpha = .71$, pain $\alpha = .80$, negative self-beliefs $\alpha = .78$; Hasking and Boyes, 2017). Cronbach's alphas for each subscale in the current sample were: affect regulation $\alpha = .87$, negative social experiences $\alpha = .80$, communication $\alpha = .70$, pain $\alpha = .80$, negative self-beliefs $\alpha = .76$.

Self-Efficacy to Avoid NSSI. This 6-item measure was adapted from Czyz et al.'s (2014) Self-Efficacy to Avoid Suicidal Action scale, to reflect an individual's belief in their ability to resist NSSI. Participants reported on a 6-point scale from 1 (very uncertain) to 6 (very certain), whether they believe they can resist engaging in NSSI in the future (e.g., how certain are you that you will not self-injure in the future?). The original version has strong convergent validity being highly correlated with suicidal ideation ($r = -.59$; $p < .001$) and strong internal consistency (Cronbach's $\alpha = .96$; Czyz et al., 2014). The adapted NSSI version also has strong internal consistency (Cronbach's $\alpha = .92$; Hasking & Rose, 2016). Cronbach's alpha in the current sample was .93.

Emotion Regulation. Trait emotion regulation was assessed using the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) The measure comprises two scales: the cognitive reappraisal scale, comprising six items including "I control my emotions by changing the way I think about the situation I am in"; and the expression suppression scale, comprising of four items such as "I control my emotions by not expressing them". Each item is answered on a scale from 1 (strongly disagree) to 7 (strongly agree). Cronbach's alphas have previously been reported at .79 for reappraisal and .73 for suppression, demonstrating sound internal consistency (Gross & John, 2003). Construct validity has also been evidenced through convergent and discriminant correlations with related measures (Gross & John, 2003). In this sample Cronbach's alphas were .90 for cognitive reappraisal and .77 for expression suppression.

Rumination. Rumination was measured with the 10-item short, trait version Repetitive Negative Thinking-Short scale (RNT-short scale; McEvoy, Mahoney, & Moulds, 2010). Participants reported on a 5-point scale from 1 (not at all true) to 5 (very true), how relevant each statement is to them (e.g., I think about the situation all the time). Validation of the short measure revealed identical patterns of significant

findings to the long version, with excellent internal consistency (Cronbach's $\alpha = .89$) and convergent validity (McEvoy et al., 2010). Cronbach's alpha for this sample was .93.

Psychological Distress. The Kessler Psychological Distress Scale (K10; Kessler et al., 2002), measures psychological distress using 10-items assessing feelings experienced in the last four weeks. Participants responded on a 5-point scale from 1 (none of the time) to 5 (all of the time) regarding how relevant the statement is for them (e.g., about how often did you feel worthless?). Higher scores are indicative of higher psychological distress. People who score under 20 are likely to be well, those with a score of 20-24 are likely to have a mild mental disorder, 25-29 are likely to have a moderate mental disorder, and a score over 30 indicates likely to have a severe mental disorder (Kessler et al., 2002). Validation of the measure revealed strong psychometric properties across samples (Cronbach's $\alpha = .93$; Kessler et al., 2002). The internal consistency for the total score in this sample was $\alpha = .91$. Given associations between NSSI and psychological distress, it was assessed as a potential covariate/confounder ($\chi^2(6)=101.66, p < .001$).

Demographics. Sociodemographic information such as age, gender, year of study, full-time/part-time study, indigenous background, and living situation was also collected.

Procedure

Undergraduate university students from an Australian University accessed the questionnaires through an online portal where it was advertised to students wishing to participate in research for course credit. Interested students were directed to the online survey. After reading the information sheet and giving informed consent, students completed demographic questions and all given measures taking approximately 45 to 60 minutes. Upon completion of the questionnaire, participants could download information about reducing stress, and local mental health resources. The research protocol was approved by the Human Research Ethics Committee at Curtin University.

Data Analysis

A multinomial logistic regression was conducted, using SPSS, Version 25.0, to explore how NSSI-specific cognitions moderate the relationship between emotional reactivity and NSSI when predicting recent (i.e. NSSI engagement in the past 12 months) and past NSSI engagement. People who had never engaged in NSSI

were used as the reference group. A binary logistic regression was then conducted to differentiate people who had recently engaged in NSSI and people who no longer engaged in the behaviour. In both analyses we simultaneously entered emotion reactivity, the cognitive variables (outcome expectancies, self-efficacy to resist NSSI), emotion regulation (cognitive reappraisal and expressive suppression), and rumination, as well as all two-way interactions between emotional reactivity and all other variables. Simple slopes analysis (Aiken & West, 1991), using PROCESS (Hayes, 2013), was used to interpret all significant interactions. All variables were standardised to minimise multicollinearity. NSSI was associated with psychological distress $\chi^2(6, N = 654) = 101.66, p < .001$, and was more common among female participants, $\chi^2(2, N = 656) = 11.68, p = .003$. As such, gender and distress were included as covariates in all analyses.

Results

Preliminary Analyses

Missing variable analysis revealed less than 5% of missing data for all variables, and was missing completely at random $\chi^2(20592) = 20911, p = .058$. As such, Expectation Maximisation was used to impute missing data. Of the total sample, 239 (36%) participants had previously engaged in NSSI. Of the participants who had self-injured, 49.4% (118) had engaged in NSSI at least once in the last 12 months, 31.4% (37) of these had engaged in NSSI 5 or more times. The mean age of NSSI onset was 14 years ($SD = 2.72$). The most commonly reported primary form of self-injury was cutting (48.7%), followed by severe scratching (15.8%), and self-battery (10.1%). Correlations between all continuous variables with means and standard deviations can be found in Table 3.1 and comparisons of group means in Table 3.2.

Table 3.1.

Correlations, means, and standard deviations of all continuous variables.

	M										
	(SD)	2	3	4	5	6	7	8	9	10	11
1. Emotional Reactivity	58.14 (19.25)	.246***	-.202***	.070	.136**	.026	-.358***	-.314***	.065	.565***	-.042
2. Affect regulation Expectancies	9.26 (3.73)		-.439***	-.045	.106**	.095*	-.365***	-.140***	.153***	.197***	.091*
3. Pain Expectancies	16.17 (3.11)			.307** *	.106**	.066	.233***	.169***	-.141**	-.065	-.021
4. Negative Self-Belief Expectancies	14.81 (3.28)				.450** *	.110* *	-.028	.128**	.074	.155***	-.006
5. Negative Social Expectancies	12.98 (3.47)					.069	-.086*	.049	.142***	.154***	.026
6. Communication Expectancies	9.82 (2.85)						.037	.077*	-.047	-.008	-.031
7. Self-Efficacy to Resist NSSI	27.13 (8.04)							.231***	-.141***	-.289***	.024

8. Cognitive Reappraisal	27.60				
	(6.68)				
9. Expressive Suppression	15.72				
	(4.71)				
10. Rumination	33.00				
	(8.77)				
11. Age	19.97				
	(1.84)				

Note:. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 3.2.

Comparison of group means on model variables.

	No NSSI(a)	Past NSSI(b)	12 month NSSI(c)	F	partial η^2	Group Comparisons ^a
	M(SD)	M(SD)	M(SD)			
1. Emotional Reactivity	54.28(17.99)	59.76(18.00)	69.78(19.93)	32.80***	.09	a<b*;b<c***;a<c***
2. Affect Regulation Expectancies	7.81(3.13)	11.15(3.17)	12.30(3.37)	116.98***	.27	a<b***;b<c*;a<c***
3. Pain Expectancies	16.96(2.94)	15.04(2.98)	14.53(2.85)	41.91***	.11	a>b***;a>c***
4. Negative Self-Belief Expectancies	14.92(3.28)	14.69(2.80)	14.67(3.68)	.38	.00	-
5. Negative Social Expectancies	12.87(3.46)	13.30(3.27)	13.14(3.74)	.83	.00	-
6. Communication Expectancies	10.35(2.77)	9.15(2.82)	8.69(2.68)	20.76***	.06	a>b***; a>c***
7. Self-Efficacy to Resist NSSI	29.02(7.08)	28.12(7.00)	19.35(7.71)	83.06***	.20	b>c***;a>c***
8. Cognitive Reappraisal	28.53(6.19)	26.94(6.67)	25.02(7.67)	13.65***	.04	a>c***
9. Expressive Suppression	15.47(4.62)	15.51(4.72)	16.68(4.89)	3.13*	.01	a<c*
10. Rumination	31.47(8.57)	34.06(8.41)	37.57(8.10)	24.56***	.07	a<b**;b<c**;a<c***

Note: . * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ ^aonly significant contrasts reported

Multinomial Logistic Regression

When differentiating people with no history of NSSI, people who had not self-injured in the last 12 months, and people who had self-injured in the last 12 months, the model was statistically significant, $\chi^2(46, N = 656) = 4.24.25, p < .001$. The model explained between 36.1% (McFadden R^2) and 57.4% (Nagelkerke R^2) of variance. Stronger affect regulation expectancies were related to past and recent NSSI (Table 3.3). Weak self-efficacy to resist NSSI was associated with recent NSSI and strong self-efficacy to resist NSSI was associated with past NSSI. Weaker negative social expectations were related to past NSSI while weaker communication expectations were related to recent NSSI engagement.

The relationship between emotional reactivity and NSSI (past history of NSSI vs no history) was moderated by self-efficacy to resist NSSI and affect regulation expectancies. There was a positive relationship between emotional reactivity and probability of past NSSI for people who reported weak self-efficacy to resist NSSI, $b = .60, z = 2.37, p = .02$ (Figure 3.1). However, for people with strong self-efficacy to resist NSSI there was no relationship ($b = -.23, z = -.89, p = .38$). There was also a positive relationship between emotional reactivity and probability of past NSSI for people who did not hold strong expectations that NSSI would result in affect regulation ($b = .66, z = 2.15, p = .03$), but no relationship for those who strongly expected NSSI to result in affect regulation ($b = .73, z = .18, p = .86$, Figure 3.1).

The relationship between emotional reactivity and NSSI (current NSSI vs No NSSI) was moderated by self-efficacy to resist NSSI and negative self-belief outcome expectancies. While simple slopes analysis revealed no significant relationships the positive relationship between emotional reactivity and current NSSI for people with weaker self-efficacy to resist NSSI approached significance, $b = .57, z = 1.78, p = .07$ (Figure 3.2). The negative relationship between emotional reactivity and current NSSI for people with weaker negative self-belief expectancies also approached significance ($b = -.63, z = -1.90, p = .06$, Figure 3.2).

Binary Logistic Regression

The model successfully differentiated people engaging in recent or prior NSSI, $\chi^2(23, N = 239) = 100.24, p < .001$, accounting for between 34.8% (Cox & Snell R^2) and 46.5% (Nagelkerke R^2) of the variance. Self-efficacy to resist NSSI significantly differentiated current from past NSSI engagement which weakened with more recent NSSI (Table 3.3). The relationship between emotional reactivity and

NSSI was moderated by negative self-belief outcome expectancies and expressive suppression. There was a negative relationship between emotional reactivity and the probability of current NSSI for people who did not anticipate NSSI would result in negative self-beliefs, $b = -.93$, $z = -2.37$, $p = .02$ (Figure 3). However, for people who did anticipate this outcome, there was no relationship, $b = .18$, $z = .49$, $p = .62$. There was also a negative relationship between emotional reactivity and the probability of current NSSI at high levels of expressive suppression, $b = -.96$, $z = -2.30$, $p = .02$ (Figure 3.3). However, at low levels of expressive suppression there was no significant relationship, $b = .18$, $z = .49$, $p = .62$.

Table 3.3.

Multinomial and binomial logistic regression results comparing people with no history of NSSI to people with a history of NSSI

	Multinomial Regression				Binary Regression	
	Past NSSI ^a		12 month NSSI ^a		12 month NSSI ^b	
	B	OR	B	OR	B	OR
Statistical controls						
Intercept/Constant	-1.48***		-2.09***		-2.22*	.11
Gender Female (ref. male)	-.10	.91	-.41	.66	.86	2.37
K10 Well (ref. severe distress)	-.53	.59	-.48	.62	-.19	.83
K10 Mild Distress	.51	1.66	-.43	.65	-1.05*	.35
K10 Moderate Distress	.27	1.31	-.15	.86	-.37	.69
Main effects						
Emotional Reactivity	.29	1.33	.03	1.03	-.28	.76
Self-Efficacy to Resist NSSI	.35*	1.41	-.77***	.47	-1.18***	.31
Affect Regulation Expectancies	1.38***	3.98	1.70***	5.45	.23	1.25
Pain Expectancies	-.34*	.71	-.33	.72	-.11	.89
Negative Self-belief expectancies	.13	1.14	.04	1.04	-.28	.76
Negative Social Expectancies	-.98***	.38	-.16	.85	-.24	.79
Communication Expectancies	.10	1.11	-1.20***	.30	-.16	.86
Cognitive Reappraisal	-.13	.88	.04	1.04	.32	1.38
Expressive Suppression	-.21	.82	-.14	.87	.03	1.03
Rumination	.17	1.19	.19	1.20	-.05	.95

Interactive effects						
EREAC ^c *Self-Efficacy to Resist	-.44*	.64	-.68**	.51	-.33	.72
NSSI						
EREAC*Affect regulation	-.44*	.64	-.10	.90	.40	1.50
EREAC*Pain	-.07	.94	-.26	.77	-.23	.80
EREAC*Negative Self-Belief	-.20	.823	.37*	1.45	.56*	1.74
EREAC*Negative Social	-.09	.91	.01	1.00	.09	1.10
EREAC*Communication	.26	1.23	.03	1.03	-.13	.88
EREAC*Reappraisal	.17	1.18	-.04	.96	-.20	.82
EREAC*Suppression	.09	1.20	-.33	.71	-.57*	.56
EREAC*Rumination	-.06	.94	-.13	.88	-.02	.98

Note.: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

^areference = no history of NSSI; ^breference = past history of NSSI; ^cemotional reactivity

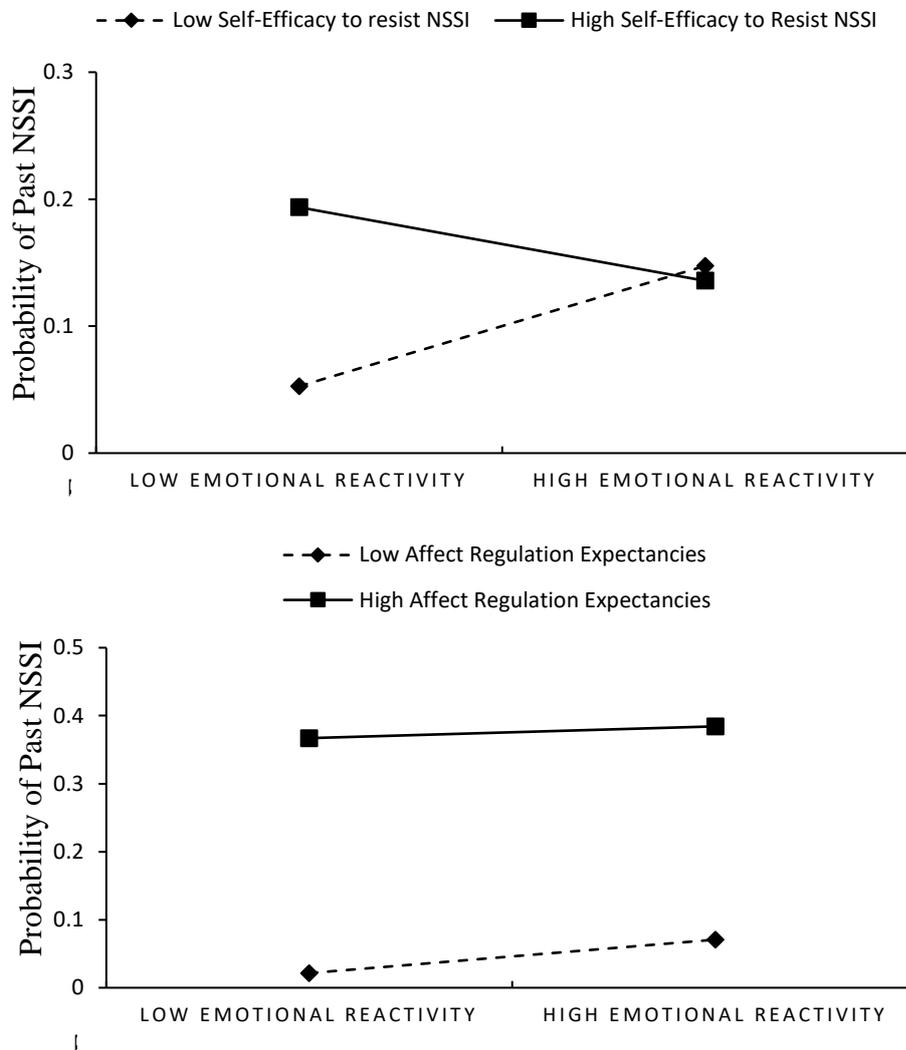


Figure 3.1. Self-efficacy to resist NSSI (top panel) and affect regulation expectancies (bottom panel) moderate the relationship between emotional reactivity and NSSI when comparing people who have engaged in NSSI but not in the past 12 months and those with no history of NSSI

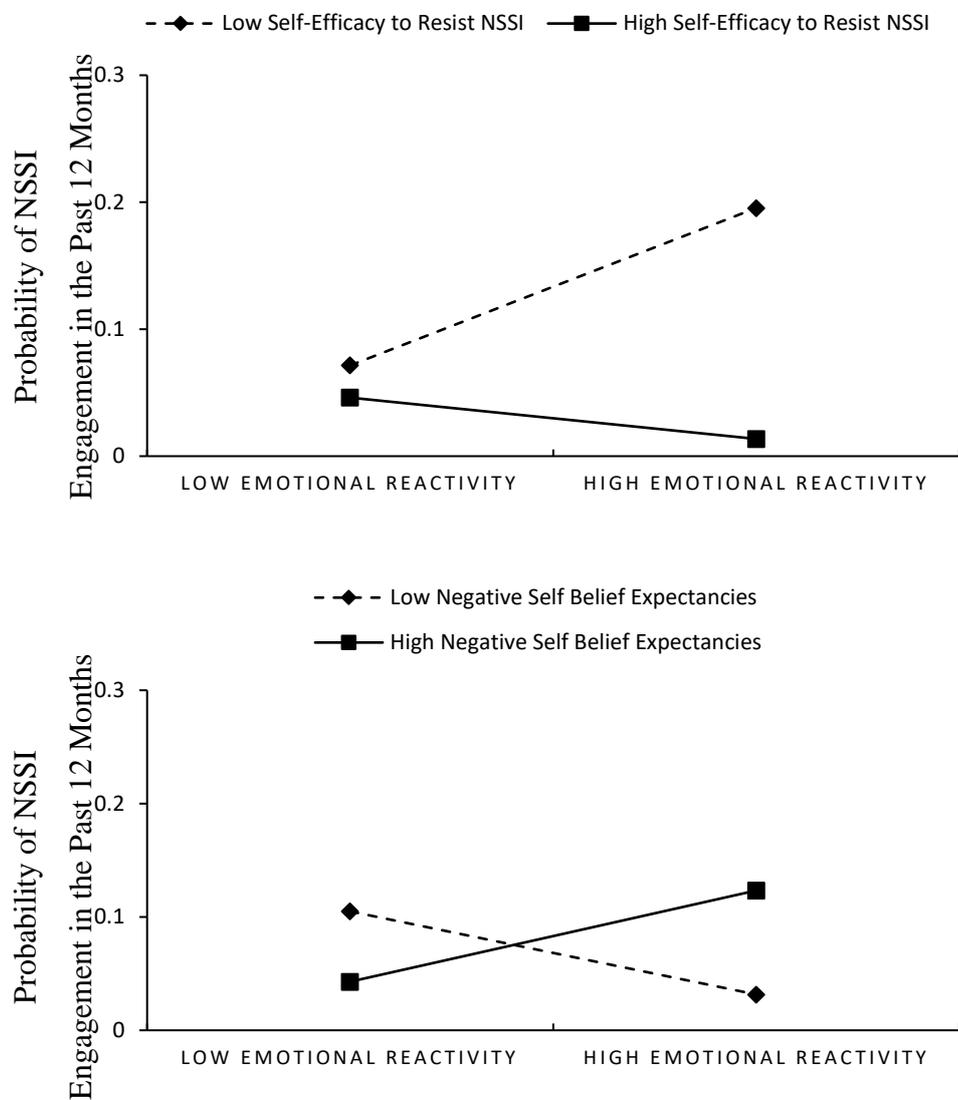


Figure 3.2. Self-efficacy to resist NSSI (top panel) and negative self-belief expectancies (bottom panel) moderate the relationship between emotional reactivity and NSSI when comparing people who have engaged in the last 12 months to people who have never engaged in NSSI.

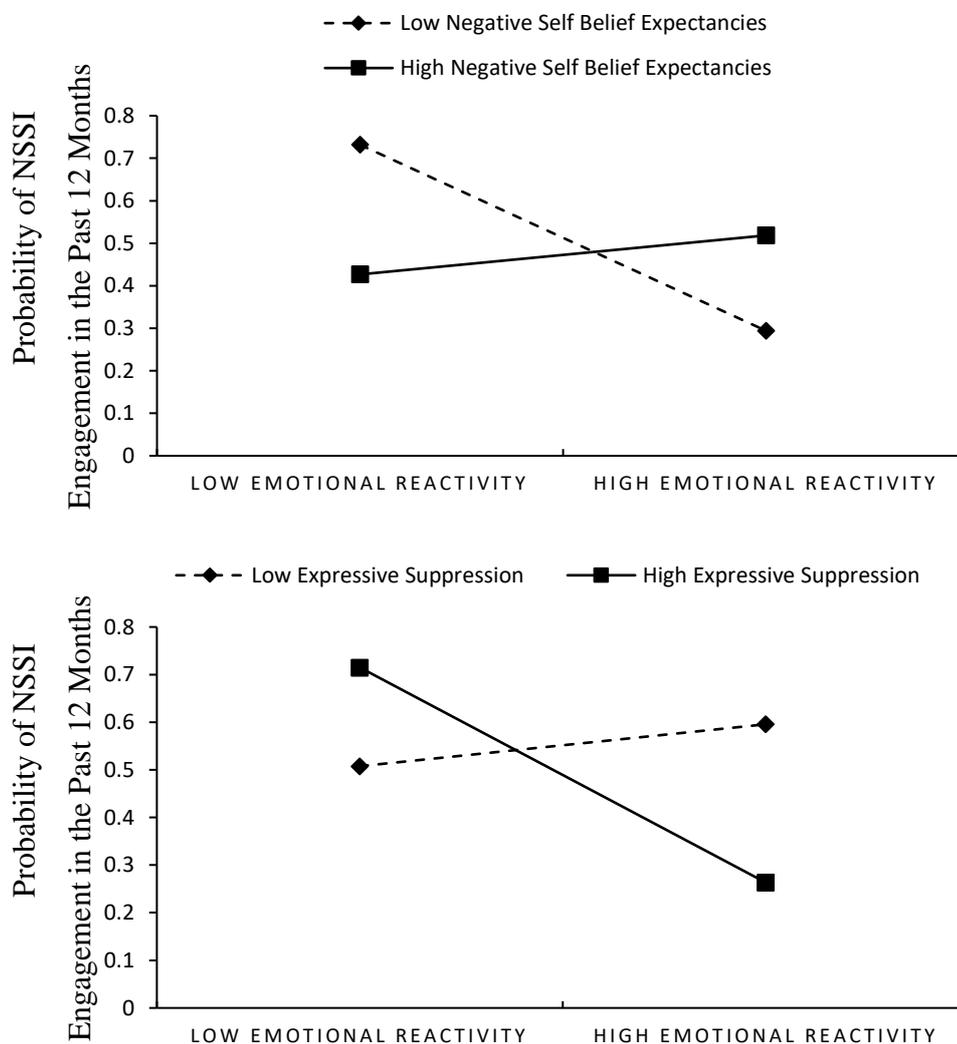


Figure 3.3. Negative self-belief expectancies (top panel) and expressive suppression (bottom panel) moderate the relationship between emotional reactivity and NSSI when comparing people who have engaged in NSSI in the past 12 months to those with a past history of NSSI.

Discussion

The recently proposed Cognitive-Emotional Model of NSSI comprises aspects of emotion regulation models of NSSI and cognitive constructs taken from Social Cognitive Theory to provide a more comprehensive perspective on the onset, maintenance, and cessation of NSSI (Hasking et al., 2017). The aim of the current study was to empirically test the prediction of the Cognitive-Emotional Model of NSSI, that the relationship between emotional reactivity and NSSI is moderated by NSSI-specific cognitions (i.e. self-efficacy to resist NSSI and NSSI outcome expectancies), as well as emotion regulation and rumination. Overall, the results partially support the proposed model, in that self-efficacy to resist NSSI, affect regulation expectancies, negative self-belief outcome expectancies, and expressive suppression moderated relationships between emotional reactivity and NSSI engagement.

Main effects of cognitive-emotional variables on NSSI

In line with Hasking and Rose's (2016) results, holding a belief that the urge to self-injure could not be resisted differentiated all three groups, with self-efficacy diminishing with more recent NSSI. This is consistent with Bandura's (1989; 1997; 2001) proposal that the belief in one's ability to successfully engage in or resist a behaviour directly predicts whether the individual will engage in the behaviour. Recent NSSI was also characterised by weaker expectations that NSSI would serve a communitive function. This may suggest that people who have self-injured determined that communication was not facilitated by NSSI, shaping their outcome expectancies to fit their past experience and guide their expected outcomes for future engagement. Furthermore, those who have never engaged in self-injury may hold the common misperception that those who self-injure do so to get attention from others (Klonsky, 2011).

Participants who had ceased their self-injury were less likely to expect pain from NSSI than those with no history, while recent and past NSSI were associated with stronger expectations that NSSI would regulate affect. This mirrors the results of previous studies, supporting the role of affect regulation expectancies in NSSI (Hasking & Boyes, 2017; Hasking & Rose, 2016) and the prediction of Social Cognitive Theory that positive outcome expectancies facilitate behaviour, while negative expectancies will reduce the likelihood of the behaviour (Bandura, 1989; 1997).

Moderating effects of cognitive-emotional variables

Self-efficacy interacted with emotional reactivity to predict 12-month NSSI, and to differentiate people who have ceased their self-injury from those with no history of the behaviour. As predicted by the Cognitive Emotion Model of NSSI, in both cases a lack of self-efficacy to resist NSSI, coupled with heightened emotional reactivity was related to a history of NSSI. Individuals with heightened emotional reactivity are more likely to have an emotional response that they feel is uncontrollable and if they do not believe that they can resist NSSI, this would increase the probability of NSSI being used to regulate that response.

Expecting NSSI to increase negative beliefs about the self, moderated the relationship between emotional reactivity and recent NSSI engagement (relative to people who had ceased NSSI and those with no history of NSSI). We found that weaker expectancies and heightened emotional reactivity were related to reduced odds of recent NSSI. Why recent NSSI is more probable with low emotional reactivity is counterintuitive, and requires further exploration. It is possible that within our sample those with low emotional reactivity are experiencing flat affect and use NSSI to “feel something” (Klonsky & Glenn, 2009). At the same time, people who engage in NSSI can hold a negative outcome expectancy, as a result of actually experiencing this outcome. As such, people who self-injure may expect NSSI to result in negative self-worth. Finally, it is possible that people hold competing expectancies, (e.g. affect regulation and expectations of diminished self-worth), and that the more salient expectancies win out. Using the model to predict function of NSSI would provide further insight into this relationship. Additionally, longitudinal data would provide insight into the formation of, and changes in, outcome expectancies.

Finally, we found no evidence for a direct relationship between the emotion regulation variables and NSSI, suggesting that the specific cognitions play a more salient role in facilitating NSSI. However, while there was no direct relationship, expressive suppression did moderate the relationship between emotional reactivity and recent NSSI, highlighting a role for emotion regulation in maintenance of NSSI. Specifically, high levels of suppression appeared protective against high levels of emotional reactivity, associated with reduced odds of recent NSSI. While expressive suppression is generally considered to be a less adaptive method of emotion regulation, it is possible that suppressing emotions in certain situations can reduce

negative affect (Liverant, Brown, Barlow, & Roemer, 2008). For participants in our sample who perceive themselves as highly emotionally reactive, it could be that using expressive suppression to modulate their emotions, reduces negative affect and helps them refrain from engaging in NSSI. Alternatively, those reporting high levels of suppression and high reactivity could be turning to other dysregulated behaviours, such as consuming alcohol, to regulate their emotional experience.

Clinical Implications

Our findings suggest that self-efficacy to resist NSSI and NSSI outcome expectancies could play an important role alongside emotional processes which could inform future prevention and intervention efforts. Alongside emotion focussed treatments, clinicians may want to challenge outcome expectancies - as has been used in interventions attempting to reduce alcohol consumption (Scott-Sheldon, Terry, Carey, Garey, & Carey, 2012). This could be implemented through devaluing the short term positive expectancies such as affect regulation while highlighting long and short term negative outcomes. Additionally, the salient role of self-efficacy to resist NSSI in facilitating the behaviour could be utilised within intervention by strengthening these beliefs which could effectively reduce NSSI engagement. As self-efficacy to resist alcohol significantly predicts relapse (Greenfield et al., 2000; Kadden & Litt, 2011), a focus on self-efficacy beliefs could be beneficial in treating NSSI.

Limitations and Future Research

The results of our study should be interpreted with some limitations in mind. Specifically, our data is self-report from a self-selected convenience sample of university students. Further exploration using a more representative sample should be conducted to ensure the generalisability of the results. Additionally, although a large proportion of students report some history of NSSI, few would meet proposed diagnostic criteria (Kiekens et al., 2018b). As such, replication in a clinical sample is warranted. The development and validation of a measure specifically designed to assess self-efficacy to resist NSSI would enhance specificity. Additionally, the cross-sectional nature of the study limits the knowledge we can gain from the data. A longitudinal study of how NSSI-specific cognitions and other constructs within the model change over time, would allow for further understanding of interactions between cognitions, emotions and NSSI. Ideally, a longitudinal study from early adolescence, measuring NSSI specific cognitions, emotion regulation, and other

NSSI-related factors through onset, maintenance, and cessation of NSSI behaviour would provide an understanding of changing patterns that could become the focus of prevention and intervention programs. Finally, considering the results suggesting expressive suppression to be a protective factor against recent NSSI, this relationship should be further explored to provide understanding and possibly inform how suppression is viewed in terms of NSSI cessation.

Conclusion

The results of this study provide support for the Cognitive-Emotional Model of NSSI and in particular the role of NSSI-specific cognitions. With further exploration, this model could provide a basis for the development of prevention and intervention programs that incorporate emotion regulation and specific cognitive elements.

Chapter 4: Thoughts and beliefs about nonsuicidal self-injury: An application of Social Cognitive Theory.

Introduction to Chapter 4

In the previous chapter I found that NSSI-related outcome expectancies and self-efficacy to resist NSSI play a role alongside the experience and regulation of emotions in understanding NSSI. Within Social Cognitive Theory, Bandura highlighted the need to consider the relationship between expectancies and self-efficacy when predicting behaviour as they can contradict each other. The current chapter expands on our knowledge about the role of NSSI-specific cognitions by exploring how NSSI-related outcome expectancies and self-efficacy to resist NSSI interact when predicting participants' history of self-injury.

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Jessica Dawkins	Development of research question, data collection, data management, data analysis, interpretation of results, and manuscript preparation	
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Abstract

According to Social Cognitive Theory, the anticipated consequences of a behaviour (outcome expectancies), coupled with our belief in our ability to successfully perform the behaviour (self-efficacy), determine the likelihood of engagement in a behaviour. We explored whether the relationship between nonsuicidal self-injury outcome expectancies and self-injury was moderated by self-efficacy to resist nonsuicidal self-injury. Five hundred and sixteen college students aged 18-26 years ($M=20.60$, $SD=1.86$). Self-report measures were completed online. The relationship between expecting self-injury would result in pain or emotion regulation and engaging in self-injury was moderated by a belief in the ability to resist self-injury. People who had never self-injured were more likely to believe that self-injury would cause physical pain and believe they could resist self-injury. A belief in the ability to resist self-injury countered expectations that self-injury would result in emotion regulation. Results may inform college based prevention and intervention efforts.

Nonsuicidal self-injury (NSSI), the direct and deliberate damage to one's own body tissue without suicidal intent (ISSS, 2020), is prevalent in adolescents (approximately 17%) and young adults (approximately 13%; Swannell et al., 2014). In college students, prevalence rates between 5-47% have been reported with a pooled estimate of 20%, indicating that students may be more likely to self-injure than their same age peers (Swannell et al., 2014). NSSI includes behaviours such as cutting, carving, and burning the skin, self-battery, and wound interference (Nock, 2010; Nock & Prinstein, 2004). Behaviours that are not socially sanctioned and or fit another diagnosis (e.g. trichotillomania, excoriation) are excluded from the definition. NSSI can cause physical harm, scarring, and psychological distress (Nock & Prinstein, 2004), and while NSSI is differentiated from suicidal behaviours, people who self-injure have four times the risk of future suicidal thoughts and behaviours than people who have never self-injured (Whitlock et al., 2013). In college students, NSSI is associated with poor academic performance (Kiekens et al., 2016), diagnoses of mental illness (Kiekens et al., 2018b), and the onset of suicidal thoughts and behaviours (Kiekens et al., 2018a). Nonsuicidal self-injury disorder (NSSI-D) has been included in the Diagnostic and Statistical Manual of Mental Disorder (5th ed.) as a "condition for further study" (American Psychiatric Association, 2013) with the first criteria being that NSSI has been engaged in on at least five days in the last 12 months. In college students this cut-off is the best predictor of the interference NSSI has on daily functioning (Kiekens et al., 2018b).

People who have engaged in NSSI most commonly report NSSI as serving an emotion regulation function (Nock & Prinstein, 2004; Guerry & Prinstein, 2009; Taylor et al., 2018). This is supported by empirical evidence that people who engage in NSSI experience a reduction in negative affect and an increase in positive affect after engaging in NSSI (Hamza & Willoughby, 2014). Given that NSSI is most often used to regulate unwanted emotional experiences, extensive research has explored the role of emotions in NSSI (Rodav, Levy, Hamdan, 2014). Only recently has research been conducted into the role of NSSI-specific *cognitions* in facilitating NSSI (Dawkins, Hasking, Boyes, Greene, & Passchier, 2018; Hasking, 2017; Hasking & Boyes, 2017; Hasking & Rose, 2016).

Social Cognitive Theory posits that our thoughts and feelings, environment, and behaviours exert bidirectional influence on each other (Bandura, 1986; 1989). Two cognitive processes taken from social cognitive theory that are relevant to NSSI

are outcome expectancies and self-efficacy expectancies. Anticipated outcomes of a given behaviour (outcome expectancies), and expectations of our ability to successfully complete a task (self-efficacy) are strong predictors of behaviour (Hasking, Boyes, & Mullan, 2015; Jones, Corbin, & Fromme, 2001). If we believe a behaviour will have a positive outcome, and we can successfully complete the task, we are more likely to engage in the behaviour. Holding positive outcome expectancies facilitates behaviour, while negative outcome expectancies play a protective role against engaging in risky behaviours such as high alcohol consumption and smoking (Jones et al., 2001; Van Zundert et al., 2009; Hasking & Oei, 2002). Self-efficacy expectancies, and the converse, refusal self-efficacy (the perception that you have the capacity to resist engaging in a specific behaviour), are salient predictors of many behaviours including excessive alcohol consumption (Hasking & Oei, 2002), unhealthy eating behaviours (Kelly, Mazzeo, & Bean, 2013), and NSSI (Tatnell, Kelada, Hasking, & Martin, 2014).

Within the Cognitive Emotional Model of NSSI, Hasking et al. (2017) consider the role of specific cognitions about self-injury alongside the experience and regulation of emotion in relation to NSSI. According to the model, an individual brings to a situation their propensity to be sensitive to and experience intense and long lasting emotions, and their specific thoughts about NSSI (i.e. outcome expectancies and self-efficacy to resist NSSI). When faced with a stressful or triggering situation, if a person is highly emotionally reactive, has difficulty tolerating distress and regulating emotions, believes they cannot resist the urge to self-injure (i.e. self-efficacy beliefs) and that self-injury will result in a desired outcome (i.e. outcome expectancies) they are more likely to engage in self-injury to avoid or change the emotion or avoid the situation all together.

Recently researchers have begun to investigate the role of outcome expectancies and self-efficacy expectancies in facilitating NSSI. According to Social Cognitive Theory, people who engage in NSSI should expect the behaviour to result in a positive outcome (such as affect regulation), while those who have never engaged in NSSI would expect a negative outcome (such as pain), assertions that have been supported in previous studies (Hasking & Boyes, 2017; Hasking & Rose, 2016). Similarly, people without a history of NSSI have a stronger belief in their ability to resist NSSI than those who have recently engaged in NSSI (Hasking & Rose, 2016). There have been recent suggestions that comparing people with and

without a history of NSSI is not nuanced enough to identify possible targets for treatment (Taylor et al., 2019). Identifying factors which may contribute to either the maintenance, reduction, or cessation of NSSI requires comparisons of people who have self-injured in the past with people who have recently and repeatedly engaged in self-injury. Dawkins et al. (2018) found that while people who had self-injured in the past held similar NSSI-related outcome expectancies to people who had recently self-injured, they had a stronger belief in their ability to resist NSSI in the future. Exploration of how these thoughts and beliefs differ between people who have recently and repeatedly engaged in NSSI from people who have self-injured less consistently could be useful in further informing future intervention efforts aimed at reducing the impact of NSSI on daily functioning.

In proposing Social Cognitive Theory, Bandura (1978) was clear that where outcome expectancies and self-efficacy can be expected to vary they need to be assessed together, and their interactional effect on behaviour examined. When entering into a situation you bring with you expectations of possible outcomes but it is your self-efficacy that determines whether you engage in an activity or not. For example, you may expect a desired outcome from a behaviour, but if you do not believe in your ability to successfully complete the task you may not engage in it; alternatively you may expect an unwanted outcome from a behaviour, but if you do not believe you can resist engaging in the behaviour, you may do it anyway. Although previous studies have found that NSSI-specific cognitions differentiate NSSI history (Dawkins et al., 2018; Hasking & Boyes, 2017; Hasking & Rose, 2016) and differentiate NSSI from other health risk behaviours (Hasking, 2017; Hasking, Boyes, & Greves, 2018), to the best of our knowledge no previous study has determined how they may work together when differentiating NSSI history.

Current study

The aim of the current study was to explore the interactions between NSSI-specific cognitions (i.e. NSSI outcome expectancies and self-efficacy to resist NSSI) in relation to NSSI. It is expected that people who have engaged in NSSI will hold more positive outcome expectancies (e.g., affect regulation), and weaker self-efficacy to resist NSSI than people who have no history of the behaviour. Additionally, it is expected that the relationship between outcome expectancies and NSSI will be moderated by self-efficacy to resist NSSI, such that self-efficacy to resist NSSI will counter more positive outcome expectancies, and bolster the effect

of negative outcome expectancies (e.g. expectations of pain). It is also expected that people who have engaged in NSSI frequently in the last 12 months (i.e. 5 or more times) will have weaker self-efficacy to resist NSSI than people who have engaged in self-injury less frequently.

Method

Participants and procedure

As part of a larger study, college students from 17 Australian colleges accessed the questionnaires through an online portal where it was advertised to students wishing to participate in research for course credit. We also advertised via college guilds and clubs' Facebook pages for the chance to win a gift voucher. Online recruitment materials included information about the study's inclusion criteria, the length of the survey, topics of questions being asked (e.g. self-injury, emotional experiences), and contact information for the researchers. Interested students were directed to the online survey, where they were provided information about the study aims, participation requirements, confidentiality, and secure data handling. After reading the information sheet and providing informed consent, students completed the questionnaire, taking 45-60 minutes, in a location of their choosing. All participants could download information about reducing stress, and local mental health resources. The research protocol was approved by the Human Research Ethics Committee at Curtin University

Measures

Nonsuicidal self-injury. Engagement in self-injury, methods, and frequency were measured using the Inventory of Statements About Self-Injury (ISAS; Klonsky & Glenn, 2009). Participants were asked whether they had ever engaged in NSSI (i.e. yes, no), and if they had, how many times in the past 12 months. Additionally, participants who had engaged in NSSI reported in an open text format the lifetime frequency of 12 NSSI methods (e.g. cutting, scratching, biting). This scale was used to differentiate people who had never engaged in NSSI from people with a history of NSSI. It was also used to determine who, of the participants who reported having engaged in NSSI, had engaged five or more times in the past 12 months.

NSSI outcome expectancies. The 25-item Nonsuicidal Self-Injury Expectancy Questionnaire (NEQ) measures 5 outcome expectancies related to self-injury (Hasking & Boyes, 2017). Participants responded on a 4-point Likert scale from 1 (not likely at all) to 4 (extremely likely) how likely they believed a certain

outcome would be should they engage in NSSI in the future. The 5 expectancies measured relate to: affect regulation (e.g., I would feel calm), anticipated negative social outcomes (e.g., My friends would be disgusted), anticipated communicative function of NSSI (e.g., Other people would notice and offer sympathy), expectations of physical pain (e.g., It would hurt), and negative self-beliefs (e.g., I would feel like a failure). Each subscale comprises 5 items. Two items in the physical pain subscale (i.e. I would not be aware of any physical pain, I would not feel any pain) were reverse scored. The mean response for each subscale were calculated with higher scores indicating stronger belief that NSSI would result in that outcome. The subscales demonstrate good internal consistency ($\alpha = .71 - .86$), reliably differentiate people who self-injure from those who do not, and are specific to NSSI rather than other behaviours (i.e., drinking; Hasking, 2017; Hasking & Boyes, 2017). Internal consistency for each subscale in this sample was: affect regulation $\alpha = .88$; negative self-belief expectancies $\alpha = .75$; negative social outcomes $\alpha = .85$; pain expectancies $\alpha = .78$; and communication expectancies $\alpha = .76$.

Self-efficacy to resist NSSI. How strongly participants believe they can resist the urge to self-injure was measured using an adapted version of the Self-Efficacy to Avoid Suicide Action scale developed by Czyz et al. (2014). The adapted version asks participants to rate how certain they are that they can resist the urge to self-injure in the future. The scale comprises 6 items responded to on a 6-point Likert scale from 1 (very uncertain) to 6 (very certain; e.g., how certain are you that you could control future self-injurious thoughts if you lost an important relationship?). The mean of all items was calculated (potential score range 1-6), with higher means indicating stronger self-efficacy to resist NSSI. Czyz et al.'s (2014) measure has strong convergent validity being correlated with suicidal ideation ($r = -.59$; $p < .001$) and evidencing strong internal consistency (Cronbach's $\alpha = .96$). The adapted NSSI version also has strong internal consistency (Cronbach's $\alpha = .92$). Cronbach's alpha for this sample was .94.

Psychological distress. The Kessler Psychological Distress Scale (K10; Kessler et al., 2002) measures psychological distress with 10-items relating to feelings experienced in the past four weeks. We used the K-10 to statistically control current symptoms of distress. Participants responded on a 5-point Likert scale from 1 (none of the time) to 5 (all of the time), how relevant the statement is for them (e.g., about how often did you feel worthless?). All items were summed (potential score

range 10-50) with higher scores indicative of higher psychological distress. Internal consistency in this sample was strong (Cronbach's alpha, $\alpha = .93$).

Analysis

Two hierarchical binary logistic regressions were performed, using SPSS, Version 25.0, one differentiating people with a history of NSSI from people without a history of NSSI and another differentiating people with a history of NSSI who have engaged in NSSI 5 or more times in the past 12 months from those with a history of NSSI who engaged in NSSI less than 5 times in the past 12 months. Psychological distress, as measured by the K10 and gender were statistically controlled in each analysis by being entered into the model at Step one. In Step 2 the Social Cognitive variables were added (self-efficacy to resist NSSI and NSSI expectancies) and in the final step 2-way interactions between self-efficacy to resist NSSI and each of the NSSI outcome expectancies were added. Simple slopes analysis, using PROCESS (Hayes, 2013) was used to interpret all significant interactions. All variables were standardised to minimise multicollinearity (Aiken & West, 1991).

Results

Preliminary analysis

Participants were 516² Australian college students aged 18-25 years ($M = 20.60$, $SD = 1.86$); 398 (77.1%) were female and 118 (22.9%) male. Eight (1.6%) participants identified as Aboriginal or Torres Strait Islander. Participants were primarily born in Australia (76.9%) with remaining students being born in 35 different countries. The majority (96.7%) were enrolled in undergraduate studies. Of the full sample 196 (38%) reported a lifetime history of NSSI. Of the people who had engaged in NSSI, 35 (17.86%) had engaged in NSSI more than five times in the past 12 months. Cutting (47.3%) was the most common form of self-injury, followed by severe scratching (13.6%), and self-battery (12.5%). The mean age of NSSI onset was 14 years ($SD = 3.08$). Age ($r = -.01$, $p = .89$), and gender ($\chi^2 = 5.46$, $p = .07$), were not related to NSSI engagement and as such were not controlled in analyses. Missing variables analysis revealed less than 5% of missing data across variables. Data was not missing completely at random $\chi^2 (881) = 1051.32$, $p < .001$, however, considering the small percentage of missing data expectation maximisation was used

² Sample size calculations suggested a sample size of 366. This was conducted using Peduzzi et al. (1996) for logistic regression taking into account the suggested 10:1 participant to predictor ratio and the expected 30% probability of NSSI being present.

to impute these data (Tabachnick & Fidell, 2013). Bivariate correlations can be found in Table 4.1 and demonstrate significant relationships between continuous variables.

Comparisons of group means indicated that NSSI was associated with affect regulation expectancies, weaker expectations of pain or communication, and lowered self-efficacy to resist NSSI (Table 4.2). Individuals who had engaged in self-injury 5+ times in the past year reported lower self-efficacy to resist NSSI than individuals who had engaged in self-injury less frequently (Table 4.2).

Differentiating NSSI history

The full model differentiating people who had engaged in NSSI from those who had not was statistically significant, $\chi^2(113, N= 516) = 252.04, p < .001$, predicting between 38.7% (Cox & Snell R^2) and 52.6% (Nagelkerke R^2) of the variance. A history of NSSI engagement was associated with high psychological distress, stronger affect regulation expectancies, weaker pain expectancies, and weaker communication expectancies (Table 4.3).

Self-efficacy to resist NSSI moderated the relationship between expectations of affect regulation, negative social outcomes, pain, and NSSI. Expectations of affect regulation were associated with engaging in NSSI, but this relationship was stronger for people with weaker self-efficacy to resist NSSI (Low self-efficacy: $b = 1.63, z = 6.26, p < .001$; High self-efficacy: $b = .87, z = 3.36, p < .001$, Figure 1). There was no significant relationship between expecting negative social outcomes and NSSI for participants with high self-efficacy to resist NSSI, $b = .15, z = .69, p = .49$. However, there was a significant negative relationship for participants who had weaker self-efficacy to resist NSSI, $b = -.62, z = -2.69, p < .05$. There was no relationship between pain expectancies and odds of past NSSI for participants with weaker self-efficacy to resist NSSI, $b = .27, z = 1.23, p = .22$ (Figure 4.1). However, there was a significant negative relationship for those with strong self-efficacy to resist NSSI, $b = -1.16, z = -4.90, p < .001$ (Figure 4.1).

Table 4.1.

Correlations, means, and standard deviations of all variables (N=516).

	M(SD)	2.	3.	4.	5.	6.	7.	8.	9.
1. NSSI Engagement	-	.40*	-.09*	-.04	-.34***	-.24***	-.16***	.25***	-.01
2. Affect regulation expectancies	1.95(.77)		.041	.157**	-.416***	.162***	-.433***	.278***	.086
3. Negative self-belief expectancies	2.85(.66)			.496***	.335***	.247***	.020	.183***	.051
4. Negative social outcomes	2.60(.77)				.171***	.210***	-.067	.162***	.038
5. Pain expectancies	3.22(.61)					.066	.243***	-.168***	.002
6. Communication expectancies	2.01(.62)						.014	-.070	.046
7 Self-efficacy to resist NSSI	4.44(1.50)							-.312***	.022
8. Psychological distress	24.73(8.78)								.021
9. Age	20.60(1.90)								

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

Table 4.2

Group comparisons

	No NSSI M(SD)	NSSI History M(SD)	F	partial η^2	NSSI <5 M(SD)	NSSI 5+ M(SD)	F	partial η^2
Affect regulation expectancies	1.68(.69)	2.38(.69)	124.77***	.20	2.32(.68)	2.65(.70)	6.83*	.03
Negative self-belief expectancies	2.89(.67)	2.79(.63)	2.37	.01	2.80(.63)	2.82(.66)	.06	.00
Negative social outcome expectancies	2.61(.77)	2.57(.75)	.46	.00	2.53(.74)	2.71(.79)	1.54	.01
Pain expectancies	3.38(.62)	2.95(.50)	69.13***	.12	2.93(.48)	3.05(.54)	1.83	.01
Communication expectancies	2.13(.60)	1.80(.60)	38.41***	.07	1.81(.62)	1.76(.50)	.16	.01
Self-efficacy to resist NSSI	4.79(1.39)	3.86(1.49)	52.51***	.09	4.10(1.40)	2.73(1.39)	27.81***	.13
Psychological distress	22.46(8.14)	28.37(8.56)	61.49***	.11	27.08(8.31)	34.28(7.23)	22.48***	.10

Note. No NSSI = participants with no history of NSSI,

NSSI History = participants with any history of NSSI,

NSSI < 5 = participants with a history of NSSI who have engaged in NSSI less than 5 times in the past year,

NSSI 5+ = participants who have engaged in NSSI 5 or more times in the last 12 months.

Table 4.3

Binomial logistic regression results

	NSSI History ^a		NSSI 5+ ^b	
	B	Odds Ratio	B	Odds Ratio
Constant	.79***	.45	-4.06***	.02
Step 1				
Psychological distress	.71***	2.04	.94***	2.55
Step 2				
Self-Efficacy to Resist NSSI	-.18	.84	-.85**	.43
Positive Affect Expectancies	1.21***	3.36	.34	1.41
Pain Expectancies	-.45**	.64	-.12	1.13
Negative Self-belief expectancies	.17	1.18	-.16	.85
Communication Expectancies	-1.03***	.36	-.02	.98
Negative Social Expectancies	-.20	.82	-.212	.81
Step 3				
Self-Efficacy to Resist NSSI*Positive Affect	-.38*	.68	.01	1.01
Self-Efficacy to Resist NSSI*Pain	-.48***	.62	-.67**	.51

Self-Efficacy to Resist NSSI*Negative Self-Belief	-.07	.93	.56	1.75
Self-Efficacy to Resist NSSI*Communication	.07	1.07	-.74*	.48
Self-Efficacy to Resist NSSI*Negative Social	.37*	1.46	.08	1.08
Nagelkerke R ²	.525		.412	
Chi-square	250.88, df=12, p<.001		56.61, df=12, p<.001	

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

^areference = no history of NSSI; ^breference = NSSI less than 5 times in past 12 months

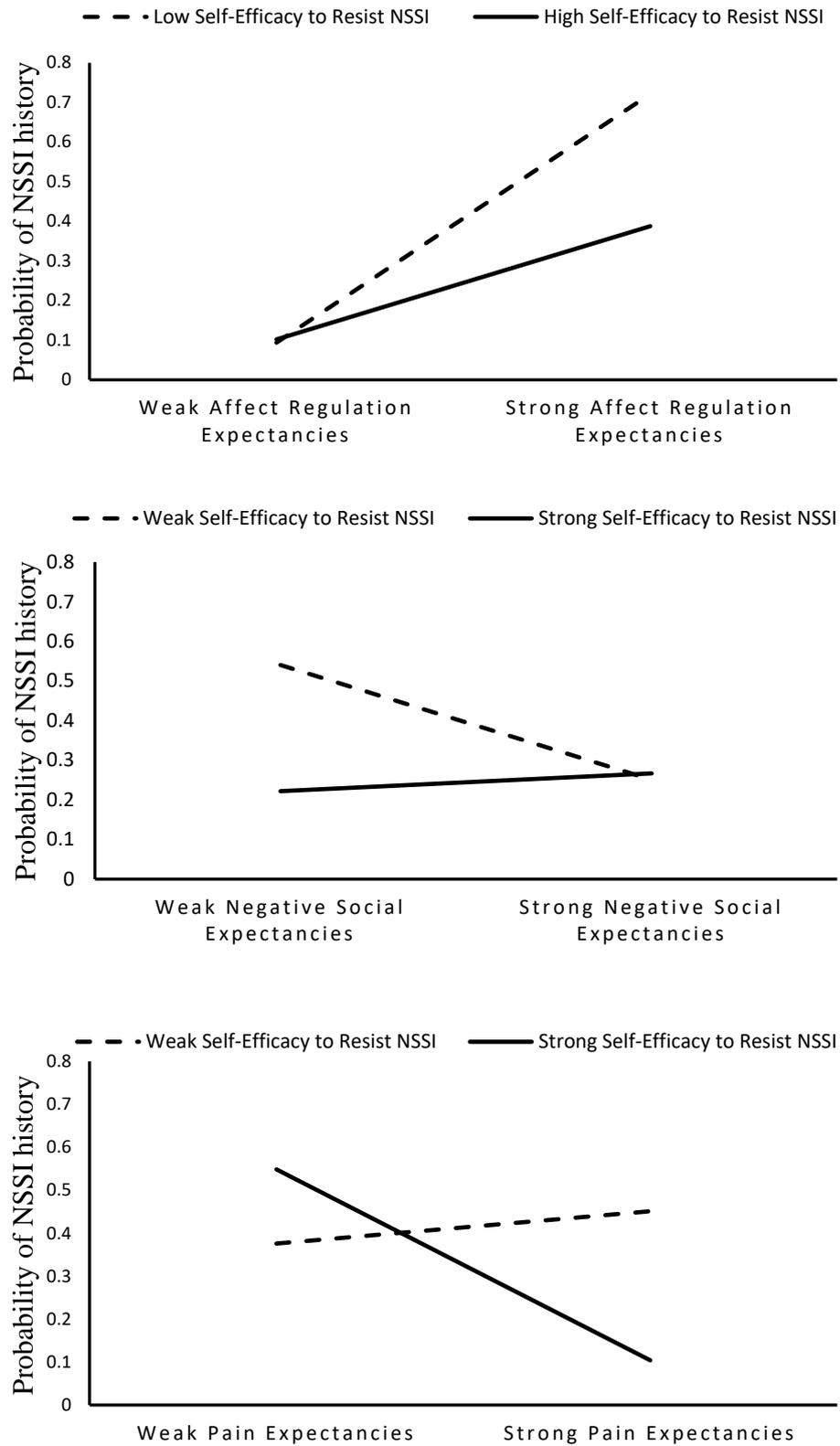


Figure 4.1. Self-efficacy to resist NSSI moderated the relationship between affect regulation expectancies (top), negative social expectations (middle), and pain expectancies (bottom) with NSSI when comparing people with a history of NSSI to those with no history of NSSI.

Differentiating frequent NSSI

The full model differentiating people who had engaged in NSSI five or more times in the past 12 months from people with a history of NSSI who had self-injured less than five times in the past 12 months was statistically significant, $\chi^2(13, N= 196) = 59.41, p <.001$, predicting between 26.1% (Cox & Snell R^2) and 43.0% (Nagelkerke R^2) of the variance. Self-efficacy to resist NSSI was significantly associated with NSSI engagement and weakened with more frequent NSSI (Table 3).

Self-efficacy to resist NSSI moderated the relationship between expectations of both pain and communication, and NSSI. Expecting NSSI to result in pain was positively associated with having engaged in NSSI 5 or more times in the past 12 months for people who reported having weak self-efficacy to resist NSSI, $b = .84, z = 1.99, p < .05$ (Figure 2). There was also a negative relationship between pain expectancies and NSSI frequency for people who reported strong self-efficacy to resist NSSI which approached significance, $b = -1.07, z = -1.82, p = .07$. While simple slopes analysis revealed no significant relationships between expectations of communication and NSSI, the negative relationship approached significance for people with stronger self-efficacy to resist NSSI, $b = -1.05, z = -1.81, p = .07$ (Figure 2). There was no relationship for participants with weaker self-efficacy to resist NSSI, $b = .43, z = 1.44, p = .15$.

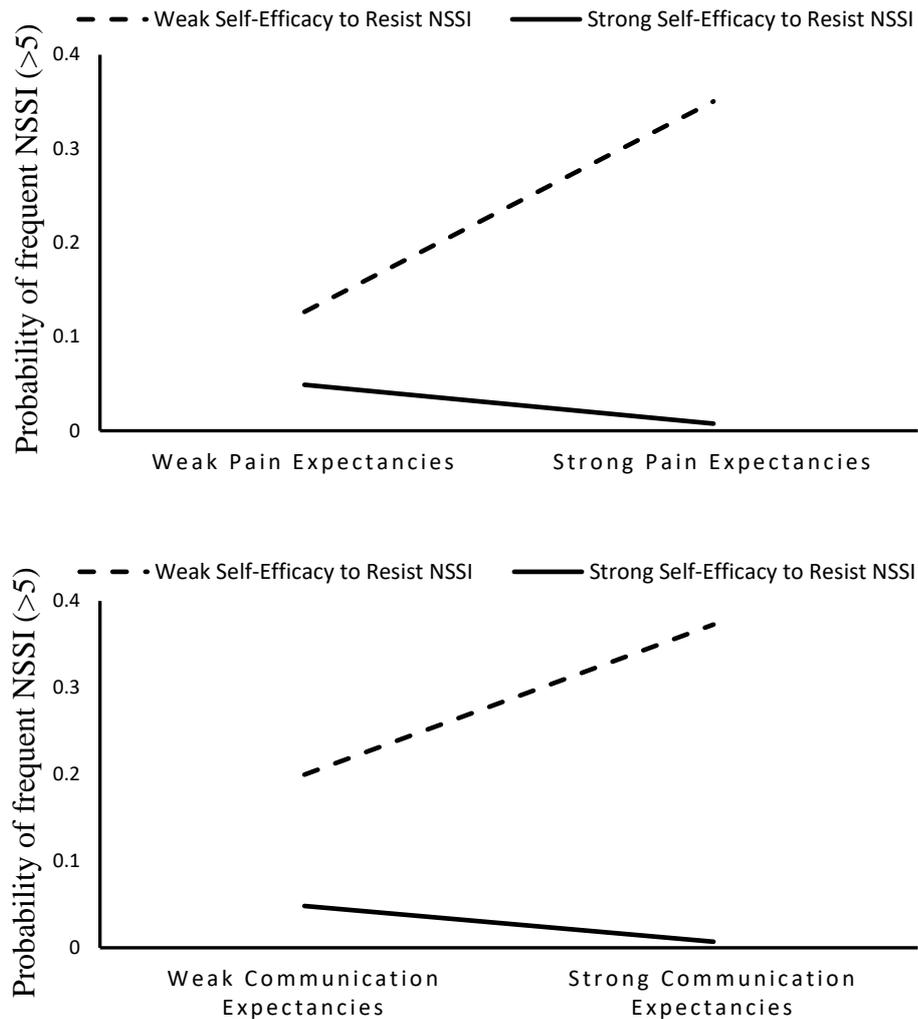


Figure 4.2. Self-efficacy to resist NSSI moderated the relationship between pain expectancies (top) and communication expectancies (bottom) with NSSI when comparing people who have engaged in NSSI five or more times in the past 12 months to those who have engaged in NSSI less than five times in the past 12 months.

Discussion

The aim of this study was to explore how specific thoughts and beliefs about self-injury interact in relation to NSSI. Drawing on Bandura's (1978) Social Cognitive Theory, it was expected that NSSI outcome expectancies and self-efficacy to resist NSSI would work together in differentiating people with a history of NSSI from those without. Results suggest that NSSI-specific cognitions are important in facilitating NSSI, with a number of specific thoughts and beliefs differentiating people with a history of NSSI from those with no history of NSSI. Additionally, these beliefs differentiate people who have frequently engaged in self-injury from those who have engaged less frequently. These results may inform future intervention efforts focussing on strengthening beliefs in the ability to resist NSSI for college students who are frequently engaging in the behaviour.

While NSSI-related outcome expectancies differentiated people with and without a history of NSSI, they did not differentiate the frequency of NSSI. In line with the current literature, people with a history of NSSI expected NSSI to regulate emotional experiences (Dawkins et al., 2018; Hasking, 2017; Hasking & Boyes, 2017; Hasking & Rose, 2016). Conversely, expecting NSSI to be physically painful decreased the likelihood of self-injury. People who have never engaged in self-injury also expected that if they were to self-injure in the future it would result in more communication and care from others. It is likely that this belief stems from a common misperception that NSSI is an attention seeking behaviour (Hamza & Willoughby, 2014). However, NSSI is usually a private behaviour (Klonsky & Muehlenkamp, 2007) and those who have a history of NSSI hold weaker expectations of communication. Many may have previously experienced that NSSI does not facilitate communication with others, shaping their expectations. Irrespective of NSSI history, people hold similar expectations with regards to negative social consequences and diminished self-worth if they were to engage in NSSI in the future. Again, people who have a history of self-injury may have experienced these negative outcomes in the past and this has shaped their expectations of future behaviour.

Consistent with Social Cognitive Theory (Bandura, 1986; 1989), a belief in the ability to resist the urge to self-injure was associated with reduced risk of self-injury, and increased as NSSI becomes less frequent. Of note, this belief could reduce the likelihood of NSSI for those with strong affect regulation expectancies.

Additionally, it seems that expecting friends and family to be angry or upset if you were to self-injure is associated with not having engaged in frequent NSSI even for people who had little belief in their ability to resist self-injury. This suggests that drawing on loved ones as a resource in clinical practice could be beneficial for people who would like to cease NSSI but have little confidence in their ability to do so. In a recent study, people with a history of self-injury reported that in instances when they did not act on urges to self-injure, they were often thinking about the negative effect of NSSI on their loved ones, and imagining their loved ones being upset if they were to self-injure (McEvoy, Hayes, Hasking, & Rees, 2017).

Having strong expectations that NSSI would result in pain was associated with no history and less frequent NSSI when people had a strong belief in their ability to resist NSSI. Additionally, people who held strong expectations that NSSI would result in physical pain, but did not believe they could resist self-injury were more likely to have frequently engaged in self-injury. This suggests that people who have very little belief in their ability to resist NSSI engage in NSSI even when they believe it will result in pain. It could also reflect that physical pain may not be an undesired outcome for some people, particularly those frequently engaging in NSSI. As we have not asked participants whether they see pain as a desired or undesired outcome we cannot speak to this for sure but should consider it in future research.

Implications

Our findings suggest that self-efficacy expectancies and outcome expectancies work together in facilitating NSSI in college students. As such they could be considered by college services in both prevention and intervention efforts. Expectancy challenges could be adopted by college counsellors in the treatment of NSSI (Scott-Sheldon et al., 2012). For example, challenging affect regulation expectancies by acknowledging the short term relief but highlighting long term increases in negative affect may be useful in reducing the frequency of NSSI engagement (McEvoy et al., 2017). While challenging outcome expectancies may assist in reducing NSSI, self-efficacy to resist NSSI appears to play a more salient role in limiting NSSI. It is possible that interventions strengthening self-efficacy to resist NSSI could be effective in reducing NSSI engagement and should be considered alongside emotion regulation focussed therapies. For example, highlighting when clients have been able to resist in the past, even for a short time, and over time building up their belief in their ability to resist NSSI in the future.

Knowledge of the expectations people hold about self-injury could also be useful for other college health services. When students present to general practitioners, nurses, and other student health services after engaging in self-injury, services will be better equipped to understand why someone may have self-injured. This will facilitate communication with students and assist in liaising with counselling services about possible treatment and intervention options.

Limitations and future research

The results of this study should be interpreted with some caution. Specifically, the cross-sectional nature of the study means we cannot determine how these thought patterns change over time and therefore cannot infer causality. While outcome expectancies and self-efficacy seem to differentiate people with and without a history of self-injury we cannot determine whether these thoughts are predictive of future engagement in NSSI. Longitudinal data measuring outcome expectancies, self-efficacy expectancies, and related NSSI variables through onset, maintenance, and cessation of NSSI would provide further insight into how these thoughts and beliefs are developed, change, and are maintained over time. Additionally, a study using ecological momentary assessment may be able to generate more in-depth data of the specific thoughts and beliefs held in mind prior to individual acts and urges of NSSI. Asking participants multiple times a day to record the thoughts they have about self-injury and the strength of the thoughts in mind when they experience an urge to self-injure, could shed light on how expectancies and self-efficacy to resist NSSI facilitate or protect against NSSI in real time. Consideration that sampling bias may have resulted in a higher rate of psychopathology among our sample is needed as psychopathology may influence outcome expectancies and self-efficacy expectancies. While we did not measure symptoms of any specific psychological disorders we did assess psychological distress and control for this in all analysis. Additionally, as this study was conducted in an Australian higher education context, replication in colleges in other parts of the world may be beneficial.

Conclusion

This study explored specific thoughts about self-injury, including how outcome expectancies and self-efficacy to resist NSSI work together in differentiating self-injury history and frequency. The results highlight the importance of considering how thoughts and beliefs about self-injury influence each other in

facilitating NSSI. Future research in this area could inform prevention programs and interventions focussing on increasing self-efficacy to resist NSSI.

Chapter 5: Knowledge of parental nonsuicidal self-injury in young people who self-injure: The mediating role of outcome expectancies

Introduction to Chapter 5

In the previous two chapters I found support for the role of NSSI-specific cognitions within the Cognitive Emotion Model of NSSI and the proposal of Social Cognitive Theory that outcome expectancies and self-efficacy beliefs interact in predicting behaviour. In the current chapter I examine a possible source or influence on NSSI-related outcome expectancies and in turn participants' history of engaging in NSSI. I drew on Social Cognitive Theory to explore the possibility of intergenerational transference of NSSI through social learning. Outcome expectancies can be influenced by observing the consequences of other people's behaviour. One possible avenue of social learning is knowledge of a parent engaging in self-injury.

Early studies indicated prevalence rates of self-injury around 8.9-13.9% (Martin, Rotaries, Pearce, & Allison, 1995; Ross & Heath, 2002) in young people and these participants would now be old enough to have children/teenagers of their own. We also know that adults engage in self-injury (Swanell et al., 2014) and in an epidemiological study the oldest age of onset of self-injurious behaviour was in the 60's (Martin, Swannell, Harrison, Hazell, & Taylor, 2010).

Within the alcohol literature it has been found that offspring's' drinking behaviour and alcohol related expectancies are influenced by parents drinking behaviour (Campbell & Oei, 2010b). Campbell and Oei (2010b) found that observing parents drinking behaviour influenced their children's alcohol related outcome expectancies and in turn their drinking behaviour. In this I chapter explored whether participants' knowledge of a parent engaging in self-injury was associated with participants' history of self-injury and whether this relationship was mediated by NSSI-related outcome expectancies.

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Mark Boyes	Assisted with development of research question, data analysis, interpretation, and manuscript preparation	

Abstract

Many dysregulated behaviours, used to cope with intense or unwanted emotion, can be learned in an interpersonal context. Nonsuicidal self-injury (NSSI) is potentially one such behaviour. In this study we explored whether knowing a parent self-injured was associated with NSSI among young adults, and whether such an association could be explained by thoughts and beliefs about NSSI. Specifically we tested the roles of anticipated outcomes of NSSI, and belief in the ability to resist urges to self-injure, in this relationship. A sample of 669 university students, aged between 17-30 years ($M = 20.77$, $SD = 2.31$), completed self-report measures of the constructs of interest. Of the sample 43 (6.4%) were aware of a parent self-injuring; this was associated with a threefold increase in history of NSSI reported by participants. This relationship was mediated by expectations that NSSI would relieve negative affect, and weaker expectations of resulting physical pain. The relationship between pain expectancies and NSSI was moderated by self-efficacy to resist NSSI. The results suggest that knowledge of parental NSSI may be a risk factor for NSSI in their children, and that cognitions about NSSI could be a potential mechanism explaining this relationship.

Nonsuicidal self-injury (NSSI), the direct and deliberate damage to one's own body without suicidal intent (ISSS, 2020), includes behaviours such as cutting, carving, and burning the skin, as well as self-battery and wound interference (Nock, 2009). People most commonly report using NSSI to regulate heightened and unwanted emotions (Chapman et al., 2006; Nock, 2009). Although NSSI is most prevalent in adolescents, with around 17% reporting a lifetime history of NSSI, it is also common in young adults (13% lifetime history) and university students (20%; Swannell et al., 2014). NSSI causes physical harm that can result in the need for medical attention, hospitalisation, and lifelong scarring (Bentley et al., 2014; Lewis & Mehrabkhani, 2015). NSSI is associated with significant psychological morbidity, including depressive and anxiety disorders (e.g., Bentley et al., 2014). Further, people who engage in NSSI are four times more likely to engage in suicidal behaviours than people with no history of NSSI, making NSSI an important consideration when developing suicide prevention programs (Whitlock et al., 2013).

Over the last 30 years NSSI has become an increasing area of interest in both clinical and research domains. One area of interest has been how the idea to self-injure initiates. Although many people cannot articulate where they first encountered NSSI, 40-50% say they were exposed to the behaviour by someone else or through media (Deliberto & Nock, 2008; Heath, Ross, Toste, Charlebois, & Nedecheva, 2009). This social learning is reflected in findings that exposure to films depicting characters who self-injure is associated with NSSI, especially if the person identifies with the character (Muehlenkamp, Hoff, Licht, Azure, & Hasenzahl, 2008; Radovic & Hasking, 2013). While peers teaching or encouraging each other to engage in self-injury is not common (Victor & Klonsky, 2018), people who self-injure are more likely than people without a history of NSSI to know someone else who self-injures (Hasking, Andrew, & Martin, 2013; Prinstein et al., 2010). However one potential source of social learning that has rarely been explored is through knowledge of parental self-injury. This knowledge could be obtained by witnessing parents engaging in self-injurious behaviours, observing the resultant scars, or parents may openly discuss their self-injury with their children. In an early study, adolescents who were aware a family member self-injured were more likely to report a history of NSSI, although this difference was not statistically significant (Deliberto & Nock, 2008). More recent work supports an association between emotion dysregulation in parents and NSSI reported by their children (Gromatsky et al., 2017).

Intergenerational effects have been observed for a range of other dysregulated behaviours, including risky drinking (Campbell & Oei, 2010a), gambling (Dowling et al., 2018), and suicidal behaviours (Burke et al., 2010).

The cognitive model of intergenerational transference of alcohol use (Campbell & Oei, 2010a) argues that the mechanism by which parent drinking influences drinking in youth is via cognitions and beliefs about drinking. Following social cognitive theory, Campbell & Oei (2010a) propose that young people can learn about the consequences of drinking by observing their parents consuming alcohol. These outcome expectancies in turn predict the volume and frequency of youth drinking. Similarly, youth can develop a sense of how easily they could resist drinking alcohol (drinking refusal self-efficacy). This cognitive model has been supported both when predicting intergenerational alcohol use (Campbell & Oei, 2010b) and gambling (Dowling et al., 2018). Arguably, similar processes may play a role in any relationship between parental NSSI, and NSSI reported by youth.

The Cognitive-Emotional Model of NSSI (Hasking et al., 2017) outlines a specific role for the social cognitive constructs of outcome expectancies and self-efficacy in the onset and maintenance of NSSI. Generally, the researchers propose that if the anticipated consequences of NSSI are viewed as positive (e.g. emotional relief), this will increase likelihood of the behaviour. At the same time, a belief in the ability to resist the urge to self-injure will be protective. Following this, researchers have found that people who self-injure have weaker self-efficacy to resist NSSI, stronger positive outcome expectancies (e.g. affect regulation) and weaker negative outcome expectancies (e.g. pain) than people with no history of NSSI (Hasking, 2017; Hasking & Rose, 2016). It is possible that these beliefs could have developed through knowledge of a parent's engagement in NSSI, much like alcohol expectancies are influenced by parents' drinking behaviour.

In this study we aimed to test whether there is an association between participants' knowledge of a parent engaging in NSSI and whether the participant has a history of NSSI. Additionally, we tested the mediating role of outcome expectancies in this relationship, and whether self-efficacy to resist NSSI moderated relationships between NSSI outcome expectancies and NSSI. We expected parental NSSI to be related to outcome expectancies, and for self-efficacy to resist NSSI to moderate relationships between these expectancies and NSSI, such that even if

participants hold favourable expectancies, a belief in the ability to resist NSSI would counter these expectations and reduce the probability of NSSI.

Method

Participants & procedure

The sample comprised 669³ university students, aged 17-30 years ($M = 20.77$, $SD = 2.31$). Of these 77.50% ($n=517$) were female, and the majority (96.7%) were in undergraduate study. Participants were recruited from 17 universities around Australia. In each case, advertisements were placed in student newsletters, on Facebook pages, and pinup boards. All participants were provided with an information sheet outlining the aims of the study, participation requirements, and strategies to ensure data security. Participants could complete the anonymous online questionnaire at a time and place of their choosing. The majority of participants were recruited through an undergraduate research participation pool at one university ($n=580$). Participants recruited via other means were entered into a draw for one of five department store gift cards valued at AU\$100. Participants interested in being entered into this draw were directed to provide their contact details in a separate questionnaire, ensuring identifying information could not be linked to participant data. All participants were able to download a list of local mental health resources, and strategies for managing stress.

Measures

Nonsuicidal self-injury. We used the Inventory of Statements about Self-Injury (ISAS; Klonsky & Glenn, 2009) to assess history of NSSI. Participants were provided with a definition of NSSI, “deliberate physical self-damage or self-harm that is not accompanied by suicidal intent or ideation” and provided some example behaviours (cutting, biting, burning, scratching, self-bruising, swallowing dangerous substances without suicidal intent). Participants were then asked if they had ever engaged in NSSI. Participants responding in the affirmative reported frequency of NSSI in the last year, primary method of NSSI, and age of onset. The ISAS reliably assesses history of NSSI and exhibits good test-retest reliability (Glenn & Klonsky, 2011; Klonsky & Olino, 2008).

³ At least 462 participants were needed to find an effect size of .8 (Fritz & MacKinnon, 2007).

Knowledge of parental NSSI. To assess parental NSSI we asked participants: “Are you aware of either of your parents having engaged in self-injury?” Participants were then asked which parent, age at which their parents self-injured, and their own age when they were aware of their parent self-injuring.

NSSI outcome expectancies. The NSSI Expectancy Questionnaire (Hasking & Boyes, 2017) was used to assess the anticipated outcomes of NSSI. This 25-item measure was designed to allow both people with experience of NSSI, and people with no experience, to contemplate the likely outcomes of engaging in NSSI. Responding on a 4-point Likert scale (1=not at all likely; 4 = extremely likely), participants indicated how likely each potential outcome was thought to be. Initial validation revealed five expectancies: affect regulation (e.g., I would feel calm), pain (e.g., The pain would be intense), communication (e.g., I would get care from others), negative social outcomes (e.g., My friends would be disgusted), and negative self-beliefs (e.g., I would feel ashamed). All subscales demonstrate acceptable internal consistency (Cronbach’s α range: .71-.86), and reliably differentiate people who have never self-injured from people who have previously self-injured but not in the last year, and people who have recently self-injured (Hasking & Boyes, 2017). In the current sample: affect regulation $\alpha = .84$, anticipated pain $\alpha = .62$, communication $\alpha = .81$, negative social outcomes $\alpha = .82$, and negative self-beliefs $\alpha = .74$.

Self-efficacy to resist NSSI. We adapted the Self-Efficacy to Resist Suicidal Action Scale (Czyz et al., 2014) to assess a person’s belief in their ability to resist the urge to self-injure. The original 6-item questionnaire requires participants to indicate, on a 6 point scale, how confident they are in their ability to resist acting on suicidal urges or ideation. We modified this scale to reflect confidence in ability to resist an urge to self-injure. This modified version has previously been used with reliable results ($\alpha = .92$; Hasking & Rose, 2016). In the current sample $\alpha = .92$.

Family functioning. We recognise that NSSI exhibited by both a parent and participants could reflect a shared family environment, or that a parent with a history of self-injury may parent in a way that increases risk of NSSI by their child. For this reason, we statistically controlled for the effect of family functioning in our analyses. The McMaster Family Assessment Device (Epstein, Baldwin, & Bishop, 1983) is a 60-item measure designed to assess perceived family functioning. The six subscales assess problem solving, communication, roles, affective responsiveness, affective involvement, behaviour control and general functioning. We used the total score (full

60 item FAD) on the measure as an indication of global family functioning. In this sample Cronbach's $\alpha = .95$.

Data analysis

We tested a moderated mediation model in PROCESS (Hayes, 2013) within SPSS, Version 25.0. Parental NSSI was entered as the predictor, with all outcomes expectancies entered as mediators. We entered self-efficacy to resist NSSI as a moderator on all expectancy-NSSI pathways. We entered gender and family functioning as covariates. Both direct and indirect paths were modelled. Indirect paths were assessed with bias corrected bootstrapping with 5,000 resampling draws, and 95% confidence intervals. Significant interactions were assessed with simple slopes analyses at \pm one standard deviation; variables were standardised to reduce multicollinearity. Missing variables analysis revealed less than 5% of missing data across variables. Data were not missing completely at random $\chi^2(8505) = 9850.21, p < .001$, however, considering the small percentage of missing data expectation maximisation was used to impute these data (Tabachnick & Fidell, 2013).

Results

Self-injury and parental self-injury

In this sample 248 (37.2%) participants reported a history of NSSI; almost half ($n = 101$; 45.9%) had self-injured more than once in the last year. Mean age of onset was 14.12 ($SD = 3.09$). Primary forms of NSSI were cutting ($n = 109$; 47.0%), self-battery ($n = 31$; 13.4%), and severe scratching ($n = 30$; 12.9%). Female participants were slightly more likely to self-injure than male participants, $\chi^2(1) = 3.895, p = .048$ (female: 38.8%; male: 29.9%). History of NSSI was not related to age of the participant, $F(1,660) = 2.407, p = .121$.

Of the sample, 43 (6.4%) were aware of a parent self-injuring, most often the mother ($n=30$; 78.9%). Estimations of the age at which a parent self-injured were highly variable and ranged from 15 years to 52 years of age. Twenty-four participants reported they were born when their parent self-injured, and most often aged in their teens at the time they became aware of their parents' self-injury ($n = 14$; 58.33%). Awareness of parental NSSI was not related to current age of the participant, $F(1,660) = .003, p = .960$. Being aware of a parent self-injuring was related to history of NSSI by participants, $\chi^2(1) = 12.84, p < .001$ (OR = 3.07, 95% CI 1.619-5.820). Participants were equally likely to be younger than 10 (37.5%), early teens (before 15; 25%), or late teens (15-19; 33.3%) when they knew of their

parent's self-injury; 50% of participants were aware of their parent's self-injury earlier, or in the same year, as they first self-injured. Gender of the parent who self-injured was not related to gender of the participant, $\chi^2(1) = .325, p = .569$.

Descriptive statistics and correlations between variables can be seen in Table 5.1.

Model testing

Neither gender, $b = .18, p = .51, 95\%CI -.36 \text{ to } .71$, nor family functioning, $b = .01, p = .07, 95\%CI -.00 \text{ to } .02$ were related to NSSI. There was no direct relationship between parental NSSI and NSSI among youth, $b = .35, p = .44, 95\%CI -.553 \text{ to } 1.23$. Parental NSSI was related to stronger affect regulation expectancies, and stronger expectations of pain. Stronger expectations of affect regulation, communication, and pain, were directly related to NSSI (Figure 5.1). Indirect paths were observed from parental NSSI to participant NSSI via both anticipated affect regulation and expectations of pain (see Table 5.2). Finally, the relationship between expectations of pain and NSSI was moderated by self-efficacy to resist self-injury. As seen in Figure 5.2, while there was no relationship between expected pain and NSSI at low levels of self-efficacy, $b = -.074, Z = -1.341, p = .180, 95\%CI -.183 \text{ to } .034$, there were negative relationships at both average, $b = -.158, Z = -3.741, p < .001, 95\%CI -.241 \text{ to } -.075$, and high levels of self-efficacy to resist NSSI, $b = -.242, Z = -4.19, p < .001, 95\%CI -.355 \text{ to } -.129$. The final model significantly differentiated participants who self-injured from those who did not ($p < .001$), and explained between 33.21% (Cox & Snell R^2) and 45.33% (Nagelkerke R^2) of variance.

Table 5.1.

Descriptive statistics and correlations between variables

Variable	Mean (sd)	2	3	4	5	6	7	8	9
1. Parental NSSI	n/a	.121**	.155***	-.119**	.016	.040	-.037	-.042	.11**
2. NSSI	n/a	-	.422***	-.340***	-.248***	-.024	-.068	-.302***	.19***
3. Affect regulation	9.579 (3.815)		-	-.425***	.193***	.124**	.020	-.415***	.24***
4. Pain	16.179 (2.986)			-	.048	.192***	.320***	.212***	-.25***
5. Communication	10.101 (3.164)				-	.213***	.226***	.004	.01
6. Negative_social	13.122 (3.797)					-	.473***	-.034	.13**
7. Negative self-beliefs	14.387 (3.290)						-	.005	-.02
8. Self-efficacy to resist NSSI	26.913 (8.680)							-	-.27***
9. Family functioning									-

Note. **p<.01 ***p<.001

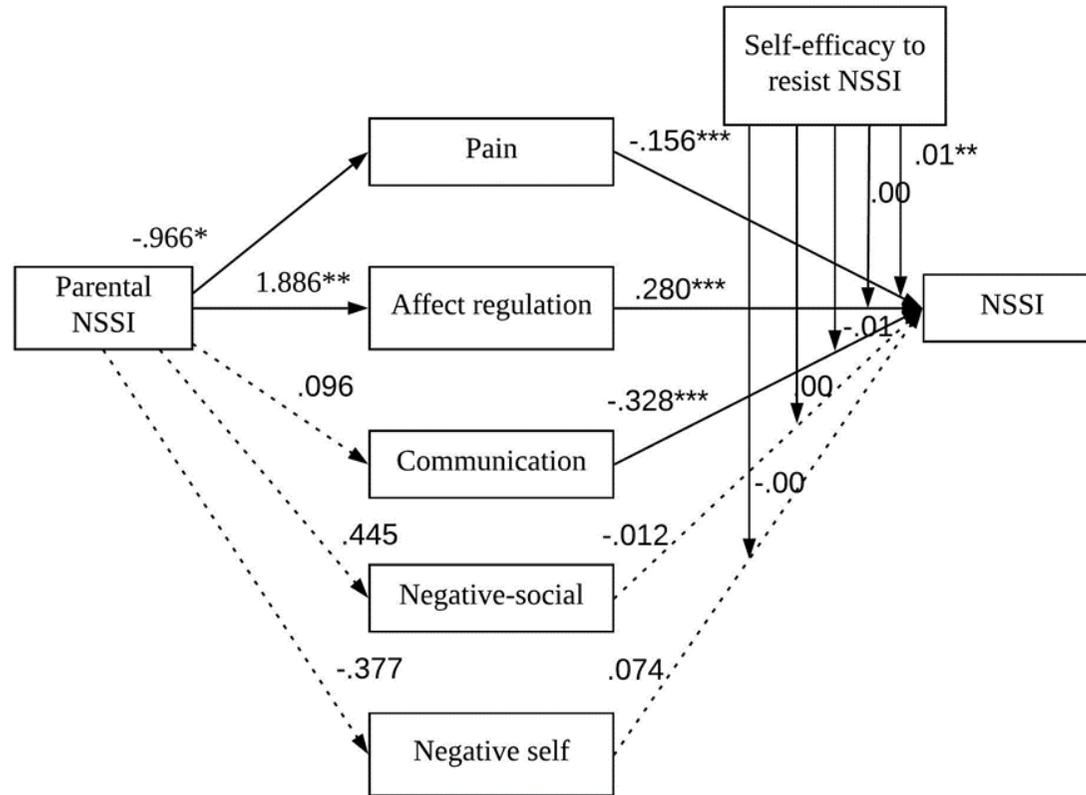


Figure 5.1. Unstandardized coefficients on moderated mediation model

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

Table 5.2.

Indirect paths from parental NSSI through outcome expectancies

Indirect effect	B	SEB	95% Confidence Intervals	
			Lower CI	Upper CI
Parental NSSI → Pain	.151	.088	.018	.560
Parental NSSI → Affect regulation	.528	.203	.159	.942
Parental NSSI → Communication	-.031	.208	-.480	.352
Parental NSSI → Negative_social	-.007	.032	-.117	.031
Parental NSSI → negative self-belief	-.028	.057	-.184	.057

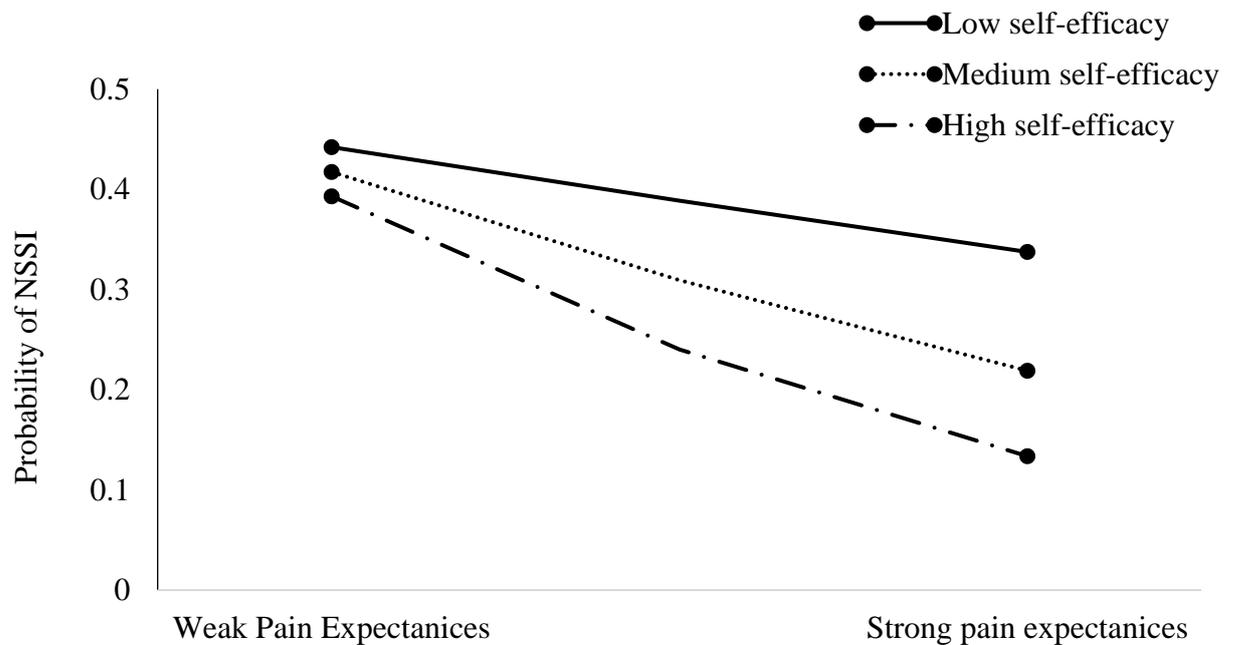


Figure 5.2. Self-efficacy to resist NSSI moderates the relationship between expectations of pain and probability of NSSI.⁴

⁴ A third slope is included in this study at a reviewer's request.

Discussion

Interpersonal accounts of NSSI suggest some people who self-injure have been exposed to the behaviour via peers, family, or the media. We tested this proposition, specifically whether there is a relationship between knowledge of a parent having self-injured and self-injury among young adults. We also tested the roles of outcome expectancies and self-efficacy to resist NSSI in this relationship. We found that participants who were aware of a parental history of NSSI were three times more likely to report their own history of NSSI. In addition, we found that NSSI-related outcome expectancies and self-efficacy played a salient role in this relationship.

Our results suggest that knowledge of a parent engaging in self-injury is an important factor to consider when conceptualising NSSI. A number of participants were aware of their parent's history of NSSI prior to their own engagement, implying that this exposure may have contributed to the onset of NSSI for these participants. However, many participants were not aware of their parent's history of self-injury when they first engaged in NSSI. While it was not assessed whether participants had discussed self-injury with their parents, previous studies have found that almost half of parents are aware that their child self-injures (Kelada, Hasking, & Melvin, 2005), and young people are more likely to feel comfortable talking to their mother (Evans, Hawton, & Rodham, 2005). As such it is possible that parental disclosures of NSSI could have been in response to discovering their child's engagement in self-injury. Future research into the contexts surrounding parental disclosure would provide further understanding of these relationships.

Consistent with previous research (Hasking & Boyes, 2017) expectations of affect regulation and pain were associated with NSSI, specifically mediating the relationship between knowledge of parental NSSI and participants' behaviour. As outlined in Social Cognitive Theory, it is possible that offspring of parents with a history of self-injury have observed the behaviour, seen scars, or discussed NSSI with their parents. It is possible that in the course of these observations and/or conversations that the possible outcomes of NSSI are communicated to the child, the child can then internalise these beliefs informing their own NSSI expectancies. For example, children who subsequently believe that NSSI effectively regulates emotions are more likely to self-injure when distressed. As such, the influence of parental NSSI on offspring's expectations about NSSI is important to note as it adds to the

understanding of how some people come to initiate engaging in self-injurious behaviours.

Only one of the expectancy-NSSI relationships was moderated by self-efficacy to resist NSSI. Although expectations of pain were associated with decreased probability of NSSI, this protective effect decreased as self-efficacy weakened. Consistent with Social Cognitive Theory, this highlights the central role of self-efficacy in limiting engagement in the behaviour. This finding is also in line with recent work demonstrating a role for NSSI specific self-efficacy (Hasking, 2017; Hasking & Boyes, 2018; Hasking & Rose, 2016). This raises the important question of how self-efficacy to resist NSSI develops and how it can be fostered. This would be an important avenue for future research.

Implications

Our findings have implications for identifying and treating youth at risk of engaging in NSSI. If parents with a history of NSSI are identified (for example in a clinical setting) then it is possible that preventative measures may be put in place for their children. Additionally, parents who engage in NSSI could receive psychoeducation for themselves and their families about the most appropriate way to talk about NSSI. Talking about coping techniques may also be important to identify that there are other effective ways to manage emotions. This could be implemented in a family therapy setting focusing on the family working together to find ways to cope with distress. Offspring's disclosure of NSSI also provides opportunities for discussion about self-injury. We know that young people who self-injure find it most helpful when parents and caregivers are calm and understanding when discussing self-injury with them (Kelada, Hasking, Melvin, Whitlock, & Baetens, 2016). Parents disclosing their own self-injury experiences may increase the perception of a parent's ability to understand their offspring's experiences. Further research on communication about self-injury could focus on how self-injury is discussed by parents who self-injure to their offspring. For example, how do parents with visible scars disclose or explain their experiences to their children.

Limitations and suggestions for future research

The results of this study should be interpreted with some limitations in mind. While knowledge of a parent's history of self-injury was associated with participant NSSI, it did not add anything to the overall model. Further research teasing out the dynamics of the parent/child interactions about self-injury may be able to determine

whether specific aspects may contribute to onset and maintenance of NSSI. In the current study we only assessed participants' knowledge of a parent's engagement in NSSI, it is likely that there would be participants who are unaware whether or not a parent has ever self-injured. The majority of participants identified that it was their mother who had history of NSSI. While this could be a reflection of gender differences in this sample, it could also be that mothers are more likely than fathers to share personal information with their children. Given gender differences in methods of self-injury (Bresin & Schoenleber, 2015) it is possible that the physical scars of mothers are more visible than fathers. Recruitment of both mothers and fathers who have a history of self-injury would provide further clarity about this. Additionally, recruiting parents and children in dyad studies would allow exploration of parents' experiences and perspectives, furthering the understanding of the relationship. This would also allow for parents and offspring gender to be included in the analysis.

Anticipating that family functioning could play a role in intergenerational associations, we statistically controlled for this in our analysis. However, there are other potential confounds that should be considered in future research. For example, we did not assess exposure to NSSI through other means such as peers and the media. Future research could consider the role of different means of exposure. Additionally, even if children are unaware that a parent has a history of NSSI, underlying issues related to NSSI may impact parenting (e.g. depression, anxiety, borderline personality disorder), which in turn have an impact on the child. For example, a parent who has borderline personality disorder and presents an invalidating environment to an infant is fostering poor emotion regulation in the infant, which is related to NSSI. There is evidence for intergenerationally transmitted emotion dysregulation through parent's (with high emotional dysregulation) invalidation of adolescent emotional experiences, resulting in adolescents' emotion dysregulation (Buckholdt, Parra, & Jobe-Shields, 2014). This would be in line with Gromatsky et al's (2017) findings that parental characteristics which are associated with emotion dysregulation are related to offspring NSSI.

This study provides a foundation for further research into intergenerational NSSI however, considering it is both cross-sectional and self-report there are limitations to what we can infer from the results. Specifically, we assessed current thoughts and beliefs about NSSI in a sample of young adults. Considering both

expectancies and self-efficacy develop and change over time, in line with direct and vicarious experience (Bandura, 1986; 1989) longitudinal studies are clearly needed.

Conclusion

Overall our findings suggest that there is an association between child and parent engagement in NSSI and that NSSI outcome expectancies and self-efficacy to resist NSSI beliefs may facilitate this. Additionally, the results provide further support for the role of Social Cognitive variables in the onset and maintenance of NSSI. Future research examining the contexts and dynamics surrounding parent and child disclosure of NSSI would provide further understanding of the intergenerational transmission of NSSI and how self-efficacy and expectancy beliefs may be influenced by these experiences.

Chapter 6: Development and validation of a measure of self-efficacy to resist nonsuicidal self-injury

Introduction to Chapter 6

In the first three studies I examined NSSI-specific cognitions framed within Social Cognitive Theory (Bandura, 1986) and the Cognitive-Emotional Model of NSSI (Hasking et al., 2017). Consistently, NSSI-related outcome expectancies and self-efficacy to resist NSSI differentiated participants based on their history of NSSI. In the remaining chapters I focus on the measurement and assessment of these constructs. Bandura highlighted, within his extensive works in self-efficacy, the importance of developing behaviour-specific measures of self-efficacy (Bandura, 2006). He stressed that measures of self-efficacy should consider the specific contexts which may impact on self-efficacy beliefs. In the previous chapters an adapted version of the Self-Efficacy to Avoid Suicide Action Scale (Czyz et al., 2014) was used to measure self-efficacy to resist NSSI generally. While this measure allowed for initial exploration of associations between self-efficacy and engagement in self-injury, it lacks scope as it was not developed specifically to measure NSSI-specific self-efficacy and the contexts related to the behaviour. In the current chapter, qualitative, self-report, and psychometric methodologies were used to develop and validate a behaviour-specific measure of self-efficacy to resist NSSI that assesses contexts in which self-efficacy to resist NSSI may vary.

Author	Contribution	I acknowledge that these represent my contribution to the above research output Signed:
Jessica Dawkins	Development of research question, data management, data analysis, interpretation of results, and manuscript preparation	
Penelope Hasking	Assisted with development of research question, data analysis, interpretation, and manuscript preparation	
Mark Boyes	Assisted with development of research question, data analysis, interpretation, and manuscript preparation	

Abstract

Understanding of nonsuicidal self-injury has primarily been focussed on the experience and regulation of emotion. Recently there has been a focus on the role of specific thoughts and beliefs about self-injury, including self-efficacy to resist self-injury, in understanding the behaviour. However, self-efficacy to resist NSSI has been assessed very broadly using an adapted measure of self-efficacy to avoid suicide. There is a need for a NSSI-specific measure of self-efficacy, which considers specific contexts that may influence confidence in the ability to resist self-injuring. This paper reports the development of such a measure. An initial item pool (125 items) was generated from interviews with people with lived experience of NSSI and experts in the field of self-injury. These items were then administered to 650 participants aged 18-40 years ($M = 21.14$, $SD = 2.32$, 45.69% with any lifetime history of NSSI). Analyses revealed a three factor structure representing: contexts in which it would be difficult to resist NSSI (risk contexts); contexts which make it easier to resist NSSI (protective contexts); and contexts in which people are reminded of self-injury (reminders of NSSI). To reduce the number of items, eight items with the highest loadings on each factor were retained. The final 24 item (three subscales) scale fit the data well and demonstrated invariance across individuals with and without a history of self-injury. Correlations with related but distinct constructs (e.g. self-esteem, locus of control, emotion regulatory self-efficacy) supported convergent and discriminative validity. This measure could be used to further theoretical understanding of NSSI and may be useful in clinical settings.

Nonsuicidal self-injury (NSSI) is the direct and deliberate damage to one's own body tissue, without suicidal intent (e.g. cutting, burning, biting the skin; ISSS, 2020). Self-injury is most commonly engaged in to regulate unwanted emotional experiences (Taylor et al., 2018) and is prevalent in clinical (Polanco-Roman et al., 2014) and non-clinical populations (Swannell et al., 2014). A history of engaging in NSSI is associated with diagnosis of mental illness, and an increased risk of suicidal thoughts and behaviours (Kiekens et al., 2018a; 2018b). Due to these associations, it is important to understand emotional and cognitive factors that may facilitate the onset, maintenance, and cessation of self-injurious behaviours.

Bandura (1986; 1997) proposed that our beliefs in our abilities to successfully complete activities (self-efficacy) influence which behaviours we engage in. Although related, these beliefs are distinct from self-esteem which refers to beliefs about self-worth, and separate concepts from locus of control (whether one's own actions affect outcomes; Bandura, 1997). According to Social Cognitive Theory (Bandura, 1997), the more confidence we have in our ability to successfully complete a task, the more likely we are to engage in the behaviour. Having little confidence in your overall ability to be successful and overcome obstacles (general self-efficacy) is associated with engagement in health risk behaviours such as risky drinking (Oei, Hasking, & Phillips, 2007), disordered eating (Glasofer et al., 2013), and NSSI (Tatnell et al., 2014). However, behaviour-specific self-efficacy is a better predictor of whether a particular behaviour is engaged in (Bandura, 1997; Hasking et al., 2018). Similarly, having confidence in our ability to resist specific behaviours (e.g. drinking, smoking, substance use, self-injury) is related to a reduced the likelihood of future engagement in that behaviour (Chavarria, Stevens, Jason, & Ferrai, 2012; Dawkins et al., 2018; Dawkins et al., 2019; Gwaltney, Metrik, Kahler, & Shiffman, 2009; Kadden & Litt, 2011). Our self-efficacy beliefs also vary depending on the context we are in (Bandura, 1997). For example, we may believe that it would be easy to resist consuming alcohol in the morning on the way to work, but anticipate that we would find it difficult to resist drinking alcohol at a party on a Friday night with friends (Oei, Hasking, & Young, 2005). As such, it is important to know which contexts are believed to make it easier or more difficult to resist or engage in a behaviour if we want to predict behaviour across contexts.

Recently, within the Cognitive-Emotional Model of NSSI, Hasking et al. (2017) included a role for self-efficacy to resist NSSI in the onset, maintenance, and

cessation of self-injury. Supporting this, recent studies exploring this relationship have found that people who have recently self-injured (in the past 12 months) have less belief in their ability to resist self-injury than people who have never self-injured, and people who have a history of self-injury but have not self-injured in the past 12 months (Dawkins et al., 2018; Dawkins et al., 2019; Hasking & Rose, 2016). This suggests that self-efficacy to resist NSSI may play a role in facilitating and/or limiting engagement in NSSI.

To date, studies exploring self-efficacy to resist NSSI have used an adapted version of Czyz et al. (2014)'s Self-Efficacy to Avoid Suicide Action scale to measure participants' general belief in their ability to resist NSSI (Dawkins et al., 2018; Dawkins et al., 2019; Hasking, 2017; Hasking & Boyes, 2017; Hasking & Rose, 2016). However, Bandura (1997; 2006) highlighted the necessity to develop measures specific to individual behaviours as the best, and most nuanced, way to identify an individual's self-efficacy beliefs. Most important is the inclusion of items spanning differing contexts so that context-dependant changes in self-efficacy can be identified (Bandura, 2006).

This paper outlines the development and preliminary validation of a measure of self-efficacy to resist NSSI across a variety of contexts identified as particularly relevant to the behaviour. Phase One includes the generation of an initial item pool and hypothesized scale structure. Phase Two includes 1) assessment of the factor structure and reduction of items; 2) assessment of convergent and discriminant validity; 3) assessment of measurement invariance among people with and without a history of self-injury.

Phase One: Item Generation

Method

Participants

Participants included people with lived experience of NSSI ($n = 10$) and people considered clinical and/or research experts ($n = 9$) in the area of NSSI. Participants with lived experience were Australian university students who self-identified as having a history of self-injury. They were recruited through an online portal where studies are advertised to undergraduate psychology students for course credit. Ten students, 6 female and 4 male, aged 19-23 ($M = 21.5$, $SD = 1.65$) participated in the study. Participants reported age of NSSI onset ranged from 8 to 20 years old ($M = 14.20$, $SD = 4.10$). Cutting was the most frequently reported main

form of self-injury ($n = 4$), followed by pinching ($n = 2$) and scratching ($n = 2$), biting ($n = 1$) and self-battery ($n = 1$). Participants reported having engaged in self-injury between 20 and 675 times in their lives ($M = 145$, $SD = 211.14$) and four reported that the last time they had engaged in self-injury was within the past 12 months.

Experts were recruited through an informal process of contacting members of the International Society for the Study of Self-Injury. People considered experts had at least 10 years of clinical or research experience, or were emerging leaders in the field. Seventeen people considered experts were invited to participate in the study, of these 9 (6 female and 3 male) accepted the invitation to participate. Experts were three clinicians, four academic researchers, and two people who worked in both research and clinical settings. Participants had an average of 17 years' experience⁵.

Data Collection

Participants with a history of NSSI completed a demographic questionnaire asking their name, age, gender, year at university, and country of birth in an open response format. The Inventory of Statements About Self-Injury (ISAS; Klonsky & Glenn, 2009) was used to assess participants' engagement in self-injurious behaviours. Participants were asked how many times they had self-injured in the past 12 months and their lifetime frequency of 13 methods of self-injury (e.g. cutting, burning, self-battery). They were also asked to indicate their main form of self-injury, if they have one. The ISAS has demonstrated test-retest reliability (Glenn & Klonsky, 2011) and is correlated with mental illness diagnoses such as depression, anxiety, and borderline personality disorder (Glenn & Klonsky, 2011; Klonsky & Olino, 2008).

The semi-structured interview guide (see Appendix I) for students included questions pertaining to details of participants' experience of engaging in NSSI including onset, whether they believed they had ceased engaging in NSSI, and contexts in which they had engaged in NSSI. Questions explored participant's views on contexts which may make it difficult or easier to resist engaging in NSSI.

The semi-structured interview guide (see Appendix L) for experts included open-ended questions about participants' professional experience with NSSI and covered contexts in which participants thought people found it difficult or easy to

⁵ Demographic data for expert participants has not been presented to maintain confidentiality.

resist an urge to self-injure. They were also asked what they believed would be important to include in a measure of self-efficacy to resist NSSI.

Procedure

Prior to commencing interviews with students and experts, participants were asked to read the participant information sheet and were given an opportunity to ask any questions about the research and their participation. If they agreed to participate they were asked to sign the consent form. All interviews were audio recorded. At completion of the interviews participants with a history of engaging in self-injury were debriefed and provided information about NSSI and support services.

Analysis

Thematic analysis was used to explore contexts surrounding self-injury using Braun and Clarke's (2006) procedure. Initially the interviews were transcribed verbatim and the first author familiarised herself with the transcripts and generated initial topic codes which described the content of the transcripts. These codes were further explored to discover themes which represented patterns within the data. These possible themes were reviewed among the researchers and further refined. These themes were named and described in line with the overarching research aim. Possible questionnaire items were generated from themes, codes, and quotes which represented contexts which may impact on an individual's belief in their ability to resist an urge to self-injure.

Findings

Thematic analysis

Analysis revealed similar themes across participants with lived experience and participants considered experts in the field of NSSI. Therefore, findings from all participants are presented together. The contexts surrounding self-injury as reported by participants, reflects the literature with regards to self-injury and the functions of self-injury. Eight themes, reflecting a variety of contexts which may make it difficult or easy to resist an urge to self-injure, were identified: emotion contexts; interpersonal relationships; cognitions and cognitive processes; physical contexts; alcohol and other drugs; reminders of NSSI; thoughts of NSSI; and alternative regulation strategies. For the majority of themes there were times when it may be easier to resist an urge to self-injure (e.g. when feeling connected to other people) or more difficult to resist that urge (e.g. after an argument with a family member or friend).

Unsurprisingly, given the existing literature on the functions of NSSI (Taylor, et al., 2018), participants overwhelmingly noted the *emotional contexts* surrounding self-injury. In particular, participants reported that NSSI was often engaged in the context of unpleasant emotional experiences "... that could be extreme anxiety, sadness, emptiness, anger, and it's reached a threshold at which they feel they can't resist the urge to engage in behaviours to hurt themselves." (expert). The emotion regulation function of NSSI was also highlighted "...during that time I felt anxiety was like the highest I ever felt and I didn't know what else I could do to manage it." (lived experience). It was apparent that unpleasant and unwanted emotional experiences were salient as an important context in which NSSI was engaged.

Interpersonal relationships and interactions were seen as potentially increasing the risk of engaging in NSSI or possibly encouraging resistance from acting on an urge to self-injure. Having an argument or disagreement with a loved one was often noted as making it difficult to resist an urge to self-injure "So, what we often see, is they er, have troubles with their peers, or their boy er, or girlfriends, or with family members, so er, there's also a sort of conflict in an interpersonal situation..." (expert). The importance of interpersonal relationships were also highlighted when it came to resisting NSSI. Participants noted that strong relationships and thinking of loved one's could make it easier to resist self-injury "I think now I have more community support the chance [of engaging in self-injury] is much lower than what it has been, what it would have been." (lived experience).

Cognitions and cognitive processes were also seen to be related to engaging in NSSI. Some participants noted the role of persistent worry and rumination while other people found it difficult to resist the urge to self-injure when they had specific negative thoughts about themselves. Often there was a combination of the two:

"It was just like, it was mostly overthinking, stress, panic, it would go from worrying about, like, certain situations, worrying about grades, to worrying about just thinking about how I'm presenting myself, thinking I'm worthless, or like, I'm useless or I don't deserve what I have. Like not deserving was like quite big for me, constantly stressing over how you were gonna lose friends, or like anything because you just didn't deserve it, so you shouldn't have had it in the first place." (lived experience).

Participants expressed that NSSI was often associated with negative self-thoughts and beliefs, including self-hatred and thoughts of deserving to be punished

“...a form of self-punishment, sort of a heightened emotional state combined with self-criticism and a desire to self-punish themselves.” (expert). Thoughts of suicide were also associated with engaging in NSSI, as self-injury was seen as an alternative to suicide. These negative thoughts and thought processes were often reported to be experienced in the lead up to engaging in self-injury.

Physical contexts surrounding self-injury could be seen to make it easier or more difficult to resist an urge to self-injure. Participants described self-injury being engaged in when they were alone and in a private space: “when it was in Perth it was like my family home um so it kind of, I guess to me it felt, I felt, more safer or um it was more private like in my own room or in the bathroom” (lived experience). It was perceived to be easier to resist engaging in self-injury when out in a social context “... if you are amidst your friends and surrounded by people, or in class, or on a date, chances are you’re going to be able to resist, because the context is not conducive to something as alarming and provocative as self-injury.” (expert). Some participants spoke about how leaving a particular physical environment could help them resist engaging in self-injury but many also spoke about leaving where they were to find a “safe” environment where they could self-injure.

Some participants highlighted that being under the *influence of drugs and/or alcohol* had increased the likelihood of engaging in self-injury, “Honestly, I was just really drunk when I did and I kind of just, couldn’t stop myself. Which was new to me at the time so now that I know that I don’t think I am gonna do that again.” (lived experience). Similarly, participants acknowledged that avoiding drugs and alcohol made it easier to resist an urge to self-injure “Umm, maybe just avoiding umm, things like, things that alter you, your control of yourself so like alcohol and drugs. I think it is super important to avoid those sorts of things.” (lived experience). As such, being under the influence of drugs and/or alcohol was considered to make engaging in NSSI more likely. However, there was another experience expressed in that substance use could replace NSSI as a coping strategy and, as such, reduced the likelihood of engaging in NSSI.

“there are groups of individuals who stop engaging in more direct forms of self-injury like cutting and burning, but as they get into college and beyond, they might engage in other types of behaviours that serve that same kind of self-punishing function, so we see when they transition into college, they may engage in substance

misuse and less direct forms of self-harm, but a lot of emotional cognitive pieces remain the same.” (expert).

Participants noted that being *reminded of NSSI* either by seeing their own or other people’s scars or engaging in conversations with people about self-injury were seen to be related to subsequent NSSI engagement “I think I had also started noticing scars on like friends and things like that.” (lived experience). Some participants reported that reminders of self-injury may be sought out “they tell me when they are in a bad period of self-injury that unconsciously or consciously, I don’t know, they look at videos or sad songs about self-injury and then it’s very difficult [to resist an urge to self-injure]” (expert).

Participants often reported having *thoughts specifically about self-injury* in the lead up to engaging in self-injury.

“it’s usually, the thoughts usually, how can I do this without people knowing, and yeah just thinking how I will do it and how I will hide it, and yeah, yeah thinking about doing it rather than thinking about sort of, what’s going on, cause I guess that’s the reason I do it, like to distract myself from whatever the issue is, cause now that’s the thing I’m thinking of, or that’s the issue in my head now, how am I going to self-harm, not what lead me to want to self-harm in the first place.” (lived experience).

Other participants stated that changing positive beliefs about self-injury decreased the frequency of engaging in NSSI “Cause like I said, I used to think it [self-injury] helped me, like for the better, but then it kind of hit one day that it doesn’t at all.” (lived experience). Participants also said that the intensity of urges to self-injure made it difficult to resist NSSI “... sort of intensity of urge was associated with greater likelihood of self-injury happening...” (expert). These thoughts about NSSI appeared separate from the negative self-thoughts and cognitive patterns which were seen to be associated with NSSI.

The availability of *alternative regulation strategies* was also seen as an important factor that could influence whether someone believed they could resist the urge to self-injure. This was premised with the knowledge that the alternative strategies often were not as effective as NSSI at regulating emotions “So they found that there were gradients of effectiveness. So, like, people reported trying to sort of distract themselves, like spending time with friends, or watch TV, but that wasn’t as effective as exercising, or removing the means to self-harm.” (expert). It was noted by participants that, with practice, these strategies would become more and more

effective “But as I got more, more, used to it I found that I could distract myself, I could like, do other things, it would eventually go away.” (lived experience).

Item generation

Following thematic analysis, 100 items were developed which reflected the identified themes within the data. Items for each theme reflected contexts which were perceived to be difficult (e.g. When I feel anxious) and easier (e.g. When I feel relaxed) to resist an urge to engage in NSSI. The scale format was informed by Bandura’s (2006) “Guide for constructing self-efficacy scales” in that participants were asked what they believed they *could* do rather than what they believe they *would* do. Participants were instructed to rate on a scale of 1 (not confident at all) to 4 (extremely confident) how confident they are that they *could* resist the urge to self-injure given a variety of situations (e.g. “When I feel lonely”, “When I know no one will find out”, “Before social situations”).

Review of Items

The 100 items resulting from the item generation phase were reviewed by attendees of an international academic conference focussed on clinical work and research related to NSSI. Attendees included researchers, clinicians, students, and people with lived experience of NSSI. Items were provided to all attendees as part of their information pack and they were given the opportunity to provide anonymous feedback on the content or format of the questionnaire and items. Feedback was provided by seven attendees, which included suggestions for additional items and item format (e.g. consistency in item stems). Once the feedback was incorporated into the item pool the total number of items was 125 (see Appendix O). Items reflected the eight themes extracted from interview transcripts: emotional contexts (25 items, e.g. When I feel hopeless); interpersonal contexts (27 items; e.g. When someone I love is angry at me); cognitions and cognitive processes (14 items, e.g. When I think I am not loveable); physical contexts (19 items, e.g. When I am in my bedroom); alcohol and other drugs (4 items, When I have been drinking); reminders of self-injury (9 items, e.g. When I see an image of self-injury); thoughts about self-injury (11 items, e.g. When I am motivated to resist self-injury); other regulation strategies (12 items, e.g. When I have other coping strategies).

Discussion

The aim of Phase One was to develop an initial item pool for a measure of self-efficacy to resist NSSI. This was done through semi-structured interviews

exploring contexts surrounding self-injury. Eight themes were identified from the transcripts which represented contexts which could make it easier or more difficult to resist an urge to self-injure.

As NSSI is commonly used to regulate intense and unwanted emotional distress (Taylor et al., 2018) it is unsurprising that emotional experiences were considered to impact whether or not someone believed they could resist an urge to self-injure. Participants noted that feelings of loneliness, anxiety, anger, and sadness precipitate engagement in NSSI and were perceived to make it more difficult to resist and urge to self-injure. The perceived influence of interpersonal situations reflects interpersonal functions of NSSI (Taylor et al., 2018). NSSI is sometimes engaged in as a way to communicate pain to other people (Taylor et al., 2018) and is less likely to be engaged in when people consider that they feel connected to other people (Assavedo & Anestis, 2016), as was expressed by participants.

The often solitary nature of NSSI engagement (Victor & Klonsky, 2018) was reflected in the physical contexts in which people perceived it would be difficult or easier to engage in NSSI. People reported being alone when they self-injured and usually in a perceivably safe and private location (e.g. bathroom, bedroom). Likewise, participants found it easier to resist NSSI when in public or around other people. Participants noted that seeing other people's self-injury scars or engaging with media (e.g. images, songs) which depicted or reminded people of self-injury could make it difficult to resist an urge to self-injure. In previous studies, participants with a history of self-injury have reported that viewing images online can act as a replacement to engaging in self-injury but can also trigger urges to engage in NSSI (Lewis & Seko, 2016).

Phase Two: Item Reduction and Psychometric Evaluation

The 125 items developed in Phase One reflect contexts in which self-efficacy to resist NSSI may vary. The aim of Phase Two was to reduce the item pool and test the internal structure of the scale. Additionally, convergent and discriminant validity were assessed using similar but distinct constructs, such as self-esteem and locus of control (Chen, Gully, & Eden, 2004; Joo, Lim, & Kim, 2012; Tatnell et al., 2014), as well as general self-efficacy (Hasking et al., 2017), emotion regulatory self-efficacy (Hasking et al., 2017), and the adapted measure previously used to assess self-efficacy to resist NSSI (Cyz et al., 2014). Measurement invariance across people with and without a history of self-injury was also assessed.

Method

Participants

Participants were 650⁶ Australian university students recruited from 42 Australian universities. They were aged between 17-40 years ($M = 21.14$, $SD = 2.32$) and the majority ($n = 486$, 74.8%) were female; 147 (22.6%) were male and 15 (2.3%) identified as “another gender”. Two participants (.3%) preferred not to disclose their gender. Thirteen (2.0%) participants identified as Aboriginal or Torres Strait Islander. The majority of participants (94.6%) were enrolled in undergraduate studies.

Materials

Self-Efficacy to Resist NSSI Scale. The 125 items developed in Phase One were administered to participants (see Appendix O)

Nonsuicidal self-injury. As in Phase One, the Inventory of Statements About Self-Injury (ISAS; Klonsky & Glenn, 2009) was used to assess participants’ engagement in self-injurious behaviours.

Adapted self-efficacy to avoid suicide action scale. Czyz et al.’s, (2014) measure has previously been adapted to measure self-efficacy to resist NSSI (Dawkins et al., 2018, Dawkins et al., 2019; Hasking, 2017; Hasking & Boyes, 2017; Hasking & Rose, 2017). The six item scale asks participants to indicate, on a scale of 1 (very uncertain) to 6 (very certain), how certain they are that they could resist the urge to self-injure in the future (e.g. How certain are you that you could resist the urge to self-injure if you lost an important relationship?). A total score is calculated with higher scores indicating stronger self-efficacy to resist NSSI. Czyz et al.’s (2014) original measure has strong convergent validity being correlated with suicidal ideation ($r = -.59$; $p < .001$) and evidencing strong internal consistency $\alpha = .96$. The adapted NSSI version also has demonstrated strong internal consistency previously $\alpha = .92$ (Hasking & Rose, 2017) and in the current study $\alpha = .94$.

General self-efficacy. Participants’ level of general self-efficacy was measured using Schwazer and Jerusalem’s (1995) General Self-Efficacy Scale. This 10-item scale asks participants to indicate, on a four point Likert scale from 1 (not at all true) to 4 (exactly true), their perceived ability to cope with daily stressors and

⁶ I aimed to recruit between 300 and 500 participants in line with suggested guidelines for sample size requirements for factor analysis (Tabachnick & Fidell, 2013).

adapt after stressful events (e.g. I am confident that I could deal efficiently with unexpected events). A total score is calculated with a higher score indicating stronger general self-efficacy. Internal consistency in the current sample was high $\alpha = .90$. General self-efficacy is associated with NSSI (Tatnell et al., 2014) and self-efficacy to resist NSSI (Hasking et al., 2017).

Emotion regulation self-efficacy. Caprara et al.'s (2008) Regulatory Emotional Self-Efficacy (RESE) scale was used to measure participants' belief in their ability to regulate their emotional experience. The 12 item scale asks participants to indicate, on a Likert scale of 1 (not well at all) to 5 (very well), their perceived capability to express positive emotions (positive: 4 items, e.g. How well can you express joy when good things happen to you?), manage feelings of despondency (despondency: 4 items, e.g. How well can you keep from getting discouraged in the face of difficulties?), and manage feelings of anger (anger: 4 items, e.g. How well can you avoid flying off the handle when you get angry?). Items are totalled for each subscale with higher scores indicating a stronger belief in the ability to express positive emotion, manage distress, and manage anger. The three subscales have previously demonstrated adequate internal consistency: positive $\alpha = .64-.85$; despondency $\alpha = .72-.82$; anger $\alpha = .68-.73$ (Caprara et al., 2008). In the current sample Cronbach's alphas were positive = .88, despondency = .87, and anger = .81. Given emotion regulation is a common function of NSSI, it is unsurprising that emotion regulatory self-efficacy is associated with engagement in NSSI and self-efficacy to resist NSSI (Hasking et al., 2017). It would be expected that these constructs are correlated but distinct from one another.

Locus of control. The Locus of Control of Behaviour Scale (Craig, Franklin & Andrews, 1984) was used to measure participants' perception of their perceived control over their behaviours. Participants respond on a 6 point Likert scale, from 1 (strongly disagree) to 6 (strongly agree), how much they agree with 17 statements about their "personal beliefs" which indicated their perceived control over their lives (e.g. My life is controlled by outside actions and events; Everyone knows that luck or chance determine one's future). Seven items are reverse coded and the total score indicates the level of external locus of control an individual has, with higher scores indicating more external locus of control and lower scores indicating more internal locus of control. Internal consistency in the current sample was $\alpha = .80$.

Self-efficacy and locus of control are both expectancies but are distinct in that one is an assessment of capability (self-efficacy) while the other is assessment of control over outcomes (locus of control). Although it has not been evaluated in relation to NSSI, locus of control and self-efficacy are generally related in terms of predicting learning outcomes (Joo et al., 2012) and play related but distinct roles in abstaining from alcohol use (Soravia, Schlafli, Stutz, Rosener, & Moggi, 2015).

Self-esteem. The Rosenberg self-esteem scale was used to measure participants' overall self-esteem (Rosenberg, 1965). The 10 item scale asks participants to indicate, on a scale of 1 (strongly disagree) to 4 (strongly agree), how much they agree with each statement (e.g. On the whole, I am satisfied with myself; I certainly feel useless at times). Four items are reverse scored and a total score calculated with higher scores indicating higher self-esteem. Internal consistency in the current sample was $\alpha = .92$.

Self-esteem and self-efficacy are considered under an umbrella of self-evaluations but are distinct constructs in that one is an evaluation of capability (self-efficacy) while the other is an evaluation of self-worth (self-esteem; Chen et al., 2004). Having lower self-esteem and weaker self-efficacy are associated with engagement in NSSI (Tatnell et al., 2014).

Procedure

This study was part of a larger study exploring cognitive and emotional constructs related to NSSI. Participants were recruited through an online portal where studies available for participation are advertised to students for course credit. The study was also advertised on social media (e.g. Facebook, Reddit) for the chance to win an iPad. Any student interested in participating was directed to an information sheet via Qualtrics. Information regarding the aims, participation requirements, confidentiality, and data storage was provided before students who wished to participate could provide informed consent. Participants were able to complete the study in a time and place of their choosing. The survey took approximately 45 minutes to complete. Once completed participants were able to download information about NSSI, stress reduction, and support services available.

Results

Preliminary results

Missing values analysis revealed less than 5% missing data across variables. Data was not missing completely at random, $\chi^2(12027) = 15777.43, p < .001$,

however, all variables had less than 1% missing data. Considering the small percentage of missing data, Expectation Maximisation was used to impute these data (Tabachnick & Fidell, 2013). Of the full sample 297 (45.69%) reported a lifetime history of NSSI. Cutting (51.2%) was the most frequently reported main form of self-injury, followed by self-battery 11.6%), and severe scratching (10.9%). The mean age of NSSI onset was 13 years old ($SD = 2.97$). Gender (binary male/female)⁷ was related to NSSI $\chi^2(1, N = 629) = 45.90, p < .001$, with females (52.4%) more likely to report a history of self-injury than males (20.5%). Age was not significantly related to history of self-injury $t(634) = 1.41, p = .161$.

Factor structure

Confirmatory Factor Analysis

Confirmatory Factor Analysis was conducted using MPlus version 8 (Muth n & Muth n, 2017). As expected, items were negatively skewed (-.197 - -2.341) so Maximum Likelihood with Robust Standard Errors was used as the estimator. Items were hypothesised to load onto the 8 factors they were developed to represent, as outlined in Phase 1. Model fit was assessed using the following fit indices: Comparative fit indices (CFI) and Tucker-Lewis Index (TLI) above .90; and Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) close to or below .08. Items were developed to tap into these themes, and theorised to correlate as factor scores. Testing this model revealed poor model fit $\chi^2(7617) = 27990, p < 0.001$; RMSEA = .064; CFI = .714; SRMR = .091.

Exploratory Factor Analysis

Given poor fit of the hypothesised model, the data were randomly divided, with one half used to conduct Exploratory Factor Analysis, and the other half used to confirm these factors using another Confirmatory Factor Analysis. To extract factors, principal axis factoring (PAF) with Promax (oblique) rotation was used, as the factors were assumed to be correlated. Factors with eigenvalues above 1 and visual inspection of the inflection point on the scree plot were used to determine the number of factors. Items were only included if they loaded on a single factor at above .30, did

⁷ People who identified as “another gender” ($n = 15$) and people who preferred not to disclose their gender ($n = 2$) could not be included in the analysis due to the small group size.

not cross-load, had high communalities, and were conceptually coherent (Costello & Osborne, 2005).

Principal axis factoring revealed seven factors with eigenvalues exceeding 1. After inspection of the scree plot and the items loadings on the factors, it appeared the three factors with eigenvalues exceeding two made the most conceptual sense, and accounted for 72.5% of the variance in the questionnaire. A three-factor solution was requested and cross-loading items were removed leaving 103 items. As the third factor had 8 items, we chose the eight highest loading, theoretically relevant, items for each of the other factors. The first factor reflected contexts in which it may be difficult to resist self-injury (Risk contexts; e.g. When I think I am a burden to someone else), the second reflects contexts in which it may be perceived as easier to resist engaging in self-injury (protective contexts; e.g. When I feel in control of my situation), and the third reflected times at which there were reminders of self-injury (Contexts which remind individuals of NSSI; e.g. When I see my own scars). A final PAF of the final 24 items was conducted in which the factors accounted for 77.78% of the variance in the data (Table 6.1). All subscales demonstrated internal consistency (Table 6.1).

Confirmatory Factor Analysis of reduced items

CFA, using Maximum Likelihood with Robust Standard Errors as the estimator, was conducted on the reduced item pool. Residuals were allowed to correlate within (but not across) factors. We found the model fit the data well, $\chi^2 = 313.271$, $df = 171$, $p < .001$; CFI = .971 RMSEA = .050; SRMR = .043. See Table 2 for factor loadings. Although factors correlated (Table 2), these were stronger for people with no history of self-injury $p < .001$.

Scale validation

All subscales were positively correlated with Czyz et al.'s (2014) measure, general self-efficacy, and two of the emotion regulatory self-efficacy subscales (i.e. positive, anger; Table 3). Risk contexts and reminders of NSSI were positively correlated with the third (i.e. despondency subscale. All subscales were positively correlated with self-esteem and more self-efficacy on each subscale was related to internal locus of control.

Table 6.1.

Results of principal axis factoring

Item	Communalities	Risk Contexts	Protective Contexts	Reminders of NSSI
1 When I feel worthless	.81	.980		
2 When I think I am a burden to someone else	.86	.970		
3 When I feel depressed	.83	.887		
4 When I don't want to live	.73	.878		
5 When I have a strong urge	.79	.864		
6 When I can't stop going over and over things in my mind	.83	.800		
7 When I feel anxious	.89	.640		
8 When I feel nervous	.90	.605		
9 When I feel relaxed	.75		.962	
10 When I am out with friends	.78		.934	
11 When I am at work/school	.75		.873	
12 When someone reassures me	.82		.863	
13 When I feel in control of my situation	.70		.824	
14 When I feel connected to my body	.68		.792	
15 When I know I can talk to a friend about my problem	.74		.733	
16 When I am motivated to resist self-injury	.70		.687	
17 When I see images of self-injury	.87			.993
18 When I am reminded of self-injury through a video or song	.81			.877

19	When I see a reminder of a past time I self-injured	.87			.867
20	When I see someone else has self-injury wounds	.84			.864
21	When I see my own scars	.82			.811
22	When I see my own injuries	.78			.783
23	When I have seen a post online about self-injury	.77			.775
24	When I have seen someone else has self-injury scars	.80			.751
	% Variance		62.19	10.90	4.69
	Cronbach's Alphas		.96	.95	.97

Table 6.2.

Confirmatory Factor Analysis factor loading

Item	Risk Contexts	Protective Contexts	Reminders of NSSI
1	When I feel worthless		
	.766		
2	When I think I am a burden to someone else		
	.860		
3	When I feel depressed		
	.784		
4	When I don't want to live		
	.727		
5	When I have a strong urge		
	.855		
6	When I can't stop going over and over things in my mind		
	.870		
7	When I feel anxious		
	.900		
8	When I feel nervous		
	1.00		
9	When I feel relaxed		
		.717	
10	When I am out with friends		
		.812	
11	When I am at work/school		
		.895	
12	When someone reassures me		
		.773	
13	When I feel in control of my situation		
		.749	
14	When I feel connected to my body		
		.829	
15	When I know I can talk to a friend about my problem		
		.735	
16	When I am motivated to resist self-injury		
		.811	
17	When I see images of self-injury		
			.858
18	When I am reminded of self-injury through a video or song		
			.835
19	When I see a reminder of a past time I self-injured		
			.841

20	When I see someone else has self-injury wounds		.835
21	When I see my own scars		.851
22	When I see my own injuries		.847
23	When I have seen a post online about self-injury		.814
24	When I have seen someone else has self-injury scars		.843
<hr/>			
	Factor correlations		
	History of NSSI	Risk	.47***
		Protect	.61***
	No history of NSSI	Risk	.70***
			.83***

Note. *** $p < .001$

Table 6.3.

Correlations between subscales of the self-efficacy to not self-injure scale and associated constructs.

	M(SD)	Risk contexts	Protective contexts	Reminders of NSSI
Self-efficacy to not self-injure – Risk contexts	22.28(8.32)			
Self-efficacy to not self-injure – Protective Contexts	28.84(5.21)	.58**		
Self-efficacy to not self-injure – Reminders of NSSI	26.16(7.34)	.77***	.73***	
Self-efficacy to avoid suicide action	26.23(8.99)	.66***	.29***	.49***
General self-efficacy	28.72(5.00)	.36***	.22***	.28***
Regulatory emotional self-efficacy – Positive emotions	15.41(3.63)	.31***	.21***	.28***
Regulatory emotional self-efficacy – Despondency	11.63(3.83)	.41***	.05	.25***
Regulatory emotional self-efficacy - Anger	11.96(3.70)	.41***	.10*	.24***
Self-esteem	26.10(6.44)	.51***	.20***	.38***
Locus of Control	51.03(9.90)	-.36***	-.30***	-.32***
NSSI	-	-.50***	-.16***	-.31***

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

Measurement invariance.

Measurement invariance of the final scale was assessed across people with ($n = 297$) and without ($n = 353$) a history of NSSI using MPlus version 8 (Muth en & Muth en, 2017). Multiple Group Confirmatory Factor Analysis was used to test measurement invariance and model fit was assessed using Maximum Likelihood Estimation with Robust Standard Errors. Measurement invariance was supported if the configural model had adequate fit, and the subsequent models had changes in CFI of $<.01$, RMSEA of $<.015$, and SRMR of $<.030$ (for metric invariance) or $<.015$ (for scalar or residual invariance; Chen, 2007). Scores on the self-efficacy to resist NSSI subscales were then compared between people with and without a history of NSSI.

The baseline model fit well for both groups of participants (Table 4). The configural, full metric, full scalar, and partial residual error invariance was supported. Full residual error invariance was not supported as indicated by change in CFI (Table 4). The residual error variances were larger in the group reporting NSSI compared to the group not reporting NSSI for items “When I feel connected to my body” (Residual Variance_(no NSSI) = 0.110 vs. Residual Variance_(NSSI) = .303), “When I know I can talk to a friend about my problem” (Residual Variance_(no NSSI) = 0.127 vs. Residual Variance_(NSSI) = 0.289), “When I am out with friends” (Residual Variance_(no NSSI) = 0.080 vs. Residual Variance_(NSSI) = 0.236), “When I am motivated to resist self-injury” (Residual Variance_(no NSSI) = 0.74 vs. Residual Variance_(NSSI) = 1.01), “It is difficult for me to reveal my innermost feelings, even to my close friends” (Residual Variance_(no NSSI) = .098 vs. Residual Variance_(NSSI) = .379), and “When I see my own injuries” (Residual Variance_(no NSSI) = 0.045 vs. Residual Variance_(NSSI) = 0.242). The residual error variance was larger in the group not reporting NSSI compared to the group reporting NSSI for the item “When I don’t want to live” (Residual Variance_(no NSSI) = 0.715 vs. Residual Variance_(NSSI) = 0.393).

Group differences

History of NSSI

To assess whether self-efficacy to resist NSSI varied between groups and within groups a 2 (Group: History of NSSI; no history of NSSI) \times 3 (Self-efficacy to resist NSSI: risk contexts; protective contexts; NSSI reminders) mixed model ANOVA was conducted. Due to the assumption of sphericity being violated Huynh-

Feldt correction was applied. Overall, participants with a history of self-injury ($M = 23.15$, 95% CI = 22.49-23.81) had significantly weaker self-efficacy to resist NSSI than people who had never engaged in NSSI ($M = 27.99$, 95% CI = 27.38-28.6), $F(1, 643) = 112.69$, $p < .001$, $\eta^2 = .15$.

There was significant variation in self-efficacy to resist NSSI across contexts, $F(1.90, 1220.17) = 554.73$, $p < .001$, $\eta^2 = .46$, with participants holding weaker self-efficacy to resist NSSI when in risk contexts ($M = 21.92$, 95% CI = 21.37-22.49) compared to protective contexts ($M = 28.79$, 95% CI = 28.19-29.19), $p < .001$, and reminders of NSSI ($M = 25.99$, 95% CI = 25.45-26.53), $p < .001$. Self-efficacy to resist NSSI when reminded of NSSI was significantly weaker than when in risk contexts, $p < .001$.

There was also a significant interaction between history of NSSI and self-efficacy to resist NSSI in different contexts, $F(1.90, 643) = 133.52$, $p < 0.001$, $\eta^2 = 0.17$ (Table 6.5). Pairwise comparisons revealed significant differences for both groups with self-efficacy to resist NSSI when in risk contexts weakest, followed by reminders of NSSI, with self-efficacy to resist NSSI when in protective contexts being strongest. Inspection of group means indicated that these differences are larger for people who had a history of engaging in NSSI.

Table 6.4.

Measurement invariance assessment of people with and without a history of NSSI.

	χ^2	df	SRMR	RSMSEA	CFI	Model comparison	Δ SRMR	Δ RSMSEA	Δ CFI
Baseline No NSSI	293.80	170	0.034	0.046	0.971				
Baseline NSSI	258.01	170	0.045	0.042	0.981				
M1: Configural invariance	564.46	340	0.039	0.045	0.975	-	-	-	-
M2: Full metric invariance	605.47	361	0.047	0.046	0.973	M1-M2	0.008	0.001	0.002
M3: Full Scalar invariance	685.726	382	0.055	0.050	0.966	M2-M3	0.008	0.004	0.007
M4: Full Residual invariance	920	406	0.064	0.063	0.942	M3-M4	0.009	0.013	0.024*
M4.1: Partial Residual invariance	776.733	400	0.065	0.054	0.958	M3-M4.1	0.01	0.004	0.008

Table 6.5.

Group differences and interactions between history of self-injury and self-efficacy to resist NSSI across contexts

	<u>Pairwise comparisons</u>					
	Risk contexts <i>M</i> [95%CI]	Protective contexts <i>M</i> [95%CI]	Reminders of NSSI <i>M</i> [95%CI]	Risk and Protect <i>t</i>	Risk and remind <i>t</i>	Protect and remind <i>t</i>
History of NSSI	17.74 [16.92-18.56]	27.97 [27.39-28.56]	23.73 [22.93-24.53]	-30.17***	-20.72***	15.10***
No History of NSSI	26.12 [25.36-26.88]	29.60 [29.06-30.14]	28.25 [27.52-28.99]	-11.13***	-8.01***	5.18***
	<u>Group differences</u>					
	<i>F</i> (Partial η^2)	<i>F</i> (Partial η^2)	<i>F</i> (Partial η^2)			
	215.97***(.251)	16.10***(.024)	66.85***(.094)			

Note. *** $p < .001$

Discussion

Recently, self-efficacy to resist NSSI has become a concept of interest in understanding cognitive factors associated with self-injurious behaviours (Dawkins et al., 2018; Dawkins et al., 2019; Hasking et al., 2017). Initial evidence for the role of self-efficacy to resist NSSI provides a basis for future research into specific NSSI-related cognitions. In measuring self-efficacy it is important to consider the situations or contexts which may influence an individual's confidence in their ability to engage in or avoid a behaviour (Bandura, 1997; 2006). We developed a behaviour-specific measure of self-efficacy to resist NSSI which assesses three contexts in which self-efficacy may vary: contexts which it may be difficult to resist NSSI (risk contexts); contexts where it may be easier to resist NSSI (protective contexts) and contexts where people are reminded of self-injury. We also conducted preliminary validation of the scale and assessed measurement invariance across people with and without a history of NSSI.

The resulting three-factor structure reflects different contexts in which self-efficacy to resist NSSI may vary (Bandura, 1997, 2006). Rather than representing specific "types" of contexts (e.g. emotional, physical) as identified in Phase One, two of the resulting factors represent collective contexts which appear to reflect the impact they have on self-efficacy rather than the context itself (i.e. risk and protective contexts). The final factor reflected the theme "reminders of self-injury" identified in Phase One suggesting that the presence of NSSI-related stimuli or reminders of self-injury are distinct from other contexts surrounding NSSI.

The Risk Contexts subscale reflects contexts in which people believe it would be more difficult to resist the urge to self-injure such as feelings of depression and anxiety, negative thoughts or thought patterns, thoughts of wanting to die, and strong urges to self-injure. This subscale mirrored the previously used adapted version of the self-efficacy to resist suicide action scale (Cyz et al., 2014) as its items also reflect situations which may be considered risk factors for suicide/NSSI. In line with previous studies (Dawkins et al., 2018; Dawkins et al., 2019; Hasking, 2017; Hasking & Rose, 2017), people who had self-injured held weaker beliefs in their ability to resist NSSI than people who had never self-injured when faced with distressing thoughts, feelings, and/or situations.

Self-efficacy to resist NSSI when in protective contexts relates to the belief people have in their ability to resist NSSI when they are with other people, when

they feel supported, and when they are motivated to resist self-injury. When considering protective contexts, people with a history of self-injury had less confidence in their ability to resist NSSI than people who had never self-injured. However, they had more confidence that they could resist self-injury in these contexts than when in risk contexts or reminders of self-injury.

Self-efficacy beliefs have been found to be a significant predictor of future behaviour when treating substance abuse (Chavarria et al., 2012; Kadden & Litt, 2011). If individuals are trying to reduce their engagement in NSSI, it is possible that there will be an increase in confidence to resist NSSI in protective contexts before they believe they can resist NSSI in more difficult situations. In a clinical setting this could indicate a future change in behaviour and may be used to identify protective situations that could help reduce an urge to engage in self-injury.

Having strong self-efficacy to resist NSSI when in protective contexts was associated with participants believing they could express positive emotions and manage feelings of anger, but was not associated with confidence to manage feelings of depression. People who self-injure tend to report less positive emotion generally (Boyes, Wilmot, & Hasking, in press) and experience less physiological response to positively valenced stimuli than people who have not self-injured (Tatnell, Hasking, Lipp, Boyes, & Dawkins, 2017). Perhaps if an individual does not believe they can express positive emotions, then situations which are perceivably positive may not be experienced as intensely, and not be perceived as protective.

The final subscale reflects contexts in which people were reminded of self-injury. Items included seeing images of self-injury, seeing other people's injuries, and seeing your own injuries. This was differentiated from risk contexts indicating that exposure to NSSI stimuli is a salient context when considering an individual's belief in their ability to resist NSSI. Both people with, and without, a history of NSSI perceived that it would be more difficult to resist self-injury when reminded of self-injury than when they were in protective contexts, but less difficult than when they were in risk contexts. This may indicate that avoiding or reducing exposure to NSSI stimuli when trying to resist NSSI may be helpful. Previous studies have identified that engagement with self-injury content online may maintain self-injury or trigger an urge to self-injure (Jacob, Evans, & Scourfield, 2017; Lewis & Seko, 2016). People with a history of self-injury have reported experiencing a physical reaction to images online, which work to trigger or intensify an urge to engage in self-injury

(Jacob et al., 2017). However, there is also evidence that for some people engaging with NSSI-related content can have positive outcomes such as receiving encouragement in their recovery and finding that images of self-injury diminish an urge to self-injure (Lewis & Seko, 2016). It is possible that interpretation of this measure at an individual level could be useful to identify how people are engaging with NSSI-related content and how this may play a role in maintaining or ceasing NSSI.

Implications

The development of this measure has the potential to further theoretical understanding of NSSI. Findings are consistent with Bandura's (1997) proposal that self-efficacy will vary in relation to the same behaviour across contexts and confirms the need to develop behaviour-specific measures of self-efficacy. The ability to measure self-efficacy to resist NSSI in varying contexts will allow predictions of the Cognitive Emotion Model of NSSI (Hasking et al., 2017) to be tested. Specifically, it will allow testing of how self-efficacy to resist NSSI in different contexts may work with NSSI-related outcome expectancies, emotional experiences, and emotion regulation in predicting NSSI. Measuring these concepts in longitudinal studies through onset, maintenance, cessation, and recovery from NSSI will allow us to see how these thoughts and beliefs change and work together over time. Ecological momentary assessment would also provide insight into the salience of these beliefs in different contexts and in the lead up to and following when NSSI is engaged. Changes in cognitions may indicate individuals at risk of future engagement of self-injury providing opportunity for early intervention.

The scale may also be useful in clinical practice. Behaviour change, including in treatment of NSSI, is often characterised by ambivalence which treatment protocols often try to address (Andover, Schatten, Morris, & Miller, 2015). Within motivational interviewing, the goals are to increase motivation and encourage commitment to change (Rollnick & Miller, 1995). Within this context this measure could be useful in identifying cognitive changes that suggest a future change in behaviour before it can be seen. If self-efficacy to resist NSSI is found to predict future behaviour, as has been found with measures of self-efficacy to avoid substance use (Chavarria et al., 2012; Kadden & Litt, 2011), this measure could be used as an indicator of change. The measure may also be useful in clinical settings to assess (at an item level) when it is more difficult to resist self-injury, identifying treatment

targets. It can be used to identify contexts which may limit the likelihood of engaging in NSSI for clients who would like to stop injuring themselves.

As engaging with NSSI-related content online can reduce or increase the likelihood of engaging in NSSI (Lewis & Seko, 2015), having a measure that assesses whether being reminded of NSSI is seen to make it difficult or easier to resist an urge to self-injure could be helpful. It could open up discussion in a clinical setting about how reminders of NSSI affect the individual. Clients may be encouraged to avoid content which trigger urges to self-injure or promote stigma of NSSI while moving towards content, which encourages recovery or diminishes an urge to self-injure (Lewis & Seko, 2016).

Limitations and directions for future research

Due to the scale being validated with university students, the measure will need to be validated in other populations in which self-injury is prevalent (e.g. adolescents, clinical settings). Further exploration of the use of the measure in clinical settings will be needed to determine whether the measure is sensitive to change, and valid to use as an indicator of change across treatment. Considering the high correlations between factors, psychometric work is needed to confirm the factor structure of the measure. As the sample was primarily female, future studies should examine measurement invariance across gender. Longitudinal data could look at both reliability and sensitivity to change to assess the utility of the measure in both research and clinical settings. We have not considered whether participants are motivated to resist an urge to engage in self-injury. It is likely that the measure will only be predictive of behaviour if someone wants to resist an urge. An individual could think that they could resist an urge to self-injure but have no intention of doing so. In clinical settings it will be imperative to ask people their intentions as well as assess their confidence that they could resist an urge to self-injure.

Conclusion

We developed a measure of self-efficacy to resist NSSI and validated it among university students. The underlying structure of the measure indicated three differing contexts which may impact an individual's belief in their ability to resist NSSI. The measure will further research into the role of self-efficacy in NSSI, and how it fits into the Cognitive-Emotional Model of NSSI. Future research validating the measure in clinical samples could provide evidence that this measure can be used as an indicator of change in clinical settings.

Chapter 7: Applying Social Cognitive Theory to nonsuicidal self-injury:

Interactions between expectancy beliefs.

Introduction to Chapter 7

In the previous chapter a behaviour-specific measure of self-efficacy to resist NSSI was developed that assesses three contexts in which self-efficacy to resist NSSI may vary. I found that self-efficacy to resist self-injury across contexts differentiated participants according to their history of self-injury. However, when working in the framework of Social Cognitive Theory (Bandura, 1986) it is important to consider how self-efficacy beliefs and outcome expectancies might work together when determining behaviour. Theoretically, this provides further understanding of how Social Cognitive Theory may apply to NSSI and opens up future research to embed this into the Cognitive-Emotional Model of NSSI (Hasking et al., 2017). In this chapter I build on Chapter 4 exploring the association between people's NSSI-related outcome expectancies and their history of NSSI, and whether these associations are moderated by self-efficacy to resist NSSI in contexts in which it may be difficult to resist engaging in self-injury (risk contexts), contexts which may make it easier to resist an urge to self-injure (protective contexts), and contexts in which people are reminded of NSSI. Additionally, I wanted to explore the thoughts and beliefs of people who have experienced NSSI ideation but have never engaged in self-injury. As thoughts theoretically precede behaviour comparing four groups (no history, ideation, past history, recent history) allows a first, although limited temporal inference of how these thoughts may differ through onset, maintenance, and cessation of NSSI.

Author	Contribution	I acknowledge that these represent my contribution to the above research output Signed:
Jessica Dawkins	Development of research question, data collection, data management, data analysis, interpretation of results, and manuscript preparation	
Penelope Hasking	Assisted with development of research question, data analysis, interpretation, and manuscript preparation	
Mark Boyes	Assisted with development of research question, data analysis, interpretation, and manuscript preparation	

Abstract

Recently research into the role of NSSI-related outcome expectancies and self-efficacy to resist NSSI have furthered understanding of self-injurious behaviours. Within Social Cognitive Theory, Bandura (1986; 1997) stated that self-efficacy beliefs vary according to the context in which the behaviour is being considered. Additionally, he promoted examining interactions between outcome expectancies and self-efficacy beliefs, as they can contradict each other when predicting behaviour. With the recent development of a behaviour-specific measure of self-efficacy to resist NSSI it is now possible to measure three contexts in which self-efficacy to resist NSSI may vary: contexts in which it may be difficult to resist NSSI (risk contexts); contexts in which it may be easier to resist NSSI (protective contexts); and contexts in which people are reminded of NSSI. The aim of this study was to build on previous research by examining how self-efficacy to resist NSSI across these contexts interacts with NSSI-related outcome expectancies when differentiating NSSI history. To explore possible changes in outcome expectancies and self-efficacy across onset, maintenance, and cessation of NSSI, participants with four differing self-injuring histories were compared (no history, NSSI ideation, past history, recent history). Participants were 501 Australian university students who completed online questionnaires. NSSI-related outcome expectancies differentiated people with (past and recent) and without (none and ideation) a history of engaging in self-injury. Self-efficacy to resist NSSI in risk contexts differentiated people based on their history of self-injury with weaker self-efficacy being associated with more recent engagement in NSSI. Self-efficacy to resist NSSI in risk and protective contexts also moderated the relationships between expectations of pain, communication, and negative self-beliefs with recent engagement in NSSI. Expecting NSSI to result in communication and care from other people was associated with engagement in NSSI but only for people who did not believe that they could resist an urge to self-injure in protective contexts. Holding strong expectations that self-injury would result in diminish self-worth reduced the likelihood of recent engagement in NSSI for people with weak self-efficacy to resist self-injury. Results support the application of Social Cognitive Theory to NSSI and provide future avenues for exploring NSSI-specific cognitions working in the framework of the Cognitive-Emotional Model of NSSI.

Nonsuicidal self-injury (NSSI) is the direct and deliberate damage to one's own body without the intention of suicide (e.g. cutting, burning, biting; ISSS, 2020). It is prevalent in community samples across the lifespan (Swannell et al., 2014). However, university students report a higher lifetime prevalence of NSSI than other samples of the same age (Swannell et al., 2014). While the average age of onset is around 14 years old, recent studies have identified a second peak of onset around the age of 20-24 years (Gandhi et al., 2018). Consistent with this, Kiekens et al (2019) found that approximately 15% of students reported first onset of NSSI during the first two years at university. Additionally, almost half of these students reported engaging in NSSI 5 or more times during this period. Persistent engagement in NSSI throughout university is associated with diagnosis of mental illness (Kiekens et al., 2018b), poor academic outcomes (Kiekens et al., 2016), and suicidal thoughts and behaviours (Kiekens et al., 2018a).

According to Social Cognitive Theory (Bandura, 1986), the anticipated consequences of our behaviour (i.e. outcome expectancies) and our confidence to successfully complete a task (i.e. self-efficacy) influence the behaviours we choose to engage in. As we can imagine what would happen if we were to engage in a behaviour, we hold these beliefs even for behaviours we have never engaged in. We are more likely to engage in behaviours when we anticipate a desirable outcome and are confident that we can successfully reach that outcome. When trying to avoid behaviours (e.g. drinking, smoking, self-injury), we are less likely to engage in the behaviour if we have confidence in our ability to resist the behaviour (Chavarría et al., 2012; Dawkins et al., 2018; Dawkins et al., 2019; Gwaltney et al., 2009; Kadden & Litt, 2011). When outcome expectancies and self-efficacy contradict each other we should consider how they work together in predicting behaviour (Bandura, 1997). For example, you may believe that a certain behaviour would result in a positive outcome but have little belief in your ability to successfully achieve it. Alternatively, you may believe you can successfully complete a behaviour but believe the outcome would be undesirable. Finally, you may believe a behaviour will result in an undesirable outcome but have little confidence that you can resist that behaviour.

The Cognitive-Emotional Model of NSSI integrates NSSI-specific cognitions (i.e. NSSI-related outcome expectancies; self-efficacy to resist NSSI) alongside the experience and regulation of emotion in understanding NSSI (Hasking et al., 2017). Previous studies have found that people who have a history of self-injury expect that

NSSI will successfully regulate emotions while people who have never self-injured believe NSSI will result in physical pain, and communication and care from others (Dawkins et al., 2018; Dawkins et al., 2019; Hasking, 2017; Hasking & Boyes, 2017; Hasking & Rose, 2017). People who have never self-injured hold stronger beliefs in their ability to resist NSSI than people who have recently self-injured (Dawkins et al., 2018; Dawkins et al., 2019; Hasking, 2017; Hasking & Rose, 2017). Dawkins et al. (2019) found that the relationships between NSSI-related outcome expectancies (i.e. expecting NSSI to result in affect regulation, pain, or communication) and history of NSSI were moderated by self-efficacy to resist NSSI. It was found that people who expect NSSI to result in affect regulation are only more likely to have recently engaged in self-injury if they do not believe they can resist the urge to do so. However, the adapted measure of self-efficacy used in these studies was not developed to assess specific contexts in which self-efficacy to resist NSSI may vary.

Bandura (2006) stressed the importance of considering different contexts which may influence people's self-efficacy beliefs about a specific behaviour. Recently a new measure of self-efficacy to resist NSSI was developed which assesses three contexts in which self-efficacy to resist NSSI may vary (Dawkins, Hasking, & Boyes, submitted). This new scale measures an individual's belief in their ability to resist NSSI when they are in situations which may be perceived as risk contexts (e.g. When I feel worthless); when they are in a context which could be considered protective (e.g. When someone reassures me); and contexts where they are reminded of NSSI (e.g. When I see images of self-injury). In order to further our understanding of NSSI in the context of Social Cognitive Theory and in turn, the Cognitive-Emotional Model of NSSI, it is important to understand how people's confidence in their ability to resist NSSI in different contexts works together with NSSI-related outcome expectancies in understanding nonsuicidal self-injurious thoughts and behaviours.

Comparisons are often made between people with a recent and past history of self-injury and people with no history of self-injury to identify factors which may be associated with the maintenance and cessation of NSSI (Taylor, McDonald, Smith, Nicholson, & Forrester, 2019). This can be extended to identify factors which may be associated the onset of self-injurious behaviours by considering the thoughts and beliefs of people who have experienced self-injury ideation but never engaged in the behaviour. As thoughts theoretically precede behaviour, by comparing four groups

(no history; ideation; recent history; past history), which are temporally ordered, we can infer differences in thoughts and beliefs from no history of self-injury, to thoughts of self-injury, to engagement in NSSI, and possible cessation of NSSI. This could identify possible cognitive targets for prevention of future NSSI.

The aim of this study was to examine whether the relationships between NSSI-related outcome expectancies and history of self-injury were moderated by self-efficacy to resist NSSI in different contexts. It was expected that NSSI-related outcome expectancies and self-efficacy to resist NSSI would differentiate participants based on their history of NSSI. Specifically, given previous findings, it was expected that participants with a history of self-injury would hold expectations that self-injury will result in affect regulation while people with no history of NSSI would expect NSSI to result in physical pain, and communication and care from other people. Within this exploratory study it was anticipated that self-efficacy to resist NSSI when faced with risk factors, protective factors, and reminders of NSSI would differentiate participants based on their history of NSSI and moderate the relationships between NSSI-related outcome expectancies and self-injury, such that strong self-efficacy beliefs would counter positive expectancies and strengthen the effect of negative expectancies.

Method

Participants

The sample comprised 501 students aged 17-40 years ($M = 21.21$, $SD = 2.36$), from 33 Australian Universities. The majority of participants were female ($n = 373$, 73.1%), 128 identified as male (25.1%), 8 (1.6%) identified as another gender, and 1 (.2%) preferred not to disclose their gender. As gender was identified as a covariate $\chi^2(3) = 30.83$, $p < .001$, with females (47.5%) more likely to have a history of self-injury than males (21.9%), data from the nine participants who identified as “another gender” or who did not want to disclose their gender were not included in the analysis, as the group was too small to allow statistical comparisons. One hundred and fifty nine (31.7%) participants reported a prior diagnosis of mental illness. Six (1.2%) participants identified as Aboriginal or Torres Strait Islander. The majority of participants were undergraduate students (95.8%).

Measures

Demographics. Participants were asked to report their date of birth, gender, whether they are indigenous, and whether they have been diagnosed with a mental

illness. With regards to their university studies, participants were asked the course they were enrolled in, and their level of study.

Nonsuicidal Self-Injury. The Inventory of Statements About Self-Injury (Klonsky & Glenn, 2009) was used to assess participants' self-injurious thoughts and behaviours. After being provided with a definition of NSSI, participants were asked whether they had ever *thought* about engaging in NSSI. They were then asked if they had ever engaged in self-injury. If they indicated that they had engaged in NSSI, participants were asked how many times they had self-injured in the past 12 months and their lifetime frequency of 13 NSSI methods (e.g. cutting, biting). The scale has demonstrated validity (Glenn & Klonsky, 2011; Klonsky & Olino, 2008) and 1 year test-retest reliability (Glenn & Klonsky, 2011).

Self-efficacy to resist NSSI. Participants' belief in their ability to resist self-injury was measured using the Self-Efficacy to Resist NSSI Scale (Dawkins et al., submitted). The scale comprises 24 items and three subscales which indicate the strength of self-efficacy beliefs when in situations considered as *risk contexts* (e.g. When I feel worthless), when in perceivably *protective contexts* (e.g. When someone reassures me), and when they are *reminded of self-injury* (e.g. When I see images of self-injury). Participants indicate on a scale of 1 (not confident at all) to 4 (extremely confident) how confident they were that they *could* resist the urge to self-injure given the context. The scale has previously demonstrated convergent and discriminant validity and internal consistency: risk factors $\alpha = .96$; protective factors $\alpha = .95$; reminders of NSSI $\alpha = .97$ (Dawkins et al., submitted). Internal consistency in the current sample: risk factors $\alpha = 0.96$; protective factors $\alpha = 0.96$; reminders of NSSI $\alpha = 0.97$.

NSSI Outcome Expectancies. Participants' expectations of what would happen if they were to self-injure in the future was measured using the NSSI Expectancy Questionnaire (NEQ; Hasking & Boyes, 2017). The 25-item scale measures five outcome expectancies related to NSSI: affect regulation, negative social outcomes, communication, physical pain, and negative self-beliefs. Participants respond on a Likert scale from 1 (not likely at all) to 4 (extremely likely) how likely they believe each outcome to be if they were to engage in self-injury. The scale has demonstrated strong criterion validity, discriminant validity, and internal consistency (affect regulation $\alpha = 0.86$, negative social outcomes $\alpha = 0.78$, communication $\alpha = 0.71$, pain $\alpha = 0.80$, negative self-beliefs $\alpha = 0.78$; Hasking &

Boyes, 2017). Internal consistencies in the current sample were adequate to good: affect regulation $\alpha = 0.86$; negative social outcomes $\alpha = 0.85$; communication $\alpha = 0.75$; pain $\alpha = 0.77$; negative social outcomes $\alpha = 0.72$.

Procedure

Within a larger study of cognitive and emotional factors related to NSSI, participants were recruited through an online portal for students wishing to participate in research for course credit and via social media platforms such as Facebook and Reddit. Participants recruited through social media were offered the chance to go into the draw to win an iPad or one of 10 department store vouchers. Students who wished to participate were directed through a link to the Qualtrics survey where they were presented with an information sheet including details about the aims, participation requirements, confidentiality, and data handling procedure of the research. Students who wished to participate were required to give informed consent prior to starting the survey. Participation took approximately 45 minutes. Participants were able to complete the survey at a time and location of their choosing. When reading the information sheet and once the survey was complete, participants were able to download information about NSSI, reducing stress, and mental health services.

Data Analysis

Three multinomial regression analyses were conducted, using SPSS, Version 25.0, comparing people who have never self-injured, people who had thoughts of self-injury but had never engaged in the behaviour, people who had self-injured but not in the past 12 months, and people who had self-injured in the past 12 months. The first multinomial regression was conducted with participants with no history of self-injury as the reference group to see how NSSI outcome expectancies and self-efficacy to resist NSSI worked together in predicting thoughts of NSSI, past engagement in NSSI, and recent engagement in NSSI. Two additional multinomial regressions were conducted, with thoughts of self-injury and past self-injury as the reference groups respectively, in order to allow comparisons across all groups. In each regression, gender and history of mental illness diagnosis (yes/no) were included as covariates in the first step. In the second step, the NSSI specific cognitions (i.e. outcome expectancies and self-efficacy across contexts) were entered. In the final step, two-way interactions between each outcome expectancy and each self-efficacy context were also included (i.e. 15 interactions). Continuous

variables were standardised to reduce multicollinearity and any significant interactions were probed using simple slopes analyses (Aiken & West, 1991). Due to the inclusion of an additional group (NSSI ideation) and the additional self-efficacy subscales increasing the number of regressions/comparisons, I applied a stringent alpha level of $p < 0.01$ for all significance tests.⁸

Results

Preliminary Results

Missing values analysis revealed that data were not missing completely at random $\chi^2(14158) = 17308.21, p < 0.001$, however considering that all items were missing less than 2% of data Expectation Maximisation was used to impute data (Tabachnik & Fidell, 2013). Of the full sample, 82 individuals (16.4%) reported NSSI ideation but no engagement in NSSI, 74 individuals (14.8%) reported engaging in NSSI but not in the past 12 months, and 116 individuals (23.2%) reported having engaged in NSSI within the past 12 months. The mean age of onset was 13.81 years old and the most common main form of NSSI was cutting (48.7%) followed by self-battery (13.4%) and severe scratching (11.4%). Correlations between all variables can be found in Table 7.1. Table 7.2 shows group differences in expectations of affect regulation, negative social outcomes, communication, and pain as well as all measured facets of self-efficacy to resist NSSI. Pairwise comparisons are also reported.

⁸ Post-hoc analysis suggested that the appropriate sample size for logistic regression as proposed by Peduzzi et al. (1996) would have been approximately 1,000.

Table 7.1.

Correlations between NSSI-related outcome expectancies, self-efficacy to resist NSSI, history of NSSI, gender, and diagnosis of a mental illness

	M (SD)	2	3	4	5	6	7	8	9	10	11
1. Affect regulation expectancies	9.83 (3.72)	.23***	.12**	.33***	.08	-.44***	-.16***	-.31***	.53***	.20***	-.28***
2. Negative social outcomes	13.00 (4.11)		.07	.09	.47***	-.17***	.07	-.11S	.16***	.10	-.07
3. Communication	9.65 (3.14)			.04	.16***	.15**	.02	.07	-.23***	-.15**	.15**
4. Pain expectancies	16.08 (3.08)				.23***	.25***	.36***	.31***	-.26***	-.11	.13**
5. Negative self-beliefs	14.04 (3.32)					-.04	.19***	.02	.02	.11	-.03
6. Self-efficacy to resist NSSI – Risk contexts	23.11 (8.17)						.60***	.77***	-.51***	-.23***	.26***
7. Self-efficacy to resist NSSI – Protect contexts	28.91 (5.41)							.76***	-.13**	.33	.02
8. Self-efficacy to resist NSSI – NSSI Reminders	26.61 (7.16)								-.29***	-.14**	.19***
9. NSSI	-									.22***	-.17***
10. Gender	-										
11. Mental illness diagnosis	-										

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

For any correlation with a categorical point biserial correlation is reported

Multinomial regressions

When differentiating people with no history of NSSI thoughts or behaviours, people who have had thoughts of engaging in NSSI, people who have engaged in NSSI but not in the past 12 months, and people who have engaged in NSSI in the past 12 months, the model was statistically significant, $\chi^2(75) = 463.42, p < 0.001$ (Table 3). The model explained between 37.3% (McFadden R^2) and 66.8% (Nagelkerke R^2) of variance.

No history reference group. Having stronger affect regulation expectancies and weaker expectancies that NSSI would result in pain or communication with other people was associated with having a past or recent history of NSSI (Table 7.3). Weaker self-efficacy to resist NSSI when faced with perceived risk factors was associated with NSSI ideation as well as a past and recent history of engaging in NSSI. Stronger self-efficacy to resist NSSI when reminded of self-injury was associated with a past or recent history of NSSI. There were no significant interactions within the model.

NSSI ideation reference group. When compared to people who have had thoughts of engaging in NSSI, having engaged in NSSI recently or in the past was associated with holding stronger expectations that self-injury would result in affect regulation and weaker expectations that self-injury would result in communication and care from other people (Table 7.4). Recent self-injury was also associated with weaker self-efficacy to resist NSSI when faced with risk factors.

When predicting recent self-injury the relationship between pain expectancies and self-injury was moderated by self-efficacy to resist NSSI when in a protective context. There was a positive relationship approaching significance for people who held weaker beliefs in their ability to resist NSSI when in protective contexts, $b = 2.44, z = 2.53, p = 0.01$ (Figure 7.1), but no significant relationship for people who had confidence in their ability to resist NSSI in protective contexts, $b = -.78, z = 1.64, p = 0.10$. The relationship between negative self-belief expectancies and NSSI was also moderated by self-efficacy to resist NSSI when in protective contexts. We found a negative relationship for people with weaker self-efficacy to resist NSSI when faced with protective factors, $b = -3.64, z = -2.91, p = 0.004$ (Figure 7.1). There was no significant relationship for people with strong self-efficacy to resist NSSI, $b = .13, z = 0.21, p = 0.83$ (Figure 7.1).

Table 7.2.

Comparisons of NSSI specific cognitions among people with no history of self-injury, people who have NSSI ideation, people who have self-injured in the past, and people who have recently self-injured.

	No NSSI (a) <i>M (SD)</i>	NSSI Ideation (b) <i>M (SD)</i>	Past NSSI (c) <i>M (SD)</i>	Recent NSSI (d) <i>M (SD)</i>	F	Partial η^2	Group comparisons ^a
Affect regulation expectancies	7.95 (3.08)	9.18 (3.37)	10.89 (3.04)	12.79 (3.26)	61.35***	.278	a<b*, a<c***, a<d***, b<c**, b<d***, c<d***
Negative social outcomes	12.28 (4.22)	12.90 (3.56)	13.47 (4.02)	13.83 (4.10)	4.03**	.025	a<d**
Communication	10.08 (2.92)	11.13 (3.31)	8.89 (2.73)	8.42 (3.10)	16.77***	.095	a<b*, a>c*, a>d***, b>c***, b>d***
Pain expectancies	16.86 (3.13)	16.54 (2.81)	14.98 (2.91)	15.09 (2.81)	13.20***	.077	a>c***, a>d***, b>c**, b>d**
Negative self-beliefs	13.78 (3.48)	14.79 (2.54)	13.98 (3.26)	13.98 (3.48)	1.88	.012	-
SERNS – Risk	26.89 (7.29)	24.33 (6.64)	22.68 (7.90)	15.94 (5.83)	62.10***	.280	a>b*, a>c***, a>d***, b>d***, c>d***
SERNS – Protect	29.42 (5.73)	29.75 (4.55)	28.14 (6.43)	27.79 (4.57)	3.19*	.020	-
SERNS - Reminders	28.25 (6.77)	27.87 (5.97)	26.15 (7.46)	23.00 (7.23)	15.86***	.091	a>d***, b>d***, c>d***

Note. $p < .001$ ***, $p < .01$ ** , $p < .05$, ^aonly significant comparisons reported

Table 7.3.

Multinomial logistic regression results comparing people with no history of NSSI to people who have thoughts of self-injury but have not engaged in self-injury, people who have self-injured but not in the past 12 months, and people who have self-injured in the past 12 months.

	NSSI Thoughts		Past NSSI		Recent NSSI	
	B	Odds Ratio	B	Odds Ratio	B	Odds Ratio
Intercept	-1.07***		-1.45***		-2.68***	
Step One						
Gender	-.16	.86	-.89	.41	-1.19**	.30
Mental illness	.90**	2.46	2.01***	7.42	2.54***	12.67
Step Two						
Affect regulation expectancies	.15	1.16	1.08***	2.94	1.57***	4.79
Negative social outcomes	-.07	.93	.34	1.40	.16	1.17
Communication	.307	1.36	-.81***	.45	-.91***	.40
Pain expectancies	-.25	.78	-.59**	.56	-.68**	.51
Negative self-beliefs	.28	1.33	-.02	.98	-.26	.77
Self-efficacy to resist NSSI – Risk	-1.25***	.29	-1.08**	.34	-2.59***	.08
Self-efficacy to resist NSSI – Protect	.28	1.33	-.07	.93	.67	1.96
Self-efficacy to resist NSSI – Remind	.82	2.26	1.00**	2.71	1.01**	2.75
Step Three						
Affect regulation*Self-efficacy to resist NSSI-Risk	-.12	.89	.68	1.96	.89	2.43
Affect regulation*Self-efficacy to resist NSSI-Protect	.54	1.72	-.40	.67	-.08	.93
Affect regulation*Self-efficacy to resist NSSI-Remind	-.11	.90	-.43	.65	-1.30	.27
Negative social *Self-efficacy to resist NSSI-Risk	.04	1.04	-.50	.60	-.19	.83
Negative social *Self-efficacy to resist NSSI-Protect	.18	1.20	.52	1.69	-.02	.98
Negative social *Self-efficacy to resist NSSI-Remind	-.14	.87	-.19	.83	-.15	.87

Communication*Self-efficacy to resist NSSI-Risk	-.20	.82	-.47	.63	.30	1.34
Communication*Self-efficacy to resist NSSI-Protect	-.39	.68	.35	1.41	-.67	.51
Communication*Self-efficacy to resist NSSI-Remind	.65	1.91	.09	1.09	.32	1.37
Pain*Self-efficacy to resist NSSI-Risk	-.31	.73	-.03	.97	.18	1.19
Pain*Self-efficacy to resist NSSI-Protect	.46	1.58	.02	1.02	-1.06	.35
Pain*Self-efficacy to resist NSSI-Remind	.50	1.64	.13	1.14	.57	1.77
Negative self-belief *Self-efficacy to resist NSSI-Risk	.59	1.79	.82	2.28	-.19	.83
Negative self-belief *Self-efficacy to resist NSSI-Protect	-.95	.39	-.07	.93	.80	2.23
Negative self-belief *Self-efficacy to resist NSSI-Remind	-.10	.91	-.60	.55	-.74	.48
Nagelkerke R ²	.67					
Chi-square	778.06, <i>df</i> =75, <i>p</i> <.001					

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

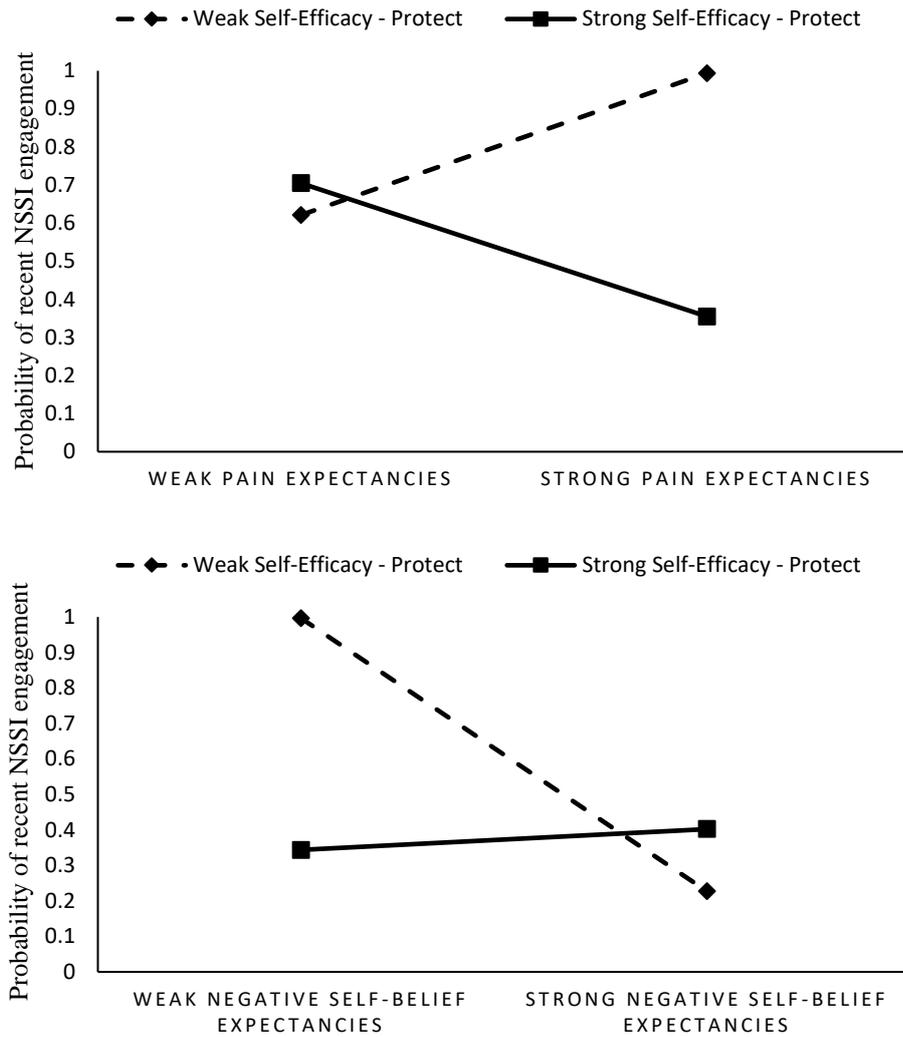


Figure 7.1. The relationship between pain expectancies (top) and negative self-belief expectancies (bottom) with NSSI was moderated by self-efficacy to resist NSSI when faced with protective factors when comparing people who had thoughts of engaging in self-injury with people who had recently self-injured.

Past NSSI reference group. When compared to people with a past history of self-injury, recent NSSI was associated with weaker self-efficacy to resist NSSI when faced with risk factors but stronger self-efficacy to resist NSSI when in protective contexts (Table 7.4). The relationship between expecting NSSI to result in communication or care from other people and NSSI was moderated by self-efficacy to resist NSSI in protective contexts. There was a positive relationship between communication expectancies and NSSI which approached significance for people who had weak self-efficacy to resist NSSI when in protective contexts, $b = 1.29$, $z = 2.21$, $p = 0.03$ (Figure 7.2) and no significant relationship for people with strong self-efficacy to resist NSSI in protective contexts, $b = 0.01$, $z = 0.03$, $p = 0.98$. The relationship between expecting self-injury to result in negative self-beliefs and NSSI was moderated by self-efficacy to resist NSSI when faced with risk factors. There was a significant negative relationship for people with strong self-efficacy to resist NSSI, $b = -1.21$, $z = -2.60$, $p = 0.01$ (Figure 7.2). However, there was no significant relationship for people with weak self-efficacy to resist NSSI when faced with risk factors. $b = 1.11$, $z = 1.97$, $p = 0.05$.

Table 7.4.

Follow-up logistic regression results comparing people who have thoughts of self-injury but have not engaged in self-injury, people who have self-injured but not in the past 12 months, and people who have self-injured in the past 12 months.

	Past NSSI ^a		Recent NSSI ^a		Recent NSSI ^b	
	B	Odds Ratio	B	Odds Ratio	B	Odds Ratio
Intercepts	-.38		-1.61***		-1.23**	
Step One						
Gender	-.74	.48	-1.04**	.35	-2.99	.74
Mental illness	1.10**	3.01	1.64***	5.14	.534	1.71
Step Two						
Affect regulation expectancies	.94***	2.55	1.42***	4.15	.49	1.63
Negative social outcomes	.41	1.51	.23	1.26	-.18	.83
Communication	-1.11***	.33	-1.22***	.30	-.11	.90
Pain expectancies	-.34	.71	-.43	.65	-.09	.92
Negative self-beliefs	-.31	.74	-.54	.58	-.24	.79
Self-efficacy to resist NSSI - Risk	.17	1.19	-1.33***	.26	-1.50***	.22
Self-efficacy to resist NSSI – Protect	-.36	.70	.39	1.48	.75**	2.11
Self-efficacy to resist NSSI - Remind	.18	1.20	.20	1.22	.02	1.02
Step Three						
Affect regulation*Self-efficacy to resist NSSI-Risk	.79	2.21	1.00	2.726	.21	1.236
Affect regulation*Self-efficacy to resist NSSI-Protect	-.94	.39	-.62	.541	.32	1.382
Affect regulation*Self-efficacy to resist NSSI-Remind	-.32	.73	-1.19	.305	-.87	.418
Negative social *Self-efficacy to resist NSSI-Risk	-.54	.58	-.22	.802	.32	1.375
Negative social *Self-efficacy to resist NSSI-Protect	.34	1.41	-.20	.816	-.55	.580
Negative social *Self-efficacy to resist NSSI-Remind	-.05	.95	-.01	.992	.04	1.045

Communication*Self-efficacy to resist NSSI-Risk	-.27	.76	.50	1.640	.77	2.149
Communication*Self-efficacy to resist NSSI-Protect	.73	2.08	-.29	.751	-1.02**	.361
Communication*Self-efficacy to resist NSSI-Remind	-.56	.57	-.33	.718	.23	1.260
Pain*Self-efficacy to resist NSSI-Risk	.28	1.33	.49	1.633	.21	1.230
Pain*Self-efficacy to resist NSSI-Protect	-.44	.64	-1.52**	.219	-1.08	.341
Pain*Self-efficacy to resist NSSI-Remind	-.37	.69	.08	1.078	.45	1.560
Negative self-belief *Self-efficacy to resist NSSI-Risk	.24	1.27	-.77	.462	-1.01**	.364
Negative self-belief *Self-efficacy to resist NSSI-Protect	.88	2.40	1.75**	5.752	.87	2.393
Negative self-belief *Self-efficacy to resist NSSI-Remind	-.50	.61	-.64	.528	-.14	.866
Nagelkerke R ²	.67			.67		
Chi-square	778.06, <i>df</i> =75, <i>p</i> <.001			778.06, <i>df</i> =75, <i>p</i> <.001		

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

^areference = thoughts of NSSI; ^breference = past history of NSSI

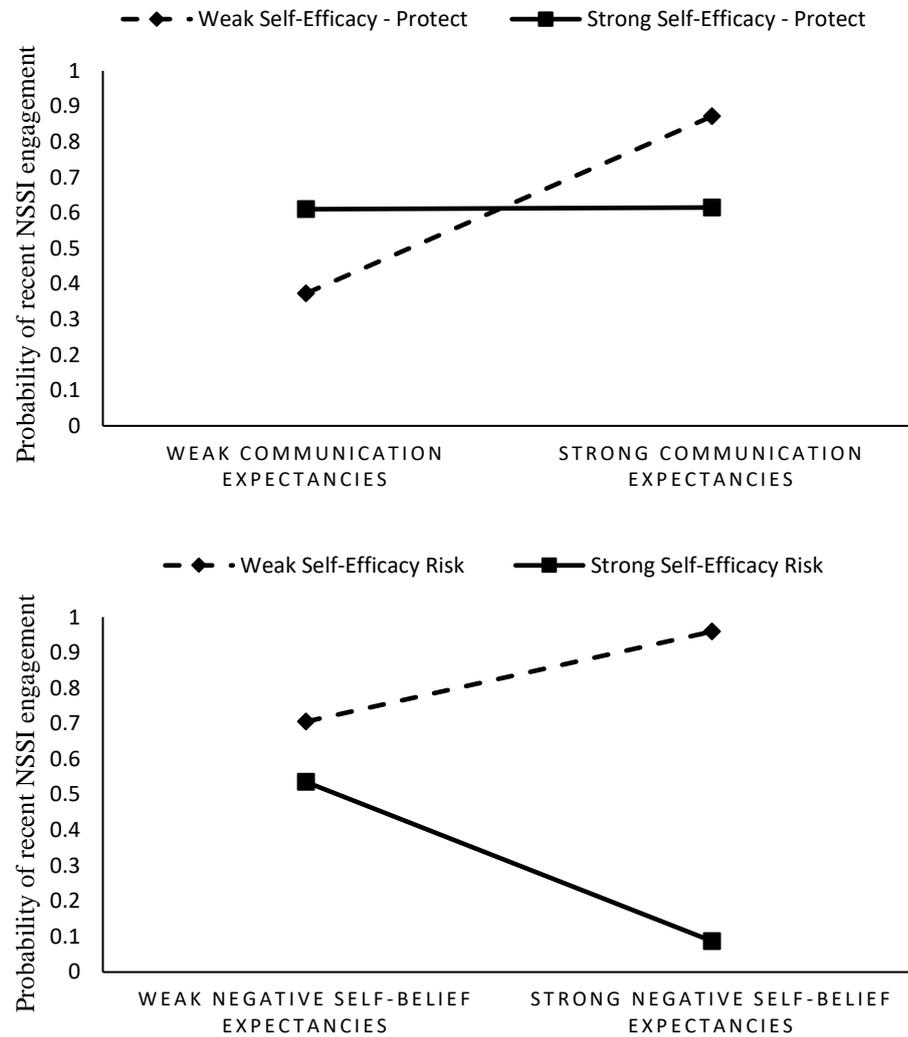


Figure 7.2. When comparing people with a past history of NSSI and people with a recent history of NSSI the relationship between communication expectancies and NSSI is moderated by self-efficacy to resist NSSI when faced with protective factors (top) and the relationship between negative self-belief expectancies and NSSI is moderated by self-efficacy to resist NSSI when faced with risk factors.

Discussion

Consideration of self-efficacy beliefs in differing contexts is integral to understanding behaviour through the lens of Social Cognitive Theory (Bandura, 1997; 2006). The newly developed self-efficacy to resist NSSI scale allows for measurement of self-efficacy to resist NSSI across contexts in which it may vary (i.e. risk contexts, protective contexts, and reminders of NSSI; Dawkins et al., under review). Self-efficacy beliefs also need to be considered in relation to the outcome expectancies people hold (Bandura, 1997). The aim of the current study was to extend on previous research which had relied on a general adapted measure of self-efficacy to resist NSSI. I explored how the relationship between NSSI-related outcome expectancies and nonsuicidal self-injurious thoughts and behaviours differed depending on participants' confidence in their ability to resist NSSI in different contexts. By examining differences in NSSI-related thoughts and beliefs across different histories of NSSI (no history, ideation, past history, recent history) we can begin to infer possible changes across onset, maintenance, cessation, and recovery from self-injury that can be examined in future research. In line with previous studies (Dawkins et al., 2018; Dawkins et al., 2019; Hasking & Boyes, 2018; Hasking & Rose 2017), I found that outcome expectancies and self-efficacy beliefs differentiated participants with different histories of NSSI. I also found that people's confidence in their ability to resist NSSI when in risk contexts, or protective contexts, interacted with expectations of pain, communication, and negative self-beliefs when predicting recent engagement in NSSI.

Consistent with previous studies (Dawkins et al., 2018; Dawkins et al., 2019; Hasking & Boyes 2017), people with no history of NSSI held stronger expectations that self-injury would result in physical pain and communication than people with a history of NSSI (past and recent). Similarly, they held weaker expectations that self-injury would alleviate distress. People who had experienced NSSI ideation, but never engaged in self-injury, held similar NSSI-related expectancies as people with no history of NSSI. The differentiation in expectancies between having engaged or not engaged in NSSI may suggest that expectancies change with the direct experience of engaging in self-injury. Direct experience is one way that outcome expectancies can be altered (Bandura, 1986). For example, someone may hurt themselves (intentionally or accidentally) and find that it does not cause as much pain as they previously expected. They may also notice a change in their emotional state after

hurting themselves. Their expectations of what would happen if they were to self-injure in the future are altered to accommodate the new experience. The individual's expectations of pain have weakened while their expectation that they may experience some emotional relief from hurting themselves is strengthened.

In previous studies, people who had never self-injured and people who had a past history of self-injury did not differ in the strength of their self-efficacy to resist NSSI (Dawkins et al., 2018; Dawkins et al., 2019; Hasking & Rose, 2017). In the current study we found that people with no history of self-injurious thoughts and behaviours held stronger self-efficacy to resist NSSI in risk contexts than people with any history of NSSI (thoughts or behaviours). By differentiating between people who have and have not considered engaging in NSSI we can see that there is a difference in their confidence in whether they can resist self-injury. For people who have experienced NSSI ideation, having contemplated self-injury may indicate to them that it is possible they would engage in self-injury in the future if they were in a difficult situation. Participants with a past history of self-injury held similar beliefs in their ability to resist NSSI in risk contexts to people who had thoughts of self-injury, which was stronger than people who had recently engaged in NSSI. It is likely that having resisted NSSI in the past increases their confidence that they could resist self-injury again in the future.

When compared to people with no history of NSSI engagement, people with a history of self-injury (past or recent) held stronger self-efficacy to resist NSSI when reminded of self-injury. This contradicts the bivariate examination of difference between the groups where more self-efficacy was associated with less recent self-injury. It is possible that this is due to a negative suppression effect (Lewis-Beck, Bryman, & Liao, 2003). Alternatively, this finding may reflect previous research that found that engagement with NSSI-related content online could play a protective role for some people (Lewis & Seko, 2015). It was reported in some studies that seeing images of NSSI can act as a replacement for acting on urges to self-injure. Additionally, some people report that their scars represent resilience and remind them that they have "overcome" NSSI (Lewis & Mehrabkhani, 2016). For people who have not self-injured recently, they may find that their scars remind them that they can overcome difficult situations. Additionally, people who had recently self-injured held stronger self-efficacy to resist NSSI in protective contexts than people who had self-injured in the past. Perhaps people who have recently self-injured

believe that they could resist self-injury if they were in a protective context but find that they do not experience protective contexts. More research is needed to understand possibly why they believe they would or would not be able to resist NSSI in different contexts.

Associations between expectations of pain, negative self-belief, and communication, and recent engagement in self-injury differed depending on participants' belief in their ability to resist self-injury in risk or protective contexts. People who did not believe they could resist NSSI when in protective contexts were more likely to engage in self-injury if they believe it will result in communication and care from other people. It is possible that we captured a group of people who engage in self-injury as a way to bond with peers (Muehlenkamp, Brausch, Quigley, & Whitlock, 2012). Therefore, they expect self-injury to result in communication with others while simultaneously having less confidence that they will be able to resist self-injury when with friends. More research is needed into how functions of NSSI may play a role in people's confidence in whether they could resist NSSI in different contexts.

People who had recently self-injured had less confidence in their ability to resist NSSI when in protective contexts while simultaneously expecting self-injury to result in physical pain. This may reflect that without confidence to resist self-injury when in a supportive environment, pain is not a strong deterrent. Alternatively, it is possible that pain may be a desirable outcome for some people, and having little confidence in their ability to resist NSSI increases the likelihood of NSSI. For example, some people engage in self-injury to "feel something", even if it is pain, in which case the pain would be a desirable outcome (Taylor et al., 2018). Future research should consider asking participants whether they perceive an expected outcome as desirable and take into consideration how outcome expectancies and functions of NSSI may be associated.

Although there were no significant differences in expectations that self-injury would result in negative self-beliefs, there was an interaction between negative self-belief expectancies and self-efficacy to resist NSSI when in risk or protective factors. It appears that expecting diminished self-worth reduces the likelihood of engaging in NSSI for people who have little belief in their ability to resist self-injury when in situation which may be considered as protective. Negative self-belief expectancies also strengthen the effect of holding strong self-efficacy to resist NSSI in risk

contexts. This is consistent with results of a study exploring thoughts and images that occur when people engage in or resist self-injury, which found that the most common images associated with resisting an urge to self-injure was of the negative impact of NSSI on the self (McEvoy et al., 2017).

Implications

The findings of this study provide further insight into how Social Cognitive Theory applies to engagement in NSSI as well as how these thoughts and beliefs fit in the Cognitive-Emotional Model of NSSI. The resulting interactions between NSSI-related outcome expectancies and self-efficacy to resist NSSI suggest that it is also important to consider which potential outcomes people perceive as desirable and the reasons why someone may engage in NSSI (i.e. functions). Future work exploring how expectancies, self-efficacy, and functions of NSSI are associated with each other would extend on current work in the Cognitive-Emotional Model of NSSI as the model proposes different pathways to engaging in NSSI dependent on function.

Comparisons of the four groups indicates differences in outcome expectancies and self-efficacy across onset, maintenance, and cessation of engagement in NSSI. In clinical settings, self-efficacy to resist NSSI may be an important target for treatment and prevention efforts. Maintaining strong self-efficacy for people who have experienced NSSI ideation and strengthening self-efficacy of people who have recently engaged in NSSI may reduce the likelihood of future engagement in self-injury. This could be achieved by reminding clients that there have been difficult times when they have been able to resist self-injury while providing alternative strategies that address the same functions as NSSI.

Limitations and future research

The results of this study should be interpreted in consideration of several limitations. As this study is cross-sectional, future research needs to be conducted to explore how these thoughts and beliefs change over time. Longitudinal research measuring NSSI-related outcome expectancies and self-efficacy to resist NSSI in different contexts is needed to further understand how they may change through onset, maintenance, cessation, and recovery from NSSI. Additionally, Ecological Momentary Assessment would be able to determine the salience of these beliefs in the lead up to and following engagement in NSSI. Future research should consider asking participants which outcomes they perceive as desirable and the functions of

their self-injury. NSSI-specific thoughts and beliefs within the wider context of the Cognitive-Emotional Model of NSSI can be examined by including the experience and regulation of emotion alongside interactions between NSSI-specific cognitions and the possible functions of NSSI.

Conclusion

Overall, we found support for the role of self-efficacy to resist NSSI in different contexts, alongside NSSI-related outcome expectancies in understanding NSSI. This adds to a growing body of evidence that self-efficacy to resist NSSI in different contexts is an important construct of interest when trying to understand self-injurious behaviours. Although a cross-sectional study, examining differences across people with no history of NSSI, people who have experienced NSSI ideation, people with a past history of NSSI, and people who have recently engaged in self-injury we can infer possible protective factors for people who have considered NSSI but not engaged in the behaviour. Future research should consider these relationships over time, alongside the experience and regulation of emotion as proposed by the Cognitive-Emotional Model of NSSI.

Chapter 8: Implicit assessment of self-injury related outcome expectancies: A comparison of three behavioural tasks

Introduction to chapter 8

In the first five studies I used self-report measures of NSSI-related outcome expectancies and self-efficacy to resist NSSI to explore their role in understanding self-injury. With self-report measures of NSSI-related outcome expectancies and self-efficacy to resist NSSI available I wanted to further measurement and understanding of these beliefs by considering implicit beliefs people hold about self-injury. While providing valuable insight, self-report measures assess participant's explicit thoughts and beliefs which may be influenced by a lack of insight or biases such as social desirability. Implicit associations are fast, do not require insight, and are often better predictors of behaviour. Due to the extensive literature exploring implicit outcome expectancies in the context of alcohol consumption, I drew on this to adapt three tasks to measure NSSI-related outcome expectancies.

Author	Contribution	I acknowledge that these represent my contribution to the above research output Signed:
Jessica Dawkins	Development of research question, development of experimental tasks, data collection, data management, data analysis, interpretation of results and discussion, manuscript preparation	
Penelope Hasking	Assisted with development of research question, data analysis, interpretation, and manuscript preparation	
Camilla Luck	Assisted in conceptualisation of study, development of experimental tasks, data preparation, and data analysis.	
Mark Boyes	Assisted with development of research question, data analysis, interpretation, and manuscript preparation	

Abstract

According to Social Cognitive Theory, the anticipated consequences of a behaviour (outcome expectancies), influence the likelihood of engaging in a behaviour. Results from self-report studies have suggested that people with a history of self-injury expect self-injury will successfully regulate emotion while people who have never self-injured expect it to be physically painful. The aim of this study was to trial three experimental tasks designed to measure implicit associations between self-injury and self-injury related outcome expectancies. 150 Australian university students aged 18-45 years ($M = 21.45$, $SD = 3.84$) completed the experimental tasks (Sentence Completion Task, Implicit Association Tests, Covariation Bias Task) within a laboratory setting. Results revealed that implicit associations with affect regulation, pain, and communication differentiated people according to history of self-injury when using the sentence completion task. The strength of implicit associations with affect regulation in this task also predicted the recency of engagement in NSSI. On the covariation bias task, people who had self-injured, but not in the past 12 months appeared to have a bias towards associating images of self-injury and neutral words when compared to people who had self-injured in the past 12 months. Implicit associations, as measured by the Implicit Association Tests did not significantly differentiate participants by self-injury history. Results suggest that the sentence completion task could further research and theoretical understanding of the role of implicit outcome expectancies in facilitating self-injury.

Nonsuicidal self-injury (NSSI), the deliberate damage to one's own body without suicidal intent, includes behaviours such as cutting, burning, and biting the skin, self-battery, and wound interference (ISSS, 2018). Culturally sanctioned behaviours such as tattoos and piercings are excluded from the definition, as are behaviours which are a symptom of another diagnosis (e.g. trichotillomania, excoriation). NSSI is prevalent in community samples of adolescents (approximately 17%) and young adults (approximately 13%; Swannell et al., 2014). Approximately 20% of university students report having engaged in self-injury at least once in their life, making them more likely to self-injure than their same age peers (Swannell et al., 2014). Among university students, NSSI is associated with poor academic outcomes (Kiekens et al., 2016), diagnosis of mental illness (Kiekens et al., 2018a), and suicidal thoughts and behaviours (Kiekens et al., 2018b). A recent study also suggests that the first two years at university are high risk for the onset of NSSI (Kiekens et al., 2019). Although NSSI is a distinct behaviour from suicide and suicide attempt, people who self-injure are up to five times more likely to engage in suicidal thoughts and behaviours than people with no history of NSSI (Keikens et al., 2018b; Whitlock et al., 2013).

People most often report that they self-injure as a way to regulate intense and unwanted emotions (Taylor et al., 2018). Supporting this, empirical studies have found that people who self-injure tend to have more difficulties regulating their emotions (Wolff et al., 2019) and experience a reduction in negative affect and increase in positive affect after engaging in NSSI (Rodriguez-Blanco, Carballo, & Baca-Garcia, 2018). As such, models used to explain the onset and maintenance of NSSI have focussed on the roles of the experience and regulation of emotion (Bentley et al., 2014; Chapman et al., 2006; Nock, 2009; Selby & Joiner, 2009). However, less attention has been paid to how thoughts and beliefs about self-injury may play a role in facilitating NSSI.

Within Social Cognitive Theory, Bandura (1986) proposed that the expected consequences of a behaviour (outcome expectancies) influence the likelihood of engaging in the behaviour. Expecting a positive outcome increases the likelihood of engagement, while expecting a negative outcome decreases this likelihood. Outcome expectancies can be influenced by personal experience, observing the consequences of others' actions, and imagining possible outcomes (Bandura, 1986). As such, outcome expectancies can be held about behaviours that have never previously been

engaged in. The recently proposed Cognitive-Emotional Model of NSSI considers the role of specific cognitions about self-injury, including outcome expectancies, alongside the experience and regulation of emotion in facilitating NSSI (Hasking et al., 2017). Only recently have outcome expectancies related to NSSI been explored. Hasking and Boyes (2017) developed the NSSI Expectancies Scale to measure NSSI outcome expectancies, identifying five anticipated consequences of NSSI (affect regulation, negative social outcomes, communication or care from other people, physical pain, and negative self-beliefs). Subsequent studies have found that people with a history of self-injury have stronger expectations that NSSI will result in affect regulation while people who have never self-injured believe self-injury will result in physical pain (Dawkins et al., 2018; Hasking, 2017; Hasking & Boyes, 2017).

Self-report measures require a certain degree of insight and as such can be biased by a participant's lack of insight or by social desirability (Marissen, Franken, Blanken, Hendriks, & Van Der Brink, 2005). In contrast, implicit associations are fast, do not require insight, and can be measured indirectly using experimental measures (Wiers & Stacy, 2006). As such, implicit measures avoid the influence of social desirability and can tap into underlying beliefs or associations that people are unaware they hold. Implicit associations often contribute to the prediction of behaviours over and above self-reported associations and can pick up changes in mental associations often before conscious awareness of a change (Hahn & Gawronski, 2015).

Several tasks have been developed to assess implicit associations with outcome expectancies related to other health risk behaviours (e.g. drinking, smoking). These include the Expectancy Task (ETASK; Palfai, Monti, Colby, & Rohsenow, 1997; Read & Curtin, 2007) and Implicit Association Tests (IAT; Jajodia & Earleywine, 2003). The ETASK is a sentence completion task, where participants indicate whether sentences related to outcome expectancies (e.g. Alcohol helps me... RELAX) are true or false for them. Faster reaction times (RT) are thought to indicate stronger implicit associations with the related outcome expectancy. Implicit association tests are used to measure the strength of associations between different stimuli and associated outcomes. It is expected that participants will have faster reaction times in conditions where associated stimuli and outcomes have paired response keys, when compared to conditions where paired stimuli and outcomes are not associated. Previous studies using Implicit Association Tests (IAT) to explore

associations between NSSI and the experience of emotional relief have found that people with a history of self-injury implicitly associate NSSI with relief (over disgust; Gratz, Chapman, Dixon-Gordon, & Tull, 2016; Gratz, Tull, Dixon-Gordon, Turner, & Chapman, 2018). Within the learning literature, implicit associations between stimuli and anticipated outcomes are often measured by assessing whether a covariation bias is present (Hermann, Ofer, & Flor, 2004). A covariation bias is the tendency to overestimate the association between a stimulus and positive/negative outcomes (Amrhein, Pauli, Dengler, & Wiedermann, 2005). These tasks could easily be adapted to measure implicit associations with NSSI-related outcome expectancies and to examine whether implicit expectancies differ between people with and without a history of NSSI.

The aim of this study was to measure implicit NSSI outcome expectancies using a variety of experimental methods (sentence completion task; implicit association tests; covariation bias task) and determine which best differentiates people who have never self-injured from people who have a past history of self-injury and people who have recently engaged in NSSI. Self-report studies have found that expectations regarding the ability of NSSI to either regulate affect and/or induce physical pain are most salient in differentiating people with a history of NSSI from those without (Dawkins et al., 2018; Hasking & Boyes, 2017; Hasking, 2017). We expect a similar pattern of findings to emerge when assessing outcome expectancies with implicit tasks.

Method

Participants

Participants were 150⁹ Australian university students aged 18-45 years ($M = 21.45$, $SD = 3.84$). The majority of participants were female ($n = 109$, 72.7%), 40 were male (26.7%), and 1 identified as agender (.7%). One (.7%) participant identified as Aboriginal or Torres Strait Islander. The majority of participants (138, 92%) were studying full-time and, as is customary in Australia, living at home with their parents or family members ($n = 109$, 73%).

⁹ Power analyses of each of the planned analyses using G*Power estimated the sample sizes needed to be between 58-160 when looking for a medium effect size and an alpha level of .05.

Experimental tasks

Each experimental task was programmed in DMDX Version 5.1.3.4, a millisecond accurate display system used to measure reaction times to visual and auditory stimuli (Forster, 2002). A Dell 2.1.5 inch LCD screen (resolution: 1920 × 1080) was used to display images at 220 pixels per inch and words were displayed at the default font size for DMDX.

Sentence completion task. The ETASK developed by Palfai et al. (1997) to measure implicit alcohol related outcome expectancies, was modified to measure participants' implicit associations with five NSSI outcome expectancies. In this task the first half of a sentence was displayed on the computer screen for one second before the second half was displayed. Participants indicated, using the left and right shift keys, whether the sentence was true (left shift key) or false (right shift key) for them (e.g. "If I self-injured I would feel... calm"). The sentences were constructed using the items from Hasking and Boyes' (2017) NSSI Expectancies Questionnaire. The questionnaire comprises 25 items that tap into five anticipated outcomes of engaging in NSSI: affect regulation (e.g. If I self-injured I would feel calm); negative social expectancies (e.g. If I self-injured my friends would be disgusted); communication (e.g. If I self-injured I would get care from others); pain (e.g. If I self-injured it would cause pain); and negative self-beliefs (e.g. If I self-injured I would feel ashamed). Each item was presented once in the original format and once in reverse format (50 trials; e.g. "If I self-injured I would feel... calm" and "If I self-injured I would NOT feel... calm"). Whether participants indicated that the sentence is true or false for them, and the time taken to respond, was recorded. The time taken to respond indicated the strength of the association between the participant's response (true or false) and the sentence presented. A faster response indicated a stronger association. Endorsement of an expectancy was indicated by a "True" response to a positively worded item (e.g. "If I self-injured my family would be disgusted") or a "False" response to the negatively worded items (e.g. "If I self-injured my family would NOT be disgusted"). Mean reaction time for the items of each subscale (positively and negatively worded) were calculated, as was the number of endorsements of each NSSI outcome expectancy. Twenty-five items taken from the Goldberg's Adjective Scale were randomly interspersed among the NSSI items as control variables in the original and reverse format (50 trials; see Goldberg, 1992).

Individual differences in reaction time were assessed using the mean response latency to these items.

Implicit Association Test - Relief. The Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) is used to measure differential associations between concepts (e.g. flowers, insects) and attributes (e.g. good, bad). Participants are asked to categorise stimuli (words or pictures) into the associated concepts and attributes. The IAT is a reaction time task based on the premise that responses will be quicker when paired stimuli are more closely associated (Greenwald et al., 1998).

The IAT requires that the attribute of interest is bipolar (e.g. pleasant, unpleasant; good, bad; Greenwald et al., 1998). As this is not always possible, several versions of the IAT have been developed. One version is the unipolar design where the attribute (e.g. good) is compared to neutral words, the other is a single attribute IAT where only one attribute is paired with the concepts (Houben, Nosek, & Wiers, 2008). The bipolar and unipolar IATs have greater validity and reliability than the single attribute IAT (Houben et al., 2008).

In developing IATs to assess associations between self-injury and NSSI outcome expectancies, attribute format needed careful consideration. As self-report studies have found affect regulation expectancies and pain expectancies to be the most reliable predictors of NSSI (Dawkins et al., 2018, Hasking & Boyes, 2017; Hasking, 2017), these were chosen as the attributes of interest. Two bipolar IATs were developed: one assessed the association between NSSI and affect regulation (relief) and the other assessed the association between NSSI and pain.

As there is no natural opposing attribute to relief (e.g. black v white; good v bad) IAT format needed to be considered. A unipolar IAT (i.e. attribute vs. neutral) could not be used as neutral words can be similar to relief related words. This would make it difficult for participants to differentiate between attributes. As such, joy-related words were chosen as the opposing attribute to relief in a bipolar IAT due to its opposing nature and intensity to relief. Participants were asked to categorise ‘relief’ (e.g. relax, calm) and ‘joy’ (e.g. cheer, happy) related words as well as images of NSSI (cutting) or neutral images (furniture) by pressing keys on a desktop computer keyboard. The NSSI images were taken from a previous study exploring implicit aversion to NSSI (Franklin, Lee, Puzia, & Prinstein, 2014) while neutral images were taken from the International Affective Picture System (IAPS; Bradley & Lang, 2007). The IAPS is a database of normative emotional colour photographs

which have been standardised according to valence and arousal ratings (Bradley & Lang, 2007). The neutral (furniture) images chosen were of neutral valence ($M = 4.93$) and low arousal ($M = 2.45$; IAPS image codes: 7235, 7705, 7020, 7175, 7026, 7025). Six words reflecting relief (Soothe, Calm, Ease, Relax, Peace, Solace) and six words reflecting joy (Bliss, Cheer, Glee, Pleasure, Enjoy, Happy) were used as the attribute stimuli.

The task comprised 7 blocks of trials. For each block, the left and right shift keys were assigned attributes for pictures and words to be categorised into. Participants were directed to respond to the images or words presented by pressing the correct key response (i.e. the assigned shift key) as quickly as possible. In all blocks if an incorrect response was given, an X was displayed on the screen and the participant was required to provide a correct response before continuing with the task. In the first block participants were asked to sort pictures of the concepts (i.e. cutting, furniture) into categories. If the picture fit the cutting category participants pressed the left shift key. If the picture was of furniture they pressed the right shift key. In the second block participants were required to sort attribute words into categories. If the word was associated with relief participants pressed the left shift key and if it was associated with joy they responded by pressing the right shift key. In the third and fourth block, both pictures and words were presented. If stimuli were cutting images or relief words participants pressed the left shift key, while, furniture images and joy words were categorised by pressing the right shift key. For the fifth block, the concepts were switched so that furniture was now categorised by pressing the left shift key and self-injury images by pressing the right shift key. The sixth and seventh blocks were combined, with furniture images and relief words categorised using the left shift key, and cutting images and joy words categorised using the right shift key. The order in which participant categorised the combination of categories (i.e. blocks 3 & 4 and blocks 6 & 7) was counterbalanced between participants.

In line with Greenwald, Nosek, and Banji's (2003) IAT scoring algorithm, data from blocks 3, 4, 6, and 7, were used in the analysis. In line with the scoring algorithm, trials with latencies more than 10,000 ms (Relief $n = 7$; Pain $n = 6$) were deleted; no participants had more than 10% of trials with latencies less than 300ms. The IAT effect (D score) was calculated by creating average reaction time scores for each block. Two difference scores (i.e. Block 6 – Block 3; Block 7 – Block 4) of the means were calculated, then each was divided by its associated pooled standard

deviation and averaged across the two quotients. Positive scores (i.e. > 0) indicated an association between NSSI and relief, with higher scores indicating a stronger association.

Implicit Association Test – Pain. Participants also completed an implicit association test measuring the strength of their association between NSSI and expectations of pain. The procedure was identical to the relief task, however the 6 relief words were replaced with 6 pain related words (Hurt, Ouch, Ache, Sore, Agony, Painful). The same furniture images and joy related words were also used in this task.

Covariation bias. This task was used to evaluate whether people over estimate the association between NSSI and NSSI-related outcome expectancies (relief, pain). Participants were presented with a series of paired pictures and words and then asked to estimate the percentage of time each picture type was paired with each word type. Each picture/word pairing were presented an equal number of times (i.e. 33% of the presentation). The NSSI and neutral images, and pain and relief words from the IATs were also used in this task, with negatively valenced images also taken from the IAPS (Bradley & Lang, 2007). Six images for each stimuli picture type were used (NSSI, neutral, negative; negative image IAPS codes: 9903, 9340, 9220, 2703, 9560, 2800) and 6 words for each outcome (pain, relief, neutral; neutral words: Chair, Table, Couch, Lamp, Bench, Desk). The negative images used were of low valence ($M = 2.10$) and medium arousal ($M = 5.27$). Negative images were included to ensure that any bias towards NSSI was not the product of a general negativity bias.

Pictures and words were paired and presented randomly in a series: stimulus image (1 sec); outcome word (1 sec); blank screen (1 sec), with each picture paired with each word three times. Participants were told at the beginning of the task that they would be watching a series of pictures and words and instructed on screen to “Just relax and watch the screen, but also pay attention to the pictures and words. You will be asked questions about them afterwards”. Participants were then presented with paired images and words. The entire presentation took approximately 17 minutes.

When the presentation was completed, participants were asked to estimate the percentage of time each picture category was paired with each outcome (e.g. “Please estimate out of 100% how often images of SELF-INJURY were paired with PAIN

related words”). As each image/word pair was presented an equal number of times, a bias towards associating concepts was demonstrated by an overestimation of the percentage of times a pairing type was presented (i.e. >33%). It was expected that people who engage in NSSI would overestimate the percentage of time that relief words were presented after an NSSI image. Conversely people with no history of NSSI were expected to overestimate the rate at which pain words were associated with NSSI images.

Questionnaires

All questionnaires were administered online through Qualtrics.

Nonsuicidal self-injury. NSSI engagement was assessed using two questions taken from Part One of the Inventory of Statements About Self-Injury (ISAS; Klonsky & Glenn, 2009). After being provided a definition of NSSI, participants were asked whether they had ever engaged in NSSI, and if they had, at what age they had first engaged and how many times they had self-injured in the past 12 months. Participants were also asked to estimate their lifetime frequency of 12 methods of NSSI and indicate their main form of self-injury. This information was used to determine history of NSSI: people with no history of NSSI; people who have self-injured but not in the past 12 months (past NSSI), and people who have self-injured in the past 12 months (recent NSSI).

NSSI outcome expectancies. The Nonsuicidal Self-Injury Expectancies Questionnaire (NEQ) was used to measure participants’ self-reported NSSI outcome expectancies (Hasking & Boyes, 2017). The measure comprises 25 items assessing five outcome expectancies related to NSSI: affect regulation (e.g., I would feel calm); negative social outcomes (e.g., My friends would be disgusted); communication (e.g., Other people would notice and offer sympathy); physical pain (e.g., It would hurt); and negative self-beliefs (e.g., I would feel like a failure). Participants respond on a four-point Likert scale from 1 (not at all likely) to 4 (extremely likely), how likely they believe the possible outcomes to be if they were to self-injure in the future. The scale has demonstrated strong criterion validity, discriminant validity, and internal consistency (affect regulation $\alpha = 0.86$, negative social outcomes $\alpha = 0.78$, communication $\alpha = 0.71$, pain $\alpha = 0.80$, negative self-beliefs $\alpha = 0.78$). In the current sample Cronbach’s alphas for each subscale were: affect regulation $\alpha = 0.84$, negative social outcomes $\alpha = 0.85$, communication 0.66, pain $\alpha = 0.89$, negative self-beliefs $\alpha = 0.70$).

Procedure

Participants attended a 90 minute laboratory session to complete the four computer-based tasks and the questionnaires. Upon arrival, participants were seated in individual cubicles and asked to read the information sheet, which was presented online in the Qualtrics survey system. If they agreed to participate they were asked to click the “I agree” button to proceed with the study. Participants completed the computer tasks, which were counterbalanced across participants. Participants were then asked to complete the questionnaires. At the end of the study, participants were provided with information about self-injury and where to find support if they were feeling distressed or wished to discuss any concerns with a mental health professional.

Analyses

Sentence completion. To assess the relationship between the endorsement of an outcome expectancy and reaction time to respond, and whether this was related to history of NSSI, Hayes’ (2013) Process model 1 was used to conduct moderated regressions. Moderation models were conducted for each NSSI outcome expectancy, with mean reaction time to that anticipated outcome as the outcome variable. Predictor variables were the number of times the expectancy was endorsed; history of NSSI (i.e. no history of NSSI, past NSSI, recent NSSI) was entered as a moderator. Three moderation models were conducted for each outcome expectancy each using different NSSI groups as the moderating variable. One compared people with no history of NSSI to people with a past history of NSSI, one compared people with no history of NSSI to people with a recent history of NSSI, and the third compared people with a past history of NSSI to people with a recent history of NSSI. Including one categorical variables (3 levels) as the moderator variable in a single analysis would not have allowed for these interactions to be explored due to the need to create dummy variables.

Implicit Association Tests. Using SPSS, Version 25.0, two one-way ANOVAs (one for each IAT) were used to compare D scores of people with no history of NSSI, people with a past history of NSSI, and people with a recent history of NSSI, as an indication of the strength of the associations between NSSI and expectancies of both pain and relief.

Covariation Bias. Using SPSS, Version 25.0, the estimated percentages of word/picture pairings reported in the covariation bias task were analysed using a

3(Group: no history of NSSI, past history of NSSI, recent history of NSSI) × 3(Picture type: cutting, negative, neutral) × 3(Word: pain, relief, neutral) ANOVA.

Results

Preliminary Analysis

Of the full sample 58 (38.7%) indicated that they had a history of NSSI. Of these, 33 (56.9%) indicated that they had self-injured at least once in the past 12 months. The most commonly reported forms of self-injury were cutting (47.4%), self-battery (17.5%), and severe scratching (15.8%). The mean age of onset was 14.20 ($SD = 2.23$) years old. Age ($r = -0.02, p = 0.78$) and gender ($\chi^2 = 5.10, p = .28$) were not related to history of NSSI and as such were not statistically controlled in the analyses.

Missing Values Analysis (MVA) of the questionnaire responses revealed <5% missing values, which were missing completely at random $\chi^2(9541)=8341.56, p = 1.00$. As such, expectation maximisation was used to impute missing data.

Inspection of responses on the Covariation Bias Task revealed that 11 participants' responses differed from the other participants in format (estimated on a scale out of 0-10 rather than 0-100%). These responses were adjusted to percentages to be proportionate with the rest of the sample (e.g. responding 6 rather than 60, or 2 rather than 20). Five participants did not respond to any of the items. MVA was conducted on the remaining participant data. All items had less than 5% missing values, which were missing completely at random $\chi^2(103)=122.96, p = 0.88$; expectation maximisation was used to impute missing values.

Explicit NSSI Outcome Expectancies

Group differences in self-reported NSSI outcome expectancies revealed that participants with a history of self-injury (recent and past) were more likely to expect NSSI to result in affect regulation than people with no history of self-injury (Table 8.1). People with no history of self-injury held stronger explicit expectations that self-injury would result in physical pain and communication and care from others than people with a history of self-injury (recent and past). There were no group differences in the self-reported strength of negative social or negative self-belief expectancies.

Table 8.1.

Group comparisons of self-reported NSSI-related outcome expectancies

	No NSSI(a) M(SD)	Past NSSI(b) M(SD)	12 month NSSI(c) M(SD)	F	Partial η^2	Group comparisons ^a
Affect regulation expectancies	12.58(2.97)	15.77(2.76)	16.93(3.45)	26.75***	.29	a<b***, a<c***
Negative social expectancies	17.67(3.99)	17.55(3.25)	18.97(3.88)	1.38	.02	-
Communication expectancies	16.26(2.47)	13.91(2.22)	14.63(3.44)	8.92***	.12	a>b**, a>c*
Pain expectancies	19.66(2.03)	16.44(3.17)	16.43(3.28)	25.79***	.28	a>b***, a>c***
Negative self-belief expectancies	19.91(2.57)	21.27(2.25)	19.49(3.96)	2.62	.04	-

Note. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ ^aonly significant contrasts reported

Sentence Completion

There was no group difference in mean overall reaction time in response to the personality related items, $F(2, 145) = 0.157, p = .855$; as such individual differences in reaction time were not statistically controlled in the analyses. Correlations between mean reaction times and endorsements of NSSI expectancy outcomes from the sentence completion task, self-reported NSSI outcome expectancies, and history of NSSI can be found in Table 8.2. These revealed a strong correlation between participants self-report NSSI-related outcome expectancies and their implicit expectancies. Group differences in the number of times participants endorsed each outcome expectancy can be found in Table 8.3. People with no history of NSSI endorsed affect regulation expectancies significantly less and pain expectancies significantly more than people with a history of NSSI.

Affect regulation expectancies. History of NSSI and the number of times participants endorsed affect regulation expectancies were not significantly related to reaction time on affect regulation trials (see Table 8.4). However, there were significant interactions between expectancy endorsement and NSSI in predicting the strength of association with affect regulation expectancies. When comparing people who have never self-injured and people who have self-injured in the past 12 months, there was a negative relationship for people who had recently self-injured that approached significance, $b = -125.83, t = -1.78, p = .077$, but no significant relationship for people who have never self-injured, $b = 75.80, t = 1.12, p = .264$ (See Figure 8.1). There was also a significant interaction when comparing people with a past history of NSSI to people who had self-injured in the past 12 months, with a significant negative relationship for people with a recent history of NSSI, $b = -161.43, t = -2.06, p < .05$, and no significant relationship for people who had self-injured but not in the past 12 months, $b = 152.75, t = 1.69, p = .096$ (see Figure 8.1).

Table 8.2.

Correlations between sentence completion task variables, self-reported NSSI outcome expectancies, and history of NSSI.

	M (SD)	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. NEQ Affect regulation	14.25 (3.73)	.26**	-.03	-.50***	.06	.06	-.03	-.10	.12	-.06	.72***	.27**	.06	-.22**	.04	.55***
2. NEQ negative social outcomes	18.03 (3.80)		-.03	-.13	.27**	-.00	-.18*	-.01	.08	-.20*	.19*	.76***	-.29***	.02	.34***	.13
3. NEQ Communication	15.48 (2.75)			.16	-.13	-.02	.02	.06	-.20*	.04	-.14	-.02	.51***	.27**	.13	-.26**
4. NEQ Pain	18.44 (2.98)				-.06	-.12	-.06	.00	-.31***	-.00	-.36***	-.19*	.14	.66***	-.13	-.49***
5. NEQ Negative Self- Beliefs	20.15 (2.88)					.06	-.01	-.02	.05	-.12	.07	.27**	-.24**	-.03	.51***	.02
6. Mean Affect Regulation Reaction Time	1811.09 (444.90)						.68***	.49***	.48***	.63***	.02	.02	.03	-.14	.08	-.04
7. Mean Negative Social Outcomes Reaction Time	1737.30 (380.90)							.48***	.44***	.67***	-.09	-.10	.06	-.16	.07	-.16*
8. Mean Communication Reaction Time	1982.85 (420.37)								.39***	.57***	-.14	.00	-.06	.09	.06	-.13
9. Mean Pain Reaction Time	1621.46 (405.89)									.34***	.10	.16	-.13	-.32***	.06	.06
10. Mean Negative Self- Beliefs Reaction Time	2015.24 (463.95)										-.13	-.18*	.07	.03	-.03	-.12
11. Affect Regulation “True” Response	3.13 (2.90)											.23**	.93	.00	.85	.00
12. Negative Social Outcomes “True” response	6.35 (2.69)												-.25**	.04	.44***	.20*

13. Communication “True” response	4.86 (2.59)		.20*	-.12	-.03
14. Pain “True” response	8.61 (2.15)			.06	-.31***
15. Negative Self-Beliefs “True” response	7.07 (2.11)				.58
16. NSSI	-				

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

NEQ = NSSI expectancy questionnaire

Table 8.3.

Group comparison of number of times each expectancy type was endorsed in sentence completion task.

	No NSSI(a) M(SD)	Past NSSI(b) M(SD)	12 month NSSI(c) M(SD)	F	Partial η^2	Group comparisons ^a
Affect regulation expectancies	1.86	4.44	5.61	33.74***	.32	a<b***, a<c***
Negative social expectancies	6.01	6.16	7.42	3.53*	.05	a<c*
Communication expectancies	5.01	4.20	4.97	.99	.01	-
Pain expectancies	9.21	7.52	7.79	10.34***	.13	a>b**, a>c**
Negative self-belief expectancies	6.99	7.16	7.21	.16	.00	-

Table 8.4.

Results of moderation models conducted for each NSSI outcome expectancy measured in the sentence completion task with overall reaction time as the outcome variable.

	Never and past NSSI					Never and recent NSSI					Past and recent NSSI							
	b	SEB	t	p	95% CI	b	SEB	t	p	95% CI	b	SEB	t	p	95% CI			
					Lower	Upper					Lower	Upper				Lower	Upper	
Affect regulation expectancies																		
Constant	1644.45	158.71	10.36	<.001*	1329.93	1958.97	1739.83	143.08	12.16	<.001*	1456.49	2023.17	1419.11	237.48	5.98	<.001*	942.79	1895.43
True responses	91.82	64.20	1.43	.156	-35.41	219.05	21.71	53.50	.46	.686	-84.25	127.66	-26.01	59.96	-.43	.67	-146.28	94.26
NSSI	-192.62	130.84	-1.47	.144	-451.92	66.67	-8.38	58.20	-.14	.886	-123.64	106.87	-115.66	127.98	-.90	.370	-372.36	141.03
True response x NSSI	83.37	123.00	.68	.499	-160.40	327.13	-100.82	48.12	-2.10	.038*	-196.11	-5.52	-314.18	117.83	-2.67	.010*	-550.53	-77.83
Negative social expectancies																		
Constant	1763.88	39.54	44.61	<.001*	1685.53	1842.23	1742.49	33.24	52.43	<.001*	1676.67	1808.31	1619.33	65.60	24.69	<.001*	1487.75	1750.90
True responses	-29.46	37.56	-.78	.435	-103.90	44.98	-21.24	33.66	-.63	.529	-87.89	45.41	-45.03	55.15	-.82	.418	-191.18	245.25
NSSI	-59.81	95.41	-.63	.532	-248.89	129.27	-70.05	47.82	-1.46	.146	-164.75	24.64	-107.50	117.39	-.92	.364	-342.96	127.97
True response x NSSI	-34.84	87.42	-.40	.691	-208.08	138.39	.44	39.18	.01	.99	-77.14	78.03	27.03	108.79	.25	.805	-191.18	245.25
Communication expectancies																		
Constant	2006.32	40.01	50.14	<.001*	1927.03	2085.62	2022.08	38.03	53.17	<.001*	1946.78	2097.39	1854.09	59.69	31.06	<.001*	1734.37	1973.81
True responses	-73.10	37.87	-1.93	.056	-148.15	1.95	-57.35	37.73	-1.52	.131	-132.07	17.37	97.23	50.90	1.91	.061	-4.86	199.32
NSSI	-246.85	98.11	-2.52	.013*	-441.29	-52.42	-55.92	55.22	-1.01	.313	-165.27	53.42	94.96	107.01	.89	.379	-119.68	309.60
True response x NSSI	204.11	97.89	2.09	.039*	10.12	398.10	112.08	42.73	2.62	.01*	27.47	196.69	17.61	104.37	.17	.867	-191.72	226.95
Pain expectancies																		
Constant	1639.52	35.09	46.73	<.001*	1569.99	1709.06	1640.44	37.08	44.24	<.001*	1567.01	1713.86	1576.11	73.29	21.50	<.001*	1429.10	1723.11
True responses	-213.47	60.09	-3.55	<.001*	-332.56	-94.39	-223.73	65.00	-3.44	<.001*	-352.44	-95.02	-135.60	44.72	-3.03	.004*	-225.31	-45.90
NSSI	-151.46	85.91	-1.76	.081	-321.72	18.80	-78.48	52.78	-1.49	.140	-183.00	26.04	30.18	130.64	.23	.82	-231.85	292.21
True response x NSSI	158.07	87.81	1.80	.074	-15.96	332.09	38.50	51.16	.75	.453	-62.81	139.81	-78.71	87.70	-.90	.374	-254.61	97.18

Negative self-belief
expectancies

Constant	2036.61	48.44	42.04	<.001*	1940.60	2132.61	2036.68	43.15	47.20	<.001*	1951.24	2122.12	1888.27	64.65	29.21	<.001*	1758.59	2017.94
True responses	-13.97	45.08	-.31	.758	-103.29	75.40	1.84	44.03	.04	.967	-85.35	89.03	-16.12	53.19	-.30	.763	-122.81	90.58
NSSI	-165.11	117.01	-1.41	.161	-397.00	66.79	-52.73	62.59	-.84	.401	-176.67	71.22	-4.60	115.30	-.04	.968	-235.86	226.67
True response x NSSI	-49.06	104.61	-.47	.640	-256.38	158.25	8.73	50.72	.17	.864	-91.70	109.17	64.47	105.60	.61	.544	-147.34	276.27

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

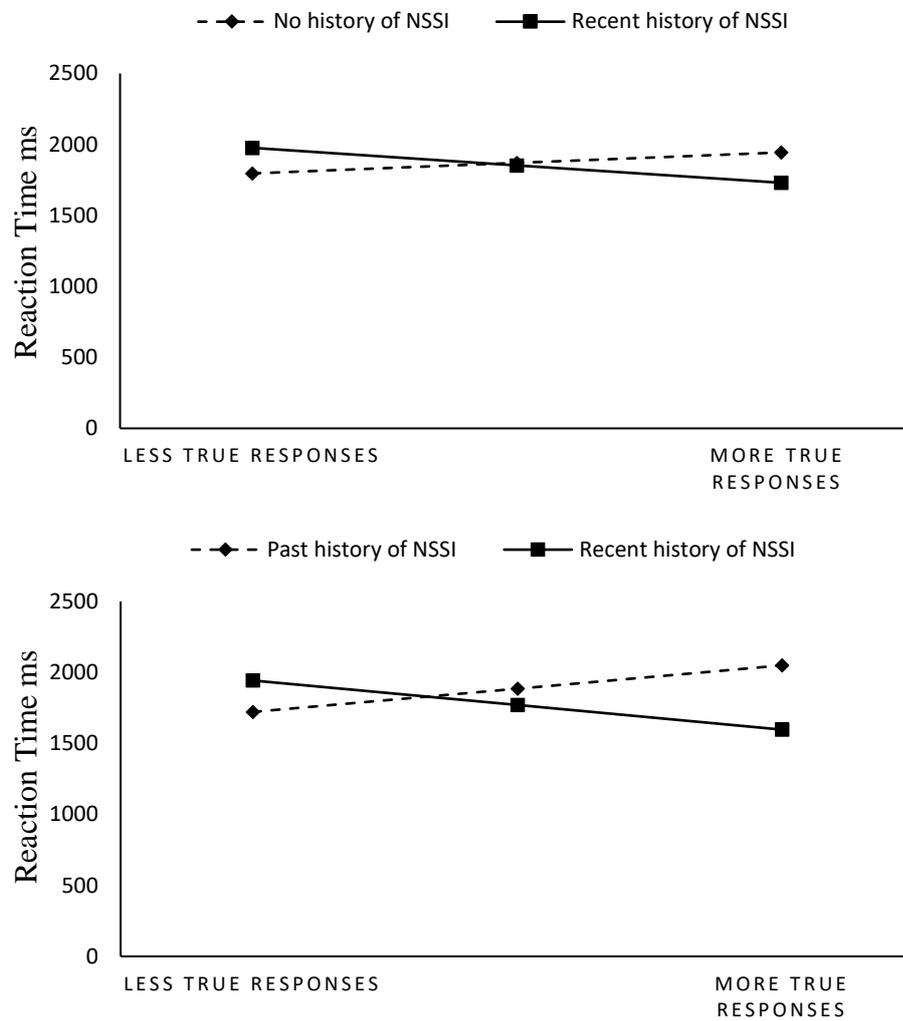


Figure 8.1. Reaction time to affect regulation expectancy items dependent on the level of endorsement and history of NSSI.

Negative social expectancies. History of NSSI and the number of times participants endorsed negative social outcome expectancies were not related to reaction time on these trials (see Table 8.4). There were also no significant interactions when predicting associations with negative social outcome expectancies.

Communication expectancies. The number of times participants endorsed communication expectancies was not related to reaction times (Table 8.4). However, people with a past history of NSSI responded faster to communication items than people with no history of NSSI. There was a significant interaction when comparing people who have never self-injured to people who had a past history of NSSI, which revealed a significant negative relationship between expectancy endorsement and reaction time for people with no history of NSSI $b = -117.47$, $t = -2.82$, $p = .006$, but no significant relationship for people with a history of NSSI $b = 86.64$, $t = .98$, $p = .330$ (Figure 8.2). There was also a significant interaction when comparing people with no history of NSSI to people with a recent history of NSSI, which indicated a significant negative relationship between expectancy endorsement and reaction time for people with no history of NSSI $b = -117.49$, $t = -2.67$, $p = .009$, but no significant relationship for people with a history of NSSI $b = 106.67$, $t = 1.46$, $p = .15$ (Figure 2).

Pain expectancies. People who endorsed pain expectancies had faster reaction times than people who did not endorse pain expectancies. There was no relationship between history of NSSI and reaction time. The interaction between expectancy endorsement and history of NSSI was approaching significance when comparing people with no history of NSSI and people with a past history of NSSI. Exploration of this revealed a significant negative relationship for people with a history of NSSI $b = -89.77$, $t = -2.03$, $p = .045$, but this was stronger for people with no history of NSSI $b = -247.84$, $t = -3.27$, $p < .001$ (Figure 8.3).

Negative self-belief expectancies. History of NSSI engagement and number of times participants endorsed negative self-belief expectancies were not significantly related to reaction time on these trials (see Table 8.4).

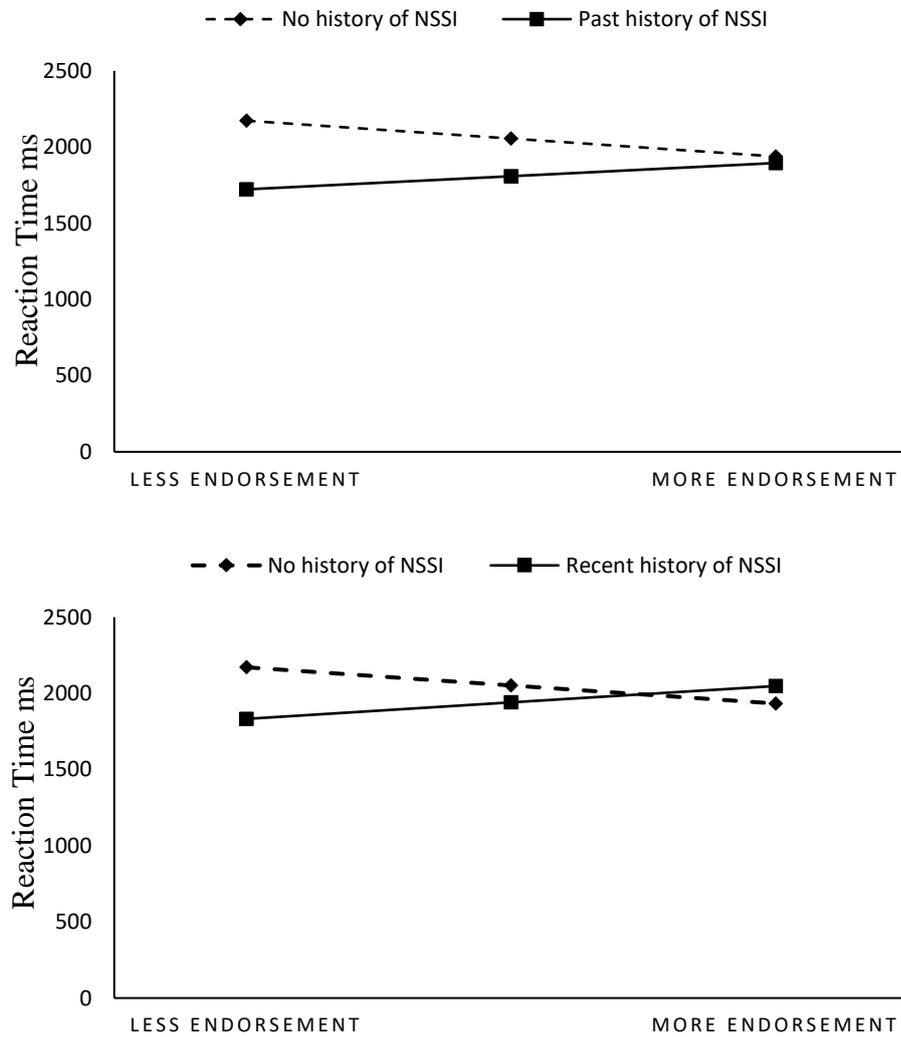


Figure 8.2. Reaction time to communication expectancy items dependent on the level of endorsement and history of NSSI.

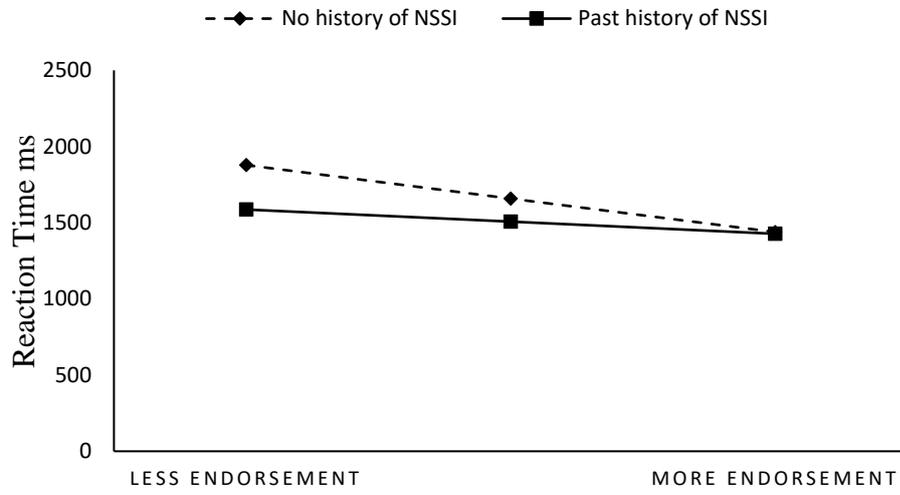


Figure 8.3. Reaction time to pain expectancy items dependent on the level of endorsement and history of NSSI

Implicit Association Tests

Correlations between IAT *D* Scores, self-reported NSSI outcome expectancies, and NSSI can be found in Table 5. *D* scores from the relief IAT were significantly positively correlated with self-reported negative social expectancies. There were no other significant correlations between *D* scores on either IAT with self-reported NSSI outcome expectancies or NSSI for either IAT.

Relief IAT. Overall mean *D* scores were greater than 0 indicating an association between NSSI and relief for all groups (see Table 8.6). There were no significant group differences in the Mean *D* scores when comparing people who had never self-injured, people who had self-injured in the past, and people who had recently self-injured, $F(2, 147) = 1.31, p = .273, \text{partial } \eta^2 = .018$.

Pain IAT. Overall mean *D* scores indicated that participants associated NSSI with pain (i.e. $= > 0$; Table 6). There were no significant group differences in the Mean *D* scores when comparing people who had never self-injured, people who had self-injured in the past, and people who had recently self-injured, $F(2, 147) = .54, p = .586, \text{partial } \eta^2 = .007$.

Covariation Bias

Correlations between Covariation Bias estimates, self-reported NSSI outcome expectancies, and NSSI can be found in Table 8.7. Generally, Covariation Bias estimates did not correlate with self-reported NSSI outcome expectancies or history of NSSI.

Overall, participants more accurately estimated the presentation of neutral images ($M = 38.34$), than NSSI ($M = 43.60$), and negative ($M = 44.47$) images $F(2, 568) = 17.181, p < .001, \text{partial } \eta^2 = .108$. There was also a main effect of word type $F(2, 568) = 12.55, p < .001, \text{partial } \eta^2 = .081$, with participants more accurately estimating the presentation of neutral words ($M = 38.52$) than pain ($M = 45.16$) and relief ($M = 42.79$) words. There was no main effect of NSSI history $F(2, 568) = 1.269, p = .284, \text{partial } \eta^2 = .018$. There were no significant 2-way interactions between image type and NSSI history $F(4, 568) = 0.89, p = .468, \text{partial } \eta^2 = .012$; word type and NSSI history $F(4, 568) = 0.123, p = .974, \text{partial } \eta^2 = .002$; or image type and word type $F(4, 568) = 1.245, p = .29, \text{partial } \eta^2 = .009$. There was a significant 3-way interaction $F(8, 564) = 2.361, p = .017, \text{partial } \eta^2 = .032$. People with a recent history of NSSI more accurately estimated the presentation of NSSI

images when paired with neutral words ($M = 32.28$, 95%CI = 25.59, 38.97) than people with a past history of NSSI ($M = 45.69$, 95%CI = 37.79, 53.58; Figure 8.4). There were no other significant differences in estimations (Table 8.8).

Table 8.5.

Correlations between IAT D scores, self-reported NSSI outcome expectancies, and NSSI history.

	M(SD)	2.	3.	4.	5.	6.	7.	8.
1. NEQ Affect Regulation	14.25 (3.73)	.256**	-.034	-.503***	.064	-.082	.107	.554***
2. NEQ Negative Social	18.03 (18.03)		-.027	-.126	.273**	-.018	.167*	.133
3. NEQ Communication	15.48 (2.75)			.163	-.131	.098	.066	-.260**
4. NEQ Pain	18.44 (2.98)				-.057	.041	-.003	-.490***
5. NEQ Negative Self-Beliefs	20.15 (2.88)					.001	-.061	.016
6. Pain IAT D	.17 (.28)						.138	-.081
7. Relief IAT D	.02 (.25)							.113
8. NSSI history	-							

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

NEQ = NSSI expectancy questionnaire

Table 8.6.

Mean D score for the Relief and Pain IATs for each NSSI group

	No history of NSSI	Past history of NSSI	Recent History of NSSI
Relief IAT <i>D</i> M(SD)	.002 (.253)	.025 (.258)	.084 (.244)
Pain IAT <i>D</i> M(SD)	.186 (.285)	.176 (.236)	.127 (.296)

Table 8.7.

Correlations between self-report NSSI outcome expectancies, covariation bias estimates, and NSSI history.

	M (SD)	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. NEQ Affect Regulation	14.25 (3.73)		.256**	-.034	-.503***	.064	-.128	-.002	-.158	-.026	-.111	-.022	-.110	.005	-.039	.554***
2. NEQ Negative Social	18.03 (3.80)			-.027	-.126	.273**	.027	.039	-.068	.055	-.086	-.024	-.079	-.071	.015	.133
3. NEQ Communication	15.48 (2.75)				.163	-.131	-.037	.079	.186*	.087	-.059	.063	.016	.102	-.058	-.260**
4. NEQ Pain	18.44 (2.98)					-.057	.182*	-.071	.098	.110	.008	-.069	-.003	.064	.025	-.490***
5. NEQ Negative Self-Beliefs	20.15 (2.88)						.026	-.068	.039	.065	.094	-.046	-.046	-.074	.066	.016
6. CB NSSI Pain	45.76 (19.64)							.344***	.228**	.573***	.279**	.132	.241**	.307***	.308***	-.087
7. CB NSSI Relief	46.30 (20.77)								.389***	.372***	.511***	.324***	.346***	.315***	.320***	-.014
8. CB NSSI Neutral	40.16 (19.53)									.297***	.416***	.380***	.427***	.425***	.251**	-.162
9. CB Negative Pain	47.82 (18.26)										.253**	.065	.300***	.281**	.296***	-.108
10. CB Negative Relief	43.65 (19.81)											.280**	.281**	.288***	.301***	-.109
11. CB Negative Neutral	40.89 (19.02)												.460***	.314***	.188*	.134
12. CB Neutral Pain	42.25 (17.73)													.251**	.136	.001
13. CB Neutral Relief	37.69														.346***	.014

	(17.73)		
14. CB Neutral Neutral	33.77		-048
	(18.62)		
15. NSSI history	-		

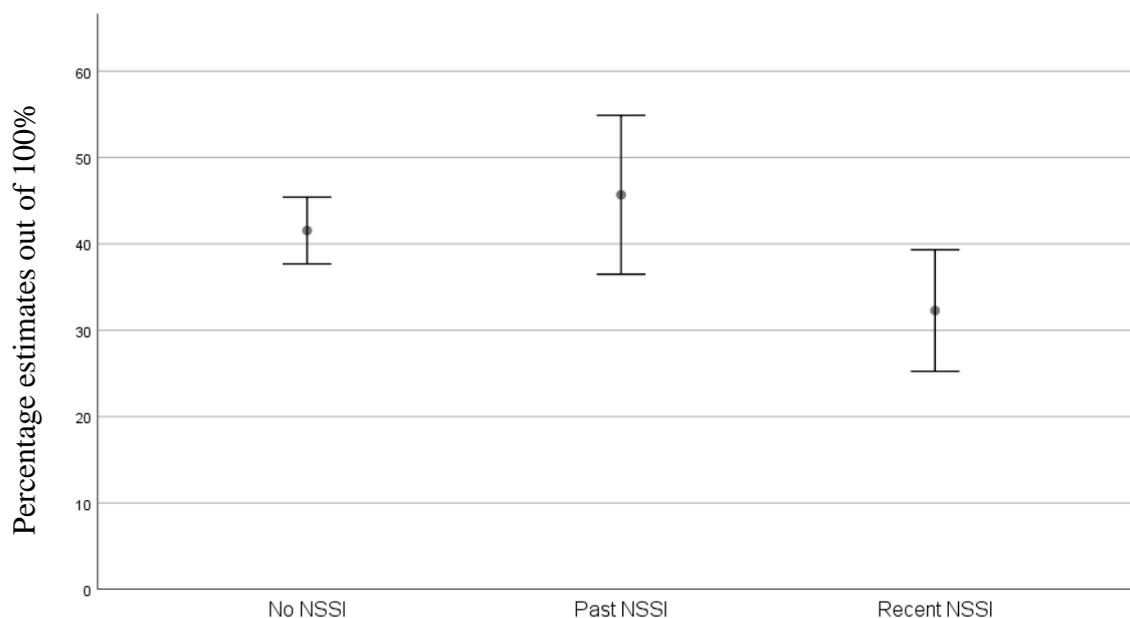


Figure 8.4 Differences in estimates of the presentation NSSI images paired with neutral images dependent on NSSI history.

Table 8.8.

Comparisons of estimates of image-outcome pairings from the Covariation Bias Task.

Pairing Type	Image	Outcome	No History of NSSI ^a	Past History of NSSI ^b	Recent History of NSSI ^c	Group comparisons		
						$p=$	ab	ac
	NSSI	Pain	46.74	46.87	42.19	1.00	.789	1.00
	NSSI	Relief	46.38	47.25	45.42	1.00	1.00	1.00
	NSSI	Neutral	41.55	45.69	32.28	1.00	.060	.034*
	Negative	Pain	49.04	48.43	43.93	1.000	.527	1.00
	Negative	Relief	44.26	50.00	37.34	.634	.263	.058
	Negative	Neutral	39.41	39.22	46.25	1.000	.244	.529
	Neutral	Pain	41.63	47.01	40.59	.589	1.000	.563
	Neutral	Relief	37.27	39.70	37.45	1.00	1.00	1.00
	Neutral	Neutral	33.86	37.74	30.67	1.00	1.00	.502

Note. Adjustment for multiple comparisons: Bonferroni

Discussion

The aim of this study was to measure implicit NSSI-related outcome expectancies and to establish whether they differ between people with and without a history of NSSI. Unlike self-report measures, implicit measures can tap into unconscious associations and avoid social desirability bias. Additionally, implicit measures often have predictive power over and above that of explicit measures (Hahn & Gawronski, 2015). We found that while two of the tasks we used did not differentiate participants based on their reported NSSI history, the sentence completion task shows promise in measuring implicit NSSI outcome expectancies and capturing different beliefs held by people, based on history of NSSI.

Consistent with self-report studies, participants with a history of self-injury had stronger associations between NSSI and affect regulation, and weaker associations between NSSI and pain, than people with no history of NSSI (Dawkins et al., 2017; Hasking, 2017; Hasking & Boyes, 2017). When endorsing items in the sentence completion task, participants with a history of self-injury demonstrated a stronger implicit association with affect regulation expectancies. While people with a past history of NSSI associated NSSI with affect regulation more than people with no history of NSSI, the implicit association was even stronger for people who had recently self-injured. This may indicate a change in the strength of associations with affect regulation as engagement in the self-injury becomes more distant. It is possible that with less recent experience, the association becomes weaker, an effect that has not previously been observed when using self-report measures. Alternatively, people who have not self-injured within the past 12 months may have held weaker associations with affect regulation to begin with, minimising the chance they would continue to self-injure.

Interestingly, while people with no history of self-injury self-reported stronger communication expectancies than people with a history of NSSI, there was no difference in the endorsement of communication items in the sentence completion task. However, people with no history of self-injury who had explicitly endorsed communication expectancies, had a stronger implicit association than people with a history of engaging in self-injury. This may reflect the common misconception in the community that people who self-injure do so to receive attention from other people (Klonsky, Victor, & Saffer, 2014). Expecting NSSI to result in friends and family becoming upset with you or experiencing diminished self-worth were associated with

NSSI regardless of NSSI history. This may reflect past negative experiences of people who have self-injured, which shape their expectations of anticipated future outcomes.

Although non-significant, the pattern of results in the IATs was in the expected direction. The lack of significant differences may have been influenced by the choice of “Joy” as the opposing outcome to relief and pain. Joy is not likely associated with NSSI and the IAT may not have been sensitive enough to measure differences in associations without the pull of an opposing outcome that *is* associated with NSSI. With previous IAT tasks conducted by Gratz et al. (2016), disgust-related words were used as an opposing attribute; however we felt disgust may be implicitly associated with NSSI for people who have never engaged in the behaviour (Zila & Kielica, 2001). This may have created larger group differences by weakening the association between NSSI and relief for people who have not self-injured. This could be examined further in future studies comparing different IAT designs within the context of associations with NSSI outcome expectancies.

People who had recently self-injured were more accurate in their estimation of the presentation of NSSI images when related to neutral words, compared to people who had self-injured in the past. This likely suggests that NSSI stimuli were more salient to people who have not recently self-injured. If it has been a while since their last engagement in NSSI, participants may have noticed the images more because of the personal relevance, as well as the non-recency of having seen self-injury. Triggering thoughts about their past self-injury may have influenced the association. However, there was no difference with people who had never self-injured. This may have been because, although images are possibly salient, they may not have had the same level of personal reference that they would have to people who have self-injured in the past.

Implications

Theoretically, the results strengthen the assertion that NSSI outcome expectancies differ between people with and without a history of NSSI. Specifically, it supports the inclusion of social cognitive constructs within the proposed Cognitive-Emotional Model of NSSI (Hasking et al., 2017). In particular, we found that implicit associations between NSSI and affect regulation expectancies may change or differ with recency of NSSI. It is possible that the sentence completion task, in particular, could be used in future research to determine whether explicit and implicit

expectancies change over time. This would improve the understanding of how outcome expectancies may play a role in the onset, maintenance, and cessation of NSSI. It is possible that implicit expectancies may be found to be an indicator of change before there is an observable reduction in frequency of NSSI. This could be useful within clinical settings to assess the efficacy of interventions aimed at treating NSSI. If future studies find that implicit NSSI outcome expectancies have predictive utility over and above self-report measures, they could be used in predictive models, or clinical settings, to identify people at risk of initiating or continuing engagement in self-injurious behaviours. This could be used to inform the implementation of prevention and interventions.

Limitations and future research

Interpretation of our results need to be considered with regards to several limitations. Consideration should be made for the debate around the validity and reliability of implicit measures, in particular the IAT, and their utility in predicting future behaviour (Meissner, Grigutsch, Koranyi, Muller, & Rothermund, 2019). Meta-analyses have reported contradictory results of correlations between implicit associations and behaviour (Greenwald, Poehlman, Uhlmann, & Banaji, 2009; Oswald, Mitchell, Blanton, Jaccard, & Tetlock, 2013). However, weak validity is mostly associated with racial bias and predicting behaviour. Future research exploring implicit NSSI-related beliefs and engagement in NSSI needs to be conducted before drawing any conclusions about the relationship. As this study was cross-sectional we cannot speak to the predictive utility of implicit NSSI-related outcome expectancies. Measuring implicit outcome expectancies across different time points, and differing contexts, may shed light on how these associations change over time. Future research could use these tasks in longitudinal or Ecological Momentary Assessment studies to develop a better understanding of the predictive value of implicit NSSI outcome expectancies. Future research could also explore whether there are changes in expectancy strength which coincide with affective experience. For example, it is possible that associations between NSSI and affect regulation may strengthen when individuals are experiencing acute stress.

Conclusion

Our results suggest that the sentence completion task is most likely to be useful in future studies assessing implicit NSSI expectancies. Implicit measures are important with regards to behaviour prediction, but also can pick up on small

changes in associations over time, which may give light to the underlying mechanisms involved in NSSI. Additionally, the Sentence Completion Task was able to differentiate between people with a recent and past history of self-injury. Future research into the underlying mechanisms of NSSI and the role of outcome expectancies could inform theory, and future prevention and intervention efforts.

General Discussion

Introduction to General Discussion

In this chapter the aims of the thesis are restated and the key findings synthesised. Additionally, theoretical, research, and clinical implications of the findings are presented. The limitations of the thesis and the opportunities for future research are examined, with a final overall conclusion to the thesis.

Summary of Aims

The overarching aim of this research was to explore the recently proposed Cognitive-Emotional Model of NSSI (Hasking et al., 2017), specifically how NSSI-related outcome expectancies and self-efficacy to resist NSSI contribute to an understanding of why someone may or may not engage in self-injury. The secondary aim was to expand on the measurement of these constructs by developing a behaviour-specific measure of self-efficacy to resist NSSI and applying implicit measures to NSSI-related outcome expectancies. The aims were addressed using a variety of designs and methodologies including quantitative, qualitative, psychometric, and experimental.

Key Findings and Implications

Converging evidence across studies indicates that NSSI-related outcome expectancies and self-efficacy to resist NSSI contribute to understanding self-injurious behaviours. According to Social Cognitive Theory, we are more likely to engage in a behaviour when we expect a desirable outcome (Bandura, 1986). Across studies included in this thesis, the most salient differences in NSSI-related outcome expectancies were with regards to expectations that NSSI would result in affect regulation or physical pain. Consistently, people with a history of self-injury (past or recent) held stronger expectations that self-injury would result in affect regulation and weaker expectations that self-injury would result in physical pain than people who have never engaged in NSSI (Chapters 3, 4, 5, 7, and 8). Exploration of implicit NSSI-related outcome expectancies suggested that implicit expectations that NSSI will relieve distress were stronger with more recent engagement in NSSI (Chapter 8).

Across studies, self-efficacy to resist NSSI played a salient role in differentiating people based on their history of self-injury (Chapters 3, 4, 5, 6, and 7). As expected, self-efficacy to resist NSSI became weaker with more recent engagement in self-injury. Participants who had not recently engaged in self-injury had similar confidence in their ability to resist NSSI as people who had never

engaged in in the behaviour. Through the development of a behaviour-specific measure of self-efficacy to resist NSSI, three contexts in which self-efficacy to resist NSSI may vary were identified: contexts considered as difficult to resist NSSI (risk contexts); contexts in which it may be easier to resist NSSI (protective contexts); and contexts where they are reminded of NSSI (Chapter 6). Across contexts, people with a history of self-injury reported less confidence that they could resist NSSI than people who had never self-injured (Chapters 6 and 7). Overall, regardless of their history of self-injury, participants reported having the strongest belief they could resist self-injury in protective contexts (e.g. when with friends) followed by when they were reminded of NSSI (e.g. seeing images of self-injury; Chapters 6 and 7). Participants were least confident that they could resist self-injury when in risk contexts (e.g. when feeling anxious).

Embedding NSSI-specific cognitions within the Cognitive-Emotional Model of NSSI, NSSI-specific cognitions interacted with emotional reactivity when differentiating participants according to their history of NSSI (Chapter 3). When people reported experiencing low emotional reactivity they were more likely to engage in self-injury if they did not anticipate feelings of shame or defectiveness as a result. Low emotional reactivity being associated with NSSI may suggest that participants are experiencing flat affect or feeling numb and engage in NSSI to “feel something” (Klonsky & Glenn, 2009). For these participants expecting to feel bad about yourself deterred them from engaging in self-injury. Participants who reported high emotional reactivity were less likely to self-injure if they used expressive suppression or reported strong self-efficacy to resist NSSI. Although expressive suppression is generally considered to be less adaptive in regulating emotions than strategies such as cognitive reappraisal, this result suggests that when people are experiencing an intense emotional response suppressing that response may assist in avoiding engaging in self-injury (Gross, 1998). Gross (1998) noted that when intense emotions are being experienced cognitive reappraisal may not be effective, and distraction or suppression could be more effective strategies in these situation. Additionally, when people reported experiencing heightened emotional reactivity, having confidence in their ability to resist NSSI reduced the likelihood of engaging in self-injury. This suggests that self-efficacy to resist NSSI could play a protective role against engaging in NSSI when individuals experience intense emotions.

In line with Social Cognitive Theory, NSSI-related outcome expectancies and self-efficacy to resist NSSI also interacted in differentiating participants according to their history of self-injury. When participants expected self-injury to reduce emotional distress, having confidence that they could resist self-injury reduced the likelihood of having engaged in NSSI (Chapter 4). Additionally, weak self-efficacy to resist NSSI when in protective situations was countered by strong beliefs that self-injury will result in negative self-beliefs (Chapters 4 & 7). It appears that even if you have little confidence that you can resist NSSI, believing you will feel bad about yourself after engaging in self-injury is a strong deterrent against engaging in self-injury. Additionally, strong self-efficacy to resist NSSI appears to be protective when people are at higher risk of engaging in NSSI (e.g. when they experience heightened emotional reactivity, when they expect NSSI to result in affect regulation). Holding perceivably negative outcome expectancies (i.e. expecting to experience diminished self-worth after engaging in NSSI) may also be protective when people have little belief in their ability to resist self-injury.

Outcome expectancies and self-efficacy beliefs also interacted when mediating the relationships between participant's knowledge of a parent engaging in self-injury and their own history of NSSI (Chapter 5). Participants who knew a parent self-injured were three times more likely to have a history of self-injury. This relationship was mediated by stronger expectations that NSSI will result in affect regulation and weaker expectations that NSSI will result in pain. The negative relationship between pain expectancies and self-injury was strengthened by having strong self-efficacy to resist NSSI. This not only suggests that intergenerational self-injury exists but also provides a possible mechanism by which it is driven.

Theoretical Implications

Previously, models used to explain NSSI focused on the experience and regulation of emotion (Chapman et al., 2006; Gratz & Roemer, 2004; Gross, 1998; Selby et al., 2008). Within Social Cognitive Theory, Bandura (1986; 1997) proposed that outcome expectancies and self-efficacy are two cognitive factors that contribute to which behaviours people engage in. There is a body of research applying Social Cognitive Theory to numerous health and health risk behaviours (Anderson et al., 2007; Cohen & Fromme, 2006; Hasking & Oei, 2007; Young et al., 2014). The findings from this thesis build on this body of work and provide preliminary evidence for the inclusion of NSSI-specific cognitions (i.e. NSSI-related outcome

expectancies and self-efficacy to resist NSSI) in understanding of the onset, maintenance, cessation, and recovery of self-injurious behaviours. However, from the perspective of the Cognitive-Emotional model of NSSI (Hasking et al., 2017), many other factors are also associated with understanding self-injury.

The Cognitive-Emotional Model of NSSI brings together elements of emotion focussed models and NSSI-specific cognitions to propose several pathways to engagement in NSSI for different functions (i.e. to avoid a situation, to avoid an emotion, or to modulate an emotion; Hasking et al., 2017). To further theoretical understanding of NSSI from this framework, NSSI-specific cognitions need to be considered in relation to other elements of the model. For example, individual differences in the functions self-injury serve (Bentley et al., 2014; Klonsky, 2007) are likely related to the outcome expectancies people hold. People hold expectations about behaviours they have never engaged in, because they can imagine the anticipated consequences (Bandura, 1997). However, a behaviour only serves a function for people who engage in it. The function of a behaviour acts as a reinforcer (e.g. NSSI relieving distress) and may provide insight into which outcome expectancies may be considered desirable to an individual. For example, if someone engages in self-injury as a method of emotion regulation, it is likely that they will hold an expectation that self-injury will relieve emotional distress and that will be perceived as a desirable outcome. Self-injury serves a number of functions (e.g. anti-dissociation, peer -bonding) for different individuals and can serve different functions for the same person (Taylor et al., 2019).

Possible relationships between NSSI-specific cognitions and the function of NSSI can be inferred from some of the interactions found between NSSI-related outcome expectancies and self-efficacy to resist NSSI in this thesis. For example, it appears that expecting NSSI to result in physical pain did not deter participants from engaging in self-injury when they had no confidence in their ability to resist NSSI. However, if we consider the possible functions NSSI can serve, people who self-injure as a method of anti-dissociation, or to “feel something” may expect self-injury to result in physical pain, and perceive this as a desirable outcome. Therefore expecting NSSI to result in pain increases the likelihood of engagement in NSSI for these individuals. However, we cannot confirm this without assessing the functions self-injury serve and the outcomes people consider as desirable or not. From a theoretical standpoint, understanding what outcomes are desirable for the individual

and possible associations with the function of self-injury will provide further insight when working in the framework of the Cognitive-Emotional Model of NSSI.

Results of this thesis also provide a basis of considering other cognitions that may contribute to understanding NSSI. Working from the framework of Social Cognitive Theory, self-efficacy can be considered in relation to a number of constructs which may impact on behaviour (Bandura, 1997). For example, due to the commonly reported emotion regulation function of NSSI, emotion regulatory may contribute to understanding self-injury. Hasking et al. (2017) found that having little belief that you can regulate emotional experiences and having little confidence that you can resist engaging in NSSI, are associated with self-injury. Additionally, the beliefs people hold about their own engagement in NSSI have recently been explored (Sandel et al., 2020). As research continues to expand in understanding cognitions associated with NSSI, theories used to explain the behaviour can expand to include specific cognitions associated with engagement in self-injury.

Research implications

Findings from this thesis provide an empirical basis for future research exploring NSSI-specific cognitions and the Cognitive-Emotional Model of NSSI. With the development of a measure of self-efficacy to resist self-injury, there is opportunity to examine how self-efficacy beliefs associated with different contexts contributes to understanding self-injury. Implicit associations with NSSI-related outcome expectancies can also be explored within the framework of the Cognitive-Emotional Model of NSSI. Embedding these measures in an expansive study of the wider Cognitive-Emotional Model of NSSI will begin to bring light to how NSSI-specific cognitions work in relation to the experience and regulation of emotion in relation to NSSI.

Developmental studies which assesses these cognitions through onset, maintenance, cessation, and recovery of NSSI are needed to explore how they initiate and change. Longitudinal studies will shed light onto whether holding specific beliefs about self-injury is related to future engagement in the behaviour. If this is the case, knowledge about NSSI-specific cognitions could help identify people who would benefit from intervention. Additionally, future research could also consider whether people believe they *could* engage in self-injury and how this relates to future engagement in the behaviour. Identifying when an individual first considers NSSI as an option may provide an opportunity to provide support with regards to their

experience of distress prior to someone engaging in self-injurious behaviours for the first time. Examining how these cognitions are associated with changes in behaviour would also identify possible treatment targets such as self-efficacy beliefs.

Alongside longitudinal work, assessing NSSI-specific thoughts and beliefs in the moment using Ecological Momentary Assessment (EMA) will provide insight into the salience of cognitions in the lead up to and following engagement in NSSI. Additionally, it will give insight into when people have an urge to self-injure but do not engage in the behaviour. In a self-report study McEvoy et al. (2017) found differences in the thoughts and images participants reported having when they had an urge to self-injure and did engage compared to when they did not. An EMA study will be able to provide this information in the moment, rather than participants needing to retrospectively recall, and ascertain which thoughts may increase risk in of engaging in self-injury in the moment and which may deter someone from engaging in the behaviour when they have an urge.

Clinical Implications

Consistently, NSSI-related outcome expectancies and self-efficacy to resist NSSI differentiated people according to their history of self-injury, and were associated with the recency of engaging in NSSI. This suggests that NSSI-specific cognitions may be future targets for intervention. It is possible that a focus on strengthening self-efficacy beliefs and challenging NSSI-related outcome expectancies, alongside interventions which improve emotion regulation (e.g. Dialectical Behaviour Therapy; Linehan, 2007), could reduce the likelihood of future engagement in NSSI. Additionally, as in the smoking and alcohol abuse literature (Kadden & Litt, 2011; Van Zundert et al., 2009) self-efficacy to resist NSSI may be found to be a predictor of future NSSI. Having a behaviour-specific measure of self-efficacy to resist NSSI will allow for measurement of possible treatment outcomes (i.e. improved self-efficacy to resist NSSI) before assessment of behaviour change is possible. However, a focus purely on cessation of behaviour as a treatment outcome not only neglects to consider other factors associated with the recovery process but also provides an unrealistic view of what the recovery process will look like (Lewis, Bryant, Schaefer, & Grunberg, 2017; Lewis & Hasking, 2019).

Lewis and Hasking (2019) highlight the importance of clients understanding that the “recovery” process of NSSI is not linear and they will likely experience “relapse”. If a client’s only measure of progress is whether or not they have engaged

in self-injury, it will likely leave them despondent if they continue to self-injure, and may reduce their self-efficacy to resist NSSI in the future. However, acceptance that relapse is part of the process will allow for other aspects of recovery, outside of behaviour change, to be focussed on. For example, if self-efficacy to resist engaging in NSSI is focussed on as a treatment outcome this will allow for short term goals and clients can experience success in treatment, building commitment to therapy while increasing self-efficacy (Muehlenkamp, 2006).

Bandura (1997) identified multiple factors which may influence behaviour-specific self-efficacy beliefs including: an individual's own experience with the behaviour; observing other people engaging in the behaviour; verbal persuasion or encouragement from other people to engage or not engage in a behaviour; imagined experience of the behaviour and mood or emotional state. In a clinical setting, one possible way of increasing self-efficacy beliefs could be through verbal persuasion or encouragement. Highlighting previous times clients have resisted an urge to self-injure can increase their confidence that they can resist engaging in NSSI in the future. Additionally, imagined experience can also be used within treatment to rescript distressing experiences and increase the client's confidence that they can resist the urge to self-injure in the future (Kress, Adamson, DeMarco, Paylo, & Zoldan, 2013). Imagery of the client in a perceivably distressing situation can be rescripted, while focussing on the emotional experience, so the client can imagine themselves "getting through" the situation while having a felt sense of calmness (Blackwell, 2019; Rusch, Grunert, Mendelsohn, & Smucker, 2000). This imagined experience can in turn influence the client's confidence that they can resist self-injury in the future.

Other factors also need to be considered when anticipating what "recovery" may look like (Lewis & Hasking, 2019). One aspect is that people with a history of self-injury report ongoing thoughts, images, and urges to self-injure (Guerdjikova, Gwizdowski, McElroy, McCullumsmith, & Suppes, 2014; Lewis & Mehrabkhani, 2016). This includes NSSI-related outcome expectancies and self-efficacy to resist NSSI. Part of understanding clients experience will be helping them accept that these thoughts, images, and urges will continue and working on how they can respond when they do experience them. One possible way of dealing with these thoughts could include challenging the expected outcomes of self-injury. Expectancy challenges have been used to reduce risky drinking behaviour (Scott-Sheldon et al.,

2012) and could be useful in approaching clients' ongoing thoughts about self-injury. For example, clients are going to have ongoing urges and expectancies that self-injury will relieve distress. Having clients focus on some of the long term outcomes that they find undesirable may be helpful for them to restructure their expectations and deal with them in the moment (McEvoy et al., 2017).

Limitations and Future Directions

The majority of limitations of the presented research were addressed in each chapter, and included the cross-sectional nature of the studies and the limitations of self-report data. Building on preliminary evidence presented within this thesis, future research may consider alternative methods to analysing relationships between these variables. For example, latent variable modelling may be using in reducing any possible measurement error and provide information about model fit and the structure of the variables. Additionally, due to the numerous statistical tests conducted across studies there is a likelihood of inflated Type 1 error.

As cross-sectional methods were used within this series of studies we cannot suggest temporal ordering of thoughts and behaviour. It is likely that there is a reciprocal relationship between NSSI-specific cognitions and engagement in the behaviour. Future research should explore how these thoughts and beliefs change over time to determine possible patterns in cognitions which could identify risk factors associated with future engagement in NSSI and identify targets for prevention efforts. Ecological momentary assessment methods could be utilised to examine which thoughts and beliefs are salient prior to and post an engagement in NSSI. Identifying which cognitions are salient in what contexts and how that relates to engagement in NSSI, could provide clarity around which specific thoughts are related to self-injury in the moment. Additionally, longitudinal studies which look at thoughts and beliefs through onset, maintenance, and cessation of NSSI would provide further insight into the temporal ordering of thoughts and beliefs and identify factors which may influence NSSI-specific cognitions.

University students are a population of interest with regards to NSSI due to the high prevalence of the behaviour and negative outcomes associated with persistent NSSI during university. However, it will be important to explore these concepts and measures in other populations of interest such as adolescents and clinical populations. In particular, validation of the self-efficacy to resist NSSI scale within a clinical setting would provide a possible future measure for research in

NSSI as well as a tool for clinical practice. If self-efficacy to resist NSSI is found to be a valid target for treatment, having a measure of self-efficacy to resist NSSI which can be used to measure treatment outcome will allow for changes to be identified in a clinical setting which does not depend on a change in behaviour.

Conclusions to the Thesis

NSSI-related outcome expectancies and self-efficacy to resist NSSI play salient roles in understanding the onset, maintenance, and cessation of self-injury. Although future research is needed, self-efficacy in particular has promise as a target for intervention with clients who engage in self-injury. Support for the inclusion of NSSI-specific cognitions in understanding self-injury provides a preliminary evidence base for the Cognitive-Emotional Model of NSSI and future research exploring this model. Future research embedding NSSI-specific cognitions within the wider context of the Cognitive-Emotion Model is needed to further understanding of the different pathways proposed to lead to engagement in self-injury.

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Every reasonable effort has been made to acknowledge the owners of copyright material. I would be pleased to hear from any copyright owner who has been omitted or incorrectly acknowledged.

Appendices

Appendix A

Ethics approval letter (Chapter 3)

MEMORANDUM



To:	A/Prof Penelope Hasking School of Psychology and Speech Pathology
CC:	
From	Prof Peter O'Leary, Chair HREC
Subject	Amendment approval Approval number: HR62/2016
Date	11-Apr-16

Office of Research and
Development
Human Research Ethics Office

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

Thank you for submitting an amendment to the Human Research Ethics Office for the project:

HR62/2016 Self-control, emotion and regulation of behaviour in young people

The Human Research Ethics Office approves the amendment to the project.

Amendment number: HR62/2016/AR1

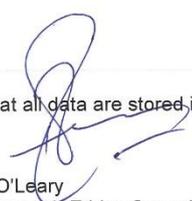
Approval date: 12-Apr-16

The following amendments were approved:

Four students, Lana Glasson, Kassandra Shaw, Amy Peterson and Harmeen Puarr, will be added to the project.

Please ensure that all data are stored in accordance with WAUSDA and Curtin University Policy.

Yours sincerely,


 Professor Peter O'Leary
 Chair, Human Research Ethics Committee

*Appendix B**Example of information sheet, consent, and questionnaires used in Chapter 3*

Self-control, emotion and regulation of behaviour in young people

Start of Block: Default Question Block

Emotion Regulation and Self-Injury Participant Information Sheet

Project Number: **HR62/2016**

Project Title: Emotion regulation and self-injury

Principal Investigator: Associate Professor Penelope Hasking

Up to one third of university students engage in NSSI (the deliberate destruction of bodily tissue without intent to die), which is associated with a range of social, emotional and psychological outcomes. How we experience and regulate emotion is thought to be an important factor in why some people self-injure, but less research has focused on how emotion regulation and thoughts about self-injury work together. Through this survey we will ask lots of questions about how you experience, think about, and change emotions with a view to gaining a deeper understanding of how emotion is related to NSSI.

You are invited to take part in this study. Please read this Information Sheet in full before making a decision. If you have any questions you would like to ask before participating please contact the Principal Investigator.

You can come back and finish the survey any time within one week. After one week your responses will be deleted and you will need to start again if you wish to participate in the study.

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. To answer our

research questions we need both people who self-injure and people who do not self-injure 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 beliefs about what people might expect to happen when they self-injure. You will also be asked about how you experience, think about, and change emotions. Finally we will ask some questions about your emotional health and levels of distress. The questionnaire will take approximately 60-75 minutes to complete.

Possible benefits

While you may not personally benefit from participating in this study the results will help us better understand the factors that initiate and maintain self-injury. Furthering our understanding of this complex behaviour will help us develop more effective prevention and early intervention initiatives to help those who want to stop self-injuring.

You 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. Note that any responses you have already made will automatically be recorded. 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. No information that could identify any participant will ever be released to a third party or made public in any way. If you are interested, we can mail you an information booklet about self-injury. If you wish to receive this booklet, you will be asked to provide your name and address at the end of the questionnaire. These details will

not be linked to your questionnaire responses and all recorded names and addresses will be destroyed once the booklet has been mailed to you.

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 2015.

Thank you!

A/Prof Penelope Hasking Ph: 9266 3437 E: Penelope.Hasking@curtin.edu.au

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 9266 2784 or by emailing hrec@curtin.edu.au.

[Useful resources](#)

[Self injury fact sheet](#)

[Seeking solutions to self injury parents and families second edition v2](#)

Q2 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 (1)
- I do not agree (2)

Skip To: End of Survey If I have received information regarding this research and had an opportunity to ask questions. I be... = I do not agree

End of Block: Default Question Block

Start of Block: Block 4

Q3 Before we get started we just need some background information about you.

What is your gender?

- Male (1)
- Female (2)
- Trans-gender/ Inter-sex/ Unspecified (3)

Q4 Date of birth? (dd/mm/yyyy)

Q5 What is your postcode?

Q6 What country were you born in?

Do you identify as Aboriginal or Torres Strait Islander?

- Yes (1)
- No (2)

Q8 What year are you in at university?

- 1st (1)
- 2nd (2)
- 3rd (3)
- 4th (4)
- other (5)

Q9 Are you studying full time or part time?

- Full time (1)
- Part time (2)

Q10 Where are you living?

- At home with parents/family (1)
 - In university accommodation (2)
 - With flatmates (3)
 - On your own (4)
 - With a partner (5)
 - Other (please specify) (6)
-

End of Block: Block 4

Start of Block: RTSQ

Page Break

Q53 This section of the questionnaire is about how you cope with emotions, distressing situations and generally how you cope with life's struggles. Some questions might seem similar but they all ask about slightly different things. Please answer all questions as best you can.

Emotional reactivity

This questionnaire asks different questions about how you experience emotions **on a regular basis (for example, each day)**.

When you are asked about being “emotional,” this may refer to being angry, sad, excited, or some other emotion. Please rate the following statements.

Not at all like me (1)	A little like me (2)	Somewhat like me (3)	A lot like me (4)	Completely like me (5)
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1. When something happens that upsets me, it's all I can think about it for a long time. (4)	<input type="radio"/>				
2. My feelings get hurt easily. (5)	<input type="radio"/>				
3. When I experience emotions, I feel them very strongly/intensely. (6)	<input type="radio"/>				
4. When I'm emotionally upset, my whole body gets physically upset as well. (7)	<input type="radio"/>				
5. I tend to get very emotional very easily. (8)	<input type="radio"/>				
6. I experience emotions very strongly. (9)	<input type="radio"/>				
7. I often feel extremely anxious. (10)	<input type="radio"/>				
8. When I feel emotional, it's hard for me to imagine feeling any other way. (11)	<input type="radio"/>				
9. Even the littlest things make me emotional. (12)	<input type="radio"/>				
10. If I have a disagreement with someone, it takes a long time for me to get over it. (13)	<input type="radio"/>				
11. When I am angry/upset, it takes me much longer than most people to calm down. (14)	<input type="radio"/>				

- | | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 12. I get angry at people very easily. (15) | <input type="radio"/> |
| 13. I am often bothered by things that other people don't react to. (16) | <input type="radio"/> |
| 14. I am easily agitated. (17) | <input type="radio"/> |
| 15. My emotions go from neutral to extreme in an instant. (18) | <input type="radio"/> |
| 16. When something bad happens, my mood changes very quickly. People tell me I have a very short fuse. (19) | <input type="radio"/> |
| 17. People tell me that my emotions are often too intense for the situation. (20) | <input type="radio"/> |
| 18. I am a very sensitive person. (21) | <input type="radio"/> |
| 19. My moods are very strong and powerful. (22) | <input type="radio"/> |
| 20. I often get so upset it's hard for me to think straight. (23) | <input type="radio"/> |
| 21. Other people tell me I'm overreacting. (24) | <input type="radio"/> |
-

68

In this section you will be asked a number of questions about your mental health.

At the end of this questionnaire we have provided some useful contacts and tips for dealing with stress that you can print or download. These might help you if these questions raise any uncomfortable feelings for you.

None of the time (1)	A little of the time (2)	Some of the time (3)	Most of the time (4)	All of the time (5)
-------------------------------	-----------------------------------	----------------------------	-------------------------------	------------------------------

K10

Please read each statement and indicate how much the statement applied to you **over the past 4 weeks**. There are no right or wrong answers. Do not spend too much time on any statement.

1. About how often did you feel tired out for no good reason? (1)	<input type="radio"/>				
2. About how often did you feel nervous? (2)	<input type="radio"/>				
3. About how often did you feel so nervous that nothing could calm you down? (3)	<input type="radio"/>				
4. About how often did you feel hopeless? (4)	<input type="radio"/>				
5. About how often did you feel restless or fidgety? (5)	<input type="radio"/>				
6. About how often did you feel so restless you could not sit still? (6)	<input type="radio"/>				
7. About how often did you feel depressed? (7)	<input type="radio"/>				
8. About how often did you feel that everything was an effort? (8)	<input type="radio"/>				
9. About how often did you feel so sad that nothing could cheer you up? (9)	<input type="radio"/>				
10. About how often did you feel worthless? (10)	<input type="radio"/>				

Q33 In this section 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.

Extremely unlikely (1) Somewhat Unlikely (2) Somewhat Likely (3) Extremely likely (4)

How likely is it that after self-injuring:

1. I would feel better about myself (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I would feel less frustrated with the world (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The pain would be intense (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I would feel calm (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The future would seem more optimistic (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I would feel closer to my friends (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I would hate myself (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I would not be aware of any emotional pain (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I would feel alone (29)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. My family would be disgusted (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. I would feel depressed (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I would feel happy (20)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Other people would notice and offer sympathy (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| 14. I would feel numb (13) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 15. My friends would accept me (14) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 16. Other people would notice and think I was a freak (47) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 17. I would feel ashamed (15) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 18. I would be able to handle what comes my way (16) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 19. I would feel physical pain (17) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 20. I would be more attune to my surroundings (18) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 21. My friends would be disgusted (19) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 22. I would feel exhilarated (21) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 23. I would feel anxious (22) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 24. It would hurt (46) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 25. I would have communicated my distress to others (43) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 26. I would feel different from other people (23) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 27. I would not feel any pain (49) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 28. I would have more confidence (24) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 29. Other people would notice and be scared of me (25) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 30. I would feel restless (26) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 31. It would be easier to get what I want from others (27) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

- | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| 32. I would feel relieved (10) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 33. I would feel angry (28) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 34. I would feel I deserved the pain (30) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 35. I would have punished someone else (44) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 36. I would feel like a failure (31) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 37. I would feel I have successfully achieved something (32) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 38. I could make other people do things for me (48) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 39. I would feel it would be easier to open up and express my feelings (33) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 40. My parents would be angry (34) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 41. I would enjoy taking care of the injury (35) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 42. I would resent having to cover my injuries (36) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 43. I would not be aware of any physical pain (37) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 44. I would feel I could manage stressful events in the future (38) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 45. I would feel disappointed (39) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 46. My friends would not approve of me (40) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 47. I would have to conceal my injuries (41) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 48. I would get care from others (45) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 49. I would feel emotionally drained (42) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Q34 Is there anything else you would expect to happen if you self-injured that you would like to tell us about?

End of Block: Block 8

Start of Block: Block 16

Q35 Please read each of the statements below carefully and click the option which best fits how certain you are about how you would act in each of the following situations.	Very uncertain (1)	(2)	(3)	(4)	(5)	Very certain (6)
Even if you have never self-injured we are interested in how confident you are you could resist doing so in future.						
1. How certain are you that you will not self-injure in the future? (1)	<input type="radio"/>	⋮	⋮	⋮	⋮	<input type="radio"/>
2. If at some point in the future you had thoughts of self-injury, how certain are you that you could resist self-injuring? (2)	<input type="radio"/>	⋮	⋮	⋮	⋮	<input type="radio"/>
3. If at some point in the future you had thoughts of self-injury, how certain are you that you could resist self-injuring if you were using alcohol or other drugs (3)	<input type="radio"/>	⋮	⋮	⋮	⋮	<input type="radio"/>
4. How certain are you that you could control future thoughts of self-injury if you were experiencing physical pain? (4)	<input type="radio"/>	⋮	⋮	⋮	⋮	<input type="radio"/>
5. How certain are you that you could control future thoughts of self-injury if you lost an important relationship? (5)	<input type="radio"/>	⋮	⋮	⋮	⋮	<input type="radio"/>
6. How certain are you that you could control future thoughts of self-injury if you lost a job, could not find employment, or suffered a financial crisis? (6)	<input type="radio"/>	⋮	⋮	⋮	⋮	<input type="radio"/>

10. When I want to feel less negative emotion, I change the way I'm thinking about the situation. (10)

Q71

RTQ

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 (1)

(2)

Somewhat true (3)

(4)

Very true (5)

1. I have thoughts or images about all my shortcomings, failings, faults, mistakes (1)

2. I have thoughts or images about events that come into my head even when I do not wish to think about them again (2)

3. I have thoughts or images that "I won't be able to do my job/work because I feel so badly." (3)

4. I have thoughts or images that are difficult to forget. (4)

5. Once I start thinking about the situation, I can't stop (5)

6. I notice that I think about the situation. (6)

7. I have thoughts or images of the situation that I try to resist thinking about. (7)

8. I think about the situation all the time. (8)

9. I know I shouldn't think about the situation, but can't help it (9)

10. I have thoughts or images about the situation and wish it would go better. (10)



Q11 Self-injury

In this next section we will ask you questions about your experience with self-injury. We will ask about your personal experience of self-injury, whether your friends self-injure and whether you have noticed self-injury in popular media.

If you become upset at any stage we suggest taking a break or completely stopping the questionnaire. Remember there are some resources you might find useful that are free to download at end of this questionnaire.

Self-injury refers to directly and intentionally hurting yourself (such as by cutting, burning, excessively scratching, etc.) *without* the intention of killing yourself.

Have you ever seriously considered self-injuring but not acted on those thoughts?

Yes (1)

No (2)

Q12 Have you ever engaged in self-injury?

Yes (1)

No (2)

Skip To: End of Block If Have you ever engaged in self-injury? = No

Q14 How many times have you self-injured **in the last year**?

- None (1)
- Once (2)
- Twice (3)
- Three times (4)
- Four times (5)
- 5 or more times (6)

Q13 What age did you start to self-injure?

Q15 Please only endorse a behaviour if you have done it intentionally (i.e., on purpose) and without suicidal intent (i.e., not for suicidal reasons).

Please estimate the **number of times in your life** you have intentionally (i.e., on purpose) performed each type of non-suicidal self- injury (Please write a number)

- Cutting (1) _____
- Biting (2) _____
- Burning (3) _____
- Carving (4) _____
- Pinching (5) _____
- Pulling hair (6) _____
- Severe scratching (7) _____
- Banging or hitting yourself (8)

- Interfering with wound healing (9)

- Rubbing skin against rough surface (10)

- Sticking yourself with needles (11)

- Swallowing dangerous substances (12)

- Other (13) _____

Q16 If you feel that you have a ***main form of self-injury***, please indicate from the list below the behaviour(s) that you consider to be your main form/s of self-injury

- Cutting (1)
- Biting (2)
- Burning (3)
- Carving (4)
- Pinching (5)
- Pulling hair (6)
- Severe scratching (7)
- Banging or hitting yourself (8)
- Interfering with wounds healing (9)
- Rubbing skin against rough surface (10)
- Sticking yourself with needles (11)
- Swallowing dangerous substances (12)
- Other (13)

Q17 Do you experience physical pain when you self-injure?

Yes (1)

No (2)

Q18 When you self-injure are you alone?

Yes (1)

No (2)

Q19 Typically how much time elapses from the time you have the urge to self-injure until you act on the urge?

< 1 hour (1)

1-3 hours (2)

3-6 hours (3)

6-12 hours (4)

12-24 hours (5)

> 1 day (6)

Q20 Do/did you want to stop self-injuring?

Yes (1)

No (2)

Page Break

Q21 This inventory was written to help us better understand the experience of non-suicidal 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.

Not
relevant
(1)

Somewhat
relevant (2)

Very
relevant
(3)

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

...calming myself down (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... creating a boundary between myself and others (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... punishing myself (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... giving myself a way to care for myself (by attending to the wound) (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... causing pain so I will stop feeling numb (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... avoiding the impulse to attempt suicide (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... doing something to generate excitement or exhilaration (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... bonding with peers (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... letting others know the extent of my emotional pain (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...seeing if I can stand the pain (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... creating a physical sign that I feel awful (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... getting back at someone (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...ensuring that I am self-sufficient (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... releasing emotional pressure that has built up inside of me (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... demonstrating that I am separate from other people (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

... expressing anger towards myself for being worthless or stupid (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... creating a physical injury that is easier to care for than my emotional distress (17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...trying to feel something (as opposed to nothing) even if it is physical pain (18)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... responding to suicidal thoughts without actually attempting suicide (19)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... entertaining myself or others by doing something extreme (20)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... fitting in with others (21)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... seeking care or help from others (22)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... demonstrating I am tough or strong (23)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... proving to myself that my emotional pain is real (24)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... getting revenge against others (25)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... demonstrating that I do not need to rely on others for help (26)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... reducing anxiety, frustration, anger, or other overwhelming emotions (27)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... establishing a barrier between myself and others (28)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... reacting to feeling unhappy with myself or disgusted with myself (29)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... allowing myself to focus on treating the injury, which can be gratifying or satisfying (30)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... making sure I am still alive when I don't feel real (31)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... putting a stop to suicidal thoughts (32)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... pushing my limits in a manner akin to skydiving or other extreme activities (33)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

... creating a sign of friendship or kinship with friends or loved ones (34)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... keeping a loved one from leaving or abandoning me (35)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... proving I can take the physical pain (36)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... signifying the emotional distress I'm experiencing (37)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... trying to hurt someone close to me (38)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
... establishing that I am autonomous/independent (39)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Block 2

Start of Block: Block 17

Q48 Thank you for taking the time to complete this questionnaire.

So we can award you credit in SONA please enter you full name and student ID. Identifying information will be permanently removed from the data set as soon as grades are ratified at the end of semester.

The following pages provide some resources you may find useful.

Full name (1) _____

Student ID (2) _____

Q49 We are currently conducting a group program for 18-24 year olds who self-injure. Please feel free to pass this [NSSI group flyer](#) on to anyone you know who may be interested in participating.

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

[Useful resources](#)

[Stress management](#)

[Self injury fact sheet](#)

[A guide for young people](#)

Q50 If you would like a hard copy of the Guide for Young People please enter you name and mailing address here. Your identifying details will be destroyed as soon as we mail you the booklet.

Name (1) _____

Address (2) _____

Address 2 (3) _____

City (4) _____

State (5) _____

Postal Code (6) _____

Country (7) _____

End of Block: Block 18

Appendix C

Ethics approval letter Chapter 4



Office of Research and Development

GPO Box U1987
Perth Western Australia 6845

Telephone +61 8 9266 7863
Facsimile +61 8 9266 3793
Web research.curtin.edu.au

08-Feb-2017

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

Dear Penelope Hasking

RE: Ethics approval
Approval number: HRE2017-0048

Thank you for submitting your application to the Human Research Ethics Office for the project **Social and intrapersonal pathways to dysregulated behaviours**.

Your application was reviewed through the Curtin University low risk ethics review process.

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 **08-Feb-2017** to **07-Feb-2018**. 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
Hasking, Penelope	
Dawkins, Jessica	Student

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

None.

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 or on 9266 2784.

Yours sincerely



Dr Catherine Gangell
Manager, Research Integrity

Appendix D

Information sheet, consent and questionnaires used for Chapters 4 and 5

Interpersonal and intrapersonal factors associated with dysregulated behaviours

Start of Block: Default Question Block

Participant Information Sheet Factors associated with self-injury and drinking behaviours in University students The aim of the research 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. In this study we are exploring how social context with family, friends and at university relate to these behaviours and how they might be used to regulate emotional experiences.

Who can participate?

You can participate in this study if you are a university student currently studying in Australia and aged between 18 and 25 years old.

What does participation involve?

If you choose to participate in the study you will be asked to complete a number of online surveys. The surveys include questions about your family, social bonds, and university experiences. Additionally you will be asked about how you cope and deal with emotions, and your patterns of alcohol use. If you have ever self-injured, you will be asked some questions about this experience.

Possible benefits

Although you may not directly benefit from participating in this study your participation will be greatly appreciated because it will contribute to scientific knowledge about how social context and emotion regulation processes lead to or possibly protect against alcohol use and self-injury. Undergraduate Curtin University Psychology students who are eligible to receive course credit in exchange for participation will be awarded 4 points if they complete the study. Participants who are not undergraduate psychology students will go into the draw to win 1 of 5 \$100 Coles/Myer gift cards.

Potential risks

Although unlikely, it is possible that some people might find some of the survey questions distressing or offensive. You are free to withdraw from the study at any time if you feel upset at any stage during participation. Once completed participation cannot be withdrawn

due to the confidential nature of the data. To withdraw simply close the browser. Upon completion of the study all participants will be provided a list of counselling services. These resources might come in handy if you ever feel the need to talk to someone about any issues you may face in your personal life.

How much time will the research take?

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

Can I withdraw from the research?

Being in this research study is entirely voluntary and you are under no obligation to consent to participation. Declining to participate will have no impact on academic progress or any relationship students have with Curtin University. You are able to discontinue your participation at any time during the research procedure. However, because your data are anonymous, once you have completed the research your data cannot be removed. If you do consent to participate you are providing consent only for this research project.

Confidentiality

Students who are eligible for course credit will be required to provide their Student ID. This information will only be used to award credit. Any contact details you provide will only be used for the purpose of distributing prizes. At the end of the study you will be redirected to a separate questionnaire to enter your details. This will be in no way linked to the information you provide during the study. These details will be destroyed upon completion of the study and not disclosed to any third party. You will not be personally identified in any part of the data you provide to this study. Results of the study will be used as the basis of grant applications, presented at national and international conferences, and prepared for

publication in academic journals. However, at no stage will any information that could identify you be included in any form of publication.

Storage of data

Storage of the data collected will adhere to the University regulations and be stored on a password protected computer, accessible only to the researchers for a period of 7 years.

Results

If you would like to be informed of the aggregate research findings, please contact Penelope Hasking at penelope.hasking@curtin.edu.au.

Thank you for participating in our research.

If you have any questions with regards to participation in this study please contact Jessica Dawkins at jessica.c.dawkins@postgrad.curtin.edu.au or Penelope Hasking on 08 9266 3437 or Penelope.Hasking@curtin.edu.au.

Curtin University Human Research Ethics Committee (HREC) has approved this study (HREC number 2017-0048). 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 (1)
- I do not agree (2)

End of Block: Default Question Block

Start of Block: Block 1

Q9

Instructions for completion: Thank you for participating in this survey. We appreciate your time. Please answer each question to the best of your ability, and please be honest in your answers. There are no right or wrong answers and your responses will remain anonymous.

Some questions may seem quite similar, but it is important that you answer as many as you can. Please read the instructions for each section of the questionnaire carefully because they are not all the same and may affect your responses.

Should any part of the survey cause you discomfort or distress, please contact one of the following services:

1. Beyond BlueWeb: <http://www.beyondblue.org.au>/Phone: 1300 22 4636
2. LifelineWeb: <http://www.lifeline.org.au>/Phone: 13 11 14
3. Kids Helpline (for people under 25 years old)Web: <http://www.kidshelp.com.au>/Phone: 1800 55 1800
4. SANE AustraliaWeb: <http://www.sane.org/au>Phone: 1800 18 SANE (7263)
5. See your psychologist, or your GP for a psychological referral

End of Block: Block 1

Start of Block: Block 2

Q11 What is your sex?

- Male (1)
- Female (2)
- transgender/intersex/unspecified (3)
-

Q13 Date of birth? (dd/mm/yyyy)

Q15 What is your postcode?

Q19 What country were you born in?

Q21 Do you identify as Aboriginal or Torres Strait Islander?

- Yes (1)
- No (2)

Q55 Which Australian university are you currently enrolled in?

Q56 What course are you currently studying?

Q57 At what level are you currently studying?

- Associate Degree (1)
- Bachelor Degree (2)
- Graduate Certificate (3)
- Graduate Diploma (4)
- Master Degree (5)
- Doctoral Degree (6)

End of Block: Block 2

Start of Block: Block 3

Q24 The first section of this study contains a number of statements about families. Read each statement carefully, and decide how well it describes your own family. You should answer according to how you see your family.

Try not to spend too much time thinking about each statement, but respond quickly and as

honestly as you can. If you have difficulty, answer with your first reaction. Please be sure to answer every statement.

Q25 FAD	Strongly Agree (1)	Agree (2)	Disagree (3)	Strongly Disagree (4)
Planning family activities is difficult because we misunderstand each other. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We resolve most everyday problems around the house. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When someone is upset the others know why. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When you ask someone to do something, you have to check that they did it. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If someone is in trouble, the others become too involved. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In times of crisis we can turn to each other for support. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We don't know what to do when an emergency comes up. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We sometimes run out of things we need. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We are reluctant to show our affection for each other. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We make sure members meet their family responsibilities. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We cannot talk to each other about the sadness we feel. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We usually act on our decisions regarding problems. (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You only get the interest of others when something is important to them. (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You can't tell how a person is feeling from what they are saying. (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Family tasks don't get spread around enough. (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Individuals are accepted for who they are. (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
You can easily get away with breaking the rules. (17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People come right out and say things instead of hinting at them. (18)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Some of us just don't respond emotionally. (19)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We know what to do in an emergency. (20)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We avoid discussing our fears and concerns. (21)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is difficult to talk to each other about tender feelings. (22)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We have trouble meeting our financial obligations. (23)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After our family solves a problem, we usually discuss whether it worked or not. (24)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We are too self-centered. (25)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We can express feelings to each other. (26)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We have no clear expectations about toilet habits. (27)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We do not show our love for each other. (28)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We talk to people directly rather than through go-betweens. (29)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Each of us has particular duties and responsibilities. (30)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are lots of bad feelings in the family. (31)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

We have rules about hitting people. (32)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We get involved with each other only when something interests us. (33)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is little time to explore personal interests. (34)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We often don't say what we mean. (35)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We feel accepted for what we are. (36)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We show interest in each other when we can get something out of it personally. (37)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We resolve most personal upsets that come up. (38)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tenderness takes second place to other things in our family. (39)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We discuss who are responsible for household jobs. (40)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Making decisions is a problem for our family. (41)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our family shows interest in each other only when they can get something out of it. (42)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We are frank (direct and straightforward) with each other. (43)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We don't hold any rules or standards. (44)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If people are asked to do something, they need reminding. (45)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We are able to make decisions about how to solve problems. (46)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If the rules are broken, we don't know what to expect. (47)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Anything goes in our family. (48)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We express tenderness. (49)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We confront problems involving feelings. (50)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We don't get along well together. (51)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We don't talk to each other when we are angry. (52)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We are generally dissatisfied with the family duties assigned to us. (53)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Even though we mean well, we intrude too much into each other's lives. (54)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are rules in our family about dangerous situations. (55)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We confide in each other. (56)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We cry openly. (57)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We don't have reasonable transport. (58)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When we don't like what someone else has done, we tell them. (59)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We try to think of different ways to solve problems. (60)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q39 ISAS

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.

Q40 Have you ever thought about engaging in self-injury?

Yes (1)

No (2)

Q41 Have you ever engaged in nonsuicidal self-injury?

Yes (1)

No (2)

Skip To: Q58 If Have you ever engaged in nonsuicidal self-injury? = No

Q42 How many times have you self-injured in the last year?

Once (1)

Twice (2)

Three times (3)

Four times (4)

5 or more times (5)

<p>Q43 Please only endorse a behaviour if you have done it intentionally (i.e., on purpose) and without suicidal intent (i.e., not for suicidal reasons).</p> <p>Please estimate the number of times in your life you have intentionally (i.e., on purpose) performed each types of nonsuicidal self-injury (please write number)</p>	<p>Click to write Scale point 1 (1)</p>
Cutting (1)	
Biting (2)	
Burning (3)	
Carving (4)	
Pinching (5)	
Pulling hair (6)	
Severe scratching (7)	
Banging or hitting yourself (8)	
Interfering with wound healing (9)	

Rubbing skin against rough surface (10)	
Sticking yourself with needles (11)	
Swallowing dangerous substances (12)	
Other (13)	

Q44 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 (1)
- Biting (2)
- Burning (3)
- Carving (4)
- Pinching (5)
- Pulling hair (6)
- Severe scratching (7)
- Banging or hitting yourself (8)
- Interfering with wound healing (9)
- Rubbing skin against rough surface (10)
- Sticking yourself with needles (11)
- Swallowing dangerous substances (12)

Other (13)

Q45 At what age did you (please write a number):

	Click to write Scale point 1 (1)
First injure yourself? (1)	
Most recently injure yourself? (2)	

Q46 Click to write the question text

	Yes (1)	No (2)	Sometimes (3)
Do you experience physical pain during self-injury? (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When you self-injure are you alone? (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q47 Typically, how much time elapses from the time you have the urge to self-injure until you act on the urge?

- (1)
- 1-3 hours (2)
- 3-6 hours (3)
- 6-12 hours (4)
- 12-24 hours (5)
- >1 day (6)

Q58

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.

Extremely likely (1) Somewhat likely (2) Somewhat unlikely (3) Extremely unlikely (4)

How likely is it that after self-injuring:

I would feel less frustrated with the world (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My friends would be disgusted (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I could make people do things for me (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel physical pain (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel like a failure (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel better about myself (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My friends would not approve of me (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would be easier to get what I want from others (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would hurt (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel ashamed (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel calm (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My family would be disgusted (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people would notice and offer sympathy (13)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would not be aware of my physical pain (14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel numb (15)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The future would seem more optimistic (16)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My parents would be angry (17)	<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 (18)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would not feel any pain (19)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel emotionally drained (20)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would feel relieved (21)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people would notice and think I was a freak (22)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would get care from others (23)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The pain would be intense (24)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would hate myself (25)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q59 Please read each of the statements below carefully and circle the number which best fits how certain you are about how you would act in each of the following situations.	Very uncertain (1)	(2)	(3)	(4)	(5)	Very certain (6)
How certain are you that you will not self-injure in the future? (1)	<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? (2)	<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? (3)	<input type="radio"/>					
How certain are you that you could control future thoughts of self-injury if you were experiencing physical pain? (4)	<input type="radio"/>					
How certain are you that you could control future self-injurious thoughts if you lost an important relationship? (5)	<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? (6)	<input type="radio"/>					

Q70 Are you aware of either of your parents having engaged in self-injury?

- Yes (1)
- No (2)

Skip To: End of Block If Are you aware of either of your parents having engaged in self-injury? = No

Q71 Which parent/s have engaged in self-injury?

Mother (1)

Father (2)

Q72 At what age did your parent/s engage in self-injury?

Q73 If you were born at the time, what age were you when your parent/s engaged in self-injury?

Q77 K10

In the last 30 days how often...

	none of the time (1)	a little of the time (2)	some of the time (3)	most of the time (4)	all of the time (5)
Did you feel tired out for no good reason. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you feel nervous. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you feel so nervous that nothing could calm you down. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you feel hopeless. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you feel restless or fidgety. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you feel so restless that you could not sit still. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you feel depressed. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you feel that everything is an effort. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you feel so sad that nothing could cheer you up. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did you feel worthless. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Block 14

Start of Block: Block 15

Q60

If any part of the survey caused you discomfort or distress, please contact one of the following services:

1. Beyond BlueWeb: <http://www.beyondblue.org.au>/Phone: 1300 22 4636
2. LifelineWeb: <http://www.lifeline.org.au>/Phone: 13 11 14 3. Kids Helpline (for people under 25 years old)Web: <http://www.kidshelp.com.au>/Phone: 1800 55 1800
4. SANE AustraliaWeb: <http://www.sane.org/au>Phone: 1800 18 SANE (7263)
5. See your psychologist, or your GP for a psychological referral

End of Block: Block 15

Start of Block: Block 13

Q76 Thank you for participating in our study.

Please let us know if you are a...

- Curtin University Student wishing to be awarded SONA points for participation. (1)
- Participant wishing to be entered into the draw to win 1 of 5 \$100 Coles/Myer gift cards. (2)

End of Block: Block 13

Appendix E

Ethics approval letter (Chapter 6)



Office of Research and Development

GPO Box U1987
Perth Western Australia 6845

Telephone +61 8 9266 7863
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Web research.curtin.edu.au

18-Sep-2017

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

Dear Penelope Hasking

RE: Ethics Office approval
Approval number: HRE2017-0649

Thank you for submitting your application to the Human Research Ethics Office for the project **Development of a Self-Efficacy to Resist Non-Suicidal Self-Injury Questionnaire**.

Your application was reviewed through the Curtin University Low risk review process.

The review outcome is: **Approved**.

Your proposal meets the requirements described in the 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-Sep-2017** to **17-Sep-2018**. 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	

Approved documents:

Document

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. 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

None.

This letter constitutes low risk/negligible risk 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 or on 9266 2784.

Yours sincerely



Amy Dowater
Acting Manager, Research Integrity

Appendix F

Participant information sheet for participants with lived experience of NSSI (Chapter

6)



PARTICIPANT INFORMATION STATEMENT

HREC Project Number:	HRE2017-0649
Project Title:	Experiences of People with a History of Self-Injury
Chief Investigator:	Associate Professor Penelope Hasking
Co-Investigators:	Dr Mark Boyes
Student researcher:	Jessica Dawkins
Version Number:	2
Version Date:	21/07/2017

The aim of the research

Nonsuicidal Self-Injury (e.g. cutting or burning skin, self-battery, without suicidal intent) is an issue that is increasingly catching the attention of the general public. While we know that self-injury is primarily used to regulate emotional experiences, little is known about how specific thoughts and beliefs about self-injury may facilitate the behaviour. The aim of this research is to explore the contexts in which people find it easier or more difficult to resist the urge to self-injure when they want to. The information will be used in the development of a questionnaire to help people identify situations which might help them minimise their self-injury.

Who is doing the research?

This project is being conducted by Jessica Dawkins and the results of this research project will contribute to obtaining a Doctor of Philosophy – Counselling Psychology at Curtin University and is funded by the University. Curtin University undergraduate psychology students who are eligible to receive course credit will be awarded 4 points for their participation.

Who can participate?

Anyone who has engaged in self-injury at least 5 times in their life is eligible to participate in this study.

What does participation involve?

If you choose to participate in the study you will be asked to attend an interview with a researcher. The study will take place on the Curtin University campus at a mutually convenient time and location. Prior to starting the interview you will be asked to complete a short questionnaire which includes general questions about you and your history of self-injury. During the interview you will be asked about your experience of self-injury as well as situations, events, places, and people connected with your experience. We will make an audio recording of the interview which will be transcribed after the interview, and the recording will be destroyed. We anticipate that the interview will take up to 60 minutes to complete.

Possible benefits

Although you may not directly benefit from participating in this study your participation will be greatly appreciated because it will contribute to scientific knowledge about self-injury beliefs and contexts. Sometimes people appreciate the opportunity to discuss their experience of nonsuicidal self-injury.



Potential risks

Talking about your self-injury experiences may be upsetting for you. You are free to take a break or withdraw from the study at any time during the interview. Upon completion of the interview you will be provided with some information about self-injury and there is a list of counselling and support services provided at the bottom of this information sheet. These resources may come in handy if you ever feel you need to talk to someone about any issues you face in your personal life. You will also be offered an opportunity to participate in a short mindfulness exercise if you feel you need to relax after participating in the study.

Can I withdraw from the research?

Participating in this study is entirely voluntary and you are under no obligation to consent to participation. Declining to participate will have no impact on academic progress or any relationship you have with Curtin University. You are able to discontinue your participation at any time during the interview. However, after you approve your transcript we will remove all identifying information, and thus not be able to remove your data.

Confidentiality

Participants name and Student ID will be required to provide course credit. This information will only be used to award credit and will be destroyed upon completion of the study and not disclosed to any third party. The interview will be recorded on a digital audio recorder and then transcribed onto a computer at which time the audio tape will be destroyed. Results of this study will be used as the basis of grant applications, presented at national and international conferences, and prepared for publication in academic journals. However, at no stage will any information that could identify you be included in any form of publication.

Storage of data

Storage of audio recordings and transcriptions will adhere to the university regulations and be stored on a password protected computer, accessible only to the researchers. Transcripts will be stored for a period of 7 years.

Results

If you would like to be informed of the aggregate research findings, please contact Jessica Dawkins at jessica.c.dawkins@postgrad.curtin.edu.au

Consent

If you decide to take part in this research we will ask you to sign the consent form. By signing it is telling us that you understand what you have read and what has been discussed. Signing the consent indicates that you agree to be in the research project and have your information used as described. Please take your time and ask any questions you have before you decide what to do. You will be given a copy of this information form to keep.

Thank you for participating in our research.

If you have any questions with regards to participation in this study please contact Jessica Dawkins at jessica.c.dawkins@postgrad.curtin.edu.au or Penelope Hasking on 08 9266 3437 or Penelope.Hasking@curtin.edu.au.

Curtin University Human Research Ethics Committee (HREC) has approved this study (HREC number 2017-0649). 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.

USEFUL RESOURCES

Crisis & Telephone Counselling Services:

1. Beyond Blue

Web: <http://www.beyondblue.org.au>

Phone: 1300 22 4636

When you call the *beyondblue* info line, you will speak to a qualified mental health professional who can provide information on depression, anxiety and related disorders, and can discuss a range of referral options, for example where you can access treatment services in your area.

The *beyondblue* info line service is available 24 hours a day, 7 days a week. Depending on your circumstances and reason for your call, the outcome may vary.

You may be given:

- Relevant local crisis or psychiatric triage service details or
- The numbers of other relevant telephone counselling services or
- Alternative referral options for assistance.

The *beyondblue* info line is an information and referral service. It is not a crisis or a telephone counselling support service, however, staff can help you with referral options, and relevant information about how to access mental health services in Australia.

All *beyondblue* info line staff members are professionally qualified with relevant tertiary education and or postgraduate degrees either in psychology, counselling or social work. *beyondblue* info line staff members also have relevant experience in mental health.

2. Kids Helpline (<25 years old) Web:

<http://www.kidshelp.com.au/> Phone:

1800 55 1800

When you contact Kids Helpline, you will talk directly with one of their counsellors. They are available 24 hours a day, 7 days a week. Web and email counselling is also available.

Kids Helpline counsellors are trained to work with young people and any issues they may be facing. They are specialised in:

- Talking with you about what has been happening and how you think or feel about it
- Listening to and understanding things from your point of view
- Helping you to figure out some ideas of how you might be able to handle things
- Helping you to decide what to do
- Providing you with information and support to find other services that can help

When you call, you can choose to speak to either a male or female counsellor. If you call more than once, you can ask to talk to the same counsellor again.

3. Lifeline

Web: <http://www.lifeline.org.au/>

Phone: 13 11 14 (24 hrs)

Lifeline is a confidential telephone crisis support service available 24/7 from a landline, payphone or mobile.

Anyone across Australia experiencing a personal crisis or thinking about suicide can contact Lifeline. Regardless of age, gender, ethnicity, religion or sexual orientation trained volunteers are ready to listen, provide support and referrals. Trained Telephone Crisis Supporters will answer your call and:

- Listen to your situation
- Provide immediate support
- Assist to clarify options and choices available to you
- Provide you with referral information for other services in your local area.

4. Black Dog Institute

Web: <http://www.blackdoginstitute.org.au/>

The Black Dog Institute website provides information on mood and anxiety disorders, and suggestions of how to ask for help and where to go to get it. It also includes information regarding what to do if you think someone you care about needs help.

5. See your psychologist, or your GP for a psychological referral

Self-help Books:

- Feeling Better: A Guide to Mood Management. By Anthony Kidman, PhD, available via website: <http://w.w.w.science.uts.edu.au/centres/psych/hpubbooks/feelbetr.html> and other local booksellers. Cost \$14.95.
- Behind Happy Faces: Taking Charge of Your Mental Health - A Guide for Young Adults by Ross Szabo and Melanie Hall (Volt Press, 2007). Cost: \$10 from www.fishpond.com
- Thoughts & Feelings: Taking Control of Your Moods and Your Life: A Workbook of Cognitive Behavioural Techniques by Matthew McKay, Patrick Fanning, Martha Davis

Websites:

- Shedding Light on Self-Injury: www.self-injury.org.au
- Cornell Research Program: <http://www.selfinjury.bctr.cornell.edu/index.html>
- Self-Injury Outreach & Support: <http://sioutreach.org/>
- S.A.F.E Alternatives: www.selfinjury.com
- Life Signs: www.selfharm.org

Appendix G

Consent form for participants with lived experience (Chapter 6)

Self-Injury Contexts



CONSENT FORM

HREC Project Number:	HRE2017-6049
Project Title:	Experiences of People with a History of Self-Injury
Chief Investigator:	Associate Professor Penelope Hasking
Co-Investigators:	Dr Mark Boyes
Student researcher:	Jessica Dawkins
Version Number:	2
Version Date:	13/09/2017

- I have read the information statement version listed above and I understand its contents.
 - I believe I understand the purpose, extent and possible risks of my involvement in this project.
 - I voluntarily consent to take part in this research project.
 - I have had an opportunity to ask questions and I am satisfied with the answers I have received.
 - I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007).
 - I understand I will receive a copy of this Information Statement and Consent Form.
 - I agree for this interview to be recorded
- Yes No

Participant Name	
Participant Signature	
Date	

Declaration by researcher: I have supplied an Information Letter and Consent Form to the participant who has signed above, and believe that they understand the purpose, extent and possible risks of their involvement in this project.

Researcher Name	
Researcher Signature	
Date	

Appendix H

Questionnaire for participants with lived experience (Chapter 6)

The Experiences of People with a History of Self-Injury
Initial Demographics Questionnaire

Name:	
Age:	
Gender:	
Year at University:	
Country of Birth:	

These questions ask about a variety of self-injury behaviours. Please only endorse a behaviour if you have done it intentionally (i.e., on purpose) and without suicidal intent (i.e., not for suicidal reasons).

1. 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):

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

2. What do you think is/was your main form of self-injury?

3. At what age did you:	
First self-injure?	Most recently harm yourself? (approximate date – day/month/year)

4. Do/did you experience physical pain when you self-injure? (please circle)		
YES	SOMETIMES	NO

5. When you self-injure are/were you alone? (please circle)		
YES	SOMETIMES	NO

6. Typically, how much time elapses/ed from the time you have the urge to self-injure until you act on the urge? (please circle)		
<1 hour	1-3 hours	3-6 hours
6-12 hours	12-24 hours	>1 day

6. Do/did you want to stop self-injuring? (please circle)	
YES	NO

Part 2

Instructions			
This inventory was written to help us better understand the experience of non-suicidal 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:			
0 = not relevant			
1 = somewhat relevant			
2 = very relevant			
‘When I self-injure, I am...’			
1... calming myself down	0	1	2
2... creating a boundary between myself and others	0	1	2
3... punishing myself	0	1	2
4... giving myself a way to care for myself (by attending to the wound)	0	1	2
5... causing pain so I will stop feeling numb	0	1	2
6... avoiding the impulse to attempt suicide	0	1	2
7... doing something to generate excitement or exhilaration	0	1	2
8... bonding with peers	0	1	2
9... letting others know the extent of my emotional pain	0	1	2

10... seeing if I can stand the pain	0	1	2
11... creating a physical sign that I feel awful	0	1	2
12... getting back at someone	0	1	2
13... ensuring that I am self-sufficient	0	1	2
14... releasing emotional pressure that has built up inside me	0	1	2
15... demonstrating that I am separate from other people	0	1	2
16... expressing anger towards myself for being worthless or stupid	0	1	2
17... creating a physical injury that is easier to care for than my emotional distress	0	1	2
18... trying to feel something (opposed to nothing) even if it is physical pain	0	1	2
19... responding to suicidal thoughts without actually attempting suicide	0	1	2
20... entertaining myself and others by doing something extreme	0	1	2
21... fitting in with others	0	1	2
22... seeking care or help from others	0	1	2
23... demonstrating I am tough or strong	0	1	2
24... proving to myself that my emotional pain is real	0	1	2
25... getting revenge against others	0	1	2
26... demonstrating that I do not need to rely on others for help	0	1	2
27... reducing anxiety, frustration, anger, or otherwise overwhelming emotions	0	1	2
28... establishing a barrier between myself and others	0	1	2
29... reacting to feeling unhappy with myself or disgusted with myself	0	1	2
30... allowing myself to focus on treating the injury, which can be gratifying or satisfying	0	1	2
31... making sure I am alive when I don't feel real	0	1	2
32... putting a stop to suicidal thoughts	0	1	2
33... pushing my limits in a manner akin to skydiving or other extreme activities	0	1	2
34... creating a sign of friendship or kinship with friends or loved ones	0	1	2
35... keeping a loved one from leaving or abandoning me	0	1	2
36... proving I can take the physical pain	0	1	2
37... signifying the emotional distress I'm experiencing	0	1	2
38... trying to hurt someone close to me	0	1	2
39... establishing that I am autonomous/independent	0	1	2

Appendix I

Semi-structured interview schedule for interviews with participants with lived experience (Chapter 6)

Thank you for coming to talk to me today. In my research I am interested in finding out about situations or contexts self-injury is more or less likely to occur. I will be asking you questions about your experiences with self-injury. I am interested in when you have found it difficult or easy to resist self-injury, contexts you most often self-injure in, and what may stop you from engaging in self-injury when you have an urge.

Before we begin I will ask you to read the information sheet and ask any questions you might have about what we are going to be talking about today. If you decide to participate I will ask you to sign a consent form.

Before we begin could you fill out this short questionnaire about you and some general questions about your self-injury experiences.

1. Thank you for providing that information. Are you happy to begin recording now? If at any time you need a break let me know.
2. I can see that you were _____ the first time you self-injured.
3. Could you tell me about this experience?
 - a. I am interested in the details surrounding that experience such as
 - i. the who was around,
 - ii. what was happening for you at that time,
 - iii. when did it take place,
 - iv. where were you,
 - v. and how injured yourself.
 - b. How has/did this changed over time?
4. Can you describe what self-injury is/was usually like for you?
 - a. Could you describe a specific example of a time you have self-injured?
5. In what situations do/did you most regularly engage in self-injury?
 - a. What thoughts and feelings accompany these situations when you most regularly self-injure?
6. Are there any particular situations that you find it difficult to resist self-injury?
 - a. places/people/feelings?
7. When is it easiest for you to resist self-injury?
8. Can you think of the last time you had the urge to self-injure but did not act?
 - a. Tell me about that?
 - b. What was different?
 - c. Why do you think you did not act?

9. Thank you for your time. The information you have provided will be very helpful. I am just wondering before we finish up if there is anything further you would like researchers to know about self-injury?
10. How are you feeling?
11. Would you like to participate in a mindfulness activity with me before leaving?

Appendix J

Participant information sheet for expert participants (Chapter 6)



PARTICIPANT INFORMATION STATEMENT

HREC Project Number:	HRE2017-0649
Project Title:	Experiences of People with a History of Self-Injury
Chief Investigator:	Associate Professor Penelope Hasking
Co-Investigators:	Dr Mark Boyes
Student researcher:	Jessica Dawkins
Version Number:	2
Version Date:	13/09/2017

While we know that self-injury is primarily used to regulate emotional experiences, little is known about how specific thoughts and beliefs about self-injury may facilitate the behaviour. The aim of this research is to explore the contexts in which people who self-injure believe they would not be able to resist engaging in self-injury and the contexts in which they find it easy to resist engaging in self-injury. The information will be used in the development of a Self-Efficacy to Resist Nonsuicidal Self-Injury questionnaire.

This project is being conducted as part of my Doctor of Philosophy – Counselling Psychology at Curtin University and is funded by the University. There will be no costs to you and you will not be paid for participating in this project.

I am interested in talking to experts in NSSI about their views/professional opinion (I am also talking to students who have engaged in NSSI about their views and experiences) with regards to the contexts surrounding NSSI.

What does participation involve?

If you choose to participate in the study you will be asked to engage in a Skype interview with a researcher. The study will take place at a mutually convenient time. During the interview you will be asked about your experiences working in the field of NSSI and your opinions with regards to contexts in which people find it difficult and easy to resist engaging in NSSI. We will make an audio recording of the interview which will be transcribed after the interview, and the recordings deleted. We anticipate that the interview will take up to 30 minutes to complete.

Possible benefits

Although you may not directly benefit from participating in this study your participation will be greatly appreciated because it will contribute to scientific knowledge about the relationship between self-efficacy and self-injury.

Potential risks

We anticipate no potential risks to your participation.

**Can I withdraw from the research?**

Participating in this study is entirely voluntary and you are under no obligation to consent to participation. You are able to discontinue your participation at any time during the interview. However, after you approve your transcript we will remove all identifying information, and thus not be able to remove your data.

Confidentiality

The interview will be recorded on a digital audio recorder and then transcribed onto a computer at which time the audio tape will be destroyed. Results of this study will be used as the basis of grant applications, presented at national and international conferences, and prepared for publication in academic journals. However, at no stage will any information that could identify you be included in any form of publication.

Storage of data

Storage of audio tapes and transcriptions will adhere to the university regulations and be stored on a password protected computer, accessible only to the researchers. Transcriptions will be stored for a period of 7 years.

Results

If you would like to be informed of the aggregate research findings, please contact Jessica Dawkins at jessica.c.dawkins@postgrad.curtin.edu.au.

Thank you for participating in our research.

If you have any questions with regards to participation in this study please contact Jessica Dawkins at jessica.c.dawkins@postgrad.curtin.edu.au or Penelope Hasking on + 61 08 9266 3437 or Penelope.Hasking@curtin.edu.au.

Curtin University Human Research Ethics Committee (HREC) has approved this study (HREC number 2017-0649). 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 +61 (08) 9266 7093 or email hrec@curtin.edu.au.

Appendix K

Consent form for expert participants (Chapter 6)

Self-Injury Contexts

**CONSENT FORM**

HREC Project Number:	HRE2017-0649
Project Title:	Experiences of People with a History of Self-Injury
Chief Investigator:	Associate Professor Penelope Hasking
Co-Investigators:	Dr Mark Boyes
Student researcher:	Jessica Dawkins
Version Number:	2
Version Date:	13/09/2017

- I have read, the information statement version listed above and I understand its contents.
- I believe I understand the purpose, extent and possible risks of my involvement in this project.
- I voluntarily consent to take part in this research project.
- I have had an opportunity to ask questions and I am satisfied with the answers I have received.
- I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007).
- I understand I will receive a copy of this Information Statement and Consent Form in digital format which I can download and save.
- I agree for this interview to be recorded

Yes No

Participant Name	
Participant Signature	
Date	

Declaration by researcher: I have supplied an Information Letter and Consent Form to the participant who has signed above, and believe that they understand the purpose, extent and possible risks of their involvement in this project.

Researcher Name	
Researcher Signature	
Date	

*Appendix L**Expert interview schedule (Chapter 6)*

Thank you for making the time to talk to me today. As you know from the information we have provided to you, we are interested in developing a measure of self-efficacy to resist NSSI and would like to ask you about your experience with people who self-injure and your opinion about contexts in which people who self-injure find it difficult or easy to resist engaging in self-injury. I am also interviewing people who self-injure to ask them about their experiences.

1. Demographics
 - a. Name
 - b. Place of employment
2. In your experience what contexts have you found that people generally self-injure?
 - a. From your understanding, do the context stay consistent or change over time?
3. From your experience what contexts do people who self-injure find it most difficult to resist engaging in self-injury?
4. In what circumstances do you think people who self-injure find it easiest to resist engaging in self-injury?
5. What contexts do you think will be important to include in a measure of self-efficacy to resist NSSI?
 - a. Why/why not?
6. Thank you for your time. Your help is greatly appreciated. I am wondering if you would be happy for me to contact you once we have created an item pool? I would like your opinion on whether you think we have missed any important items that could be included. Or if you have any suggestions on how to improve the generated item pool.

Appendix M

Ethics approval letter – feedback for items (Chapter 6)



Office of Research and Development

GPO Box U1987
Perth Western Australia 6845

Telephone +61 8 9266 7863
Facsimile +61 8 9266 3793
Web research.curtin.edu.au

11-Jun-2018

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

Dear Penelope Hasking

RE: Amendment approval
Approval number: HRE2017-0649

Thank you for submitting an amendment request to the Human Research Ethics Office for the project **Development of a Self-Efficacy to Resist Non-Suicidal Self-Injury Questionnaire**.

Your amendment request has been reviewed and the review outcome is: **Approved**

The amendment approval number is HRE2017-0649-02 approved on 11-Jun-2018.

The following amendments were approved:

The distribution of the initial item pool (provided) to researchers and clinicians attending the International Society for the Study of Self-Injury Annual Conference in Belgium in order to receive feedback on the items.

Any special conditions noted in the original approval letter still apply.

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.

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 or on 9266 2784.

Yours sincerely



Catherine Gangell
Manager, Research Integrity

Appendix N

Participant information sheet and items for feedback (Chapter 6)



Curtin University

School of Psychology

GPO Box U1987
Perth Western Australia 6845

Telephone +61 8 9266 0000
Facsimile +61 8 9266 0000
Email jessica.c.dawkins@postgrad.curtin.edu.au
Web curtin.edu.au

My name is Jessica Dawkins and I am a PhD candidate, working under the supervision of A/Prof Penny Hasking and Dr Mark Boyes in the School of Psychology at Curtin University.

I am developing a questionnaire to measure self-efficacy to resist the urge to self-injure and would like to invite you to provide feedback on the initial item pool. The pool was created after conducting interviews with young people who self-injure, clinicians working with clients who self-injure and researchers.

Any feedback you provide is completely anonymous, and will be used to refine the questionnaire. I am particularly interested in any feedback on wording of items and any items that you think should be included or excluded from the questionnaire. We will then administer the items to a large pool of participants and conduct a psychometric evaluation to determine the final questionnaire items.

If you would like to give any feedback please do so on the attached questionnaire, either next to the items or at the end of the items, and return it to the box provided. If you have any questions feel free to chat to either myself or Penny.

Thank you for your time.

Jess

Note: Feedback you provide on the attached questionnaire will be stored in accordance with the WA State Records Act (2000); forms will be kept in a locked filing cabinet accessible only to the researchers, for a period of seven years. Curtin University Human Research Ethics Committee (HREC) has approved this study (HREC number 2017-0649). 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 +61 (08) 9266 7093 or email hrec@curtin.edu.au.

Please rate how confident are you that you could resist the urge to self-injure given the following situations described below.

	Not at all confident 1	Somewhat confident 2	Moderately confident 3	Extremely confident 4
1. When I am feeling angry				
2. When I am feeling sad				
3. When I am feeling depressed				
4. When I am feeling worthless				
5. When I am feeling hopeless				
6. When I am feeling ashamed				
7. When I am feeling lonely				
8. When I am feeling embarrassed				
9. When I am feeling guilty				
10. When I feel frustrated				
11. When I feel like everything I do is pointless				
12. When I feel fed up				
13. When I feel in control of my situation				
14. When I feel calm				
15. When I feel relaxed				
16. When I feel nothing at all				
17. When I feel alienated				
18. When I feel different from everyone else				
19. When I feel numb				
20. When I feel disconnected from my body				
21. When I feel connected to my body				
22. After having an argument with a friend				
23. After arguing with my parent/s				
24. When my parents reassure me				
25. When I know I can talk to a friend about my problem				
26. I feel abandoned				
27. When a friend abandons me				
28. When someone I love is angry with me				
29. When someone I love is there to support me				
30. When I am by myself				
31. When I am at home				
32. When I am in the shower				
33. When I am in the bathroom				
34. When I am out with friends				
35. When I am in a group				
36. If I know no one will find out				
37. When other people are around				

38. When it's the middle of the night and I can't sleep
39. When I think I am not good enough
40. When I think I am a burden to someone else
41. When I think I am not loveable
42. When I have no control over a situation
43. When I have no other option
44. When I feel powerless
45. When other people don't understand me
46. When I don't want to live
47. When I think I have no other options
48. When I think I have a better way to cope
49. When I keep busy
50. If I have been crying
51. If I have been drinking
52. When I am drunk
53. When I am motivated to resist self-injury
54. When I have been thinking about self-injury for a long time
55. When I have been trying to resist the urge for a long time
56. When I have been avoiding suicidal thoughts
57. If I have been taking drugs
58. When I withdraw myself from others
59. When I have just engaged in self-injury
60. When I am feeling pressure from work/school/university
61. If I have hurt someone I care about
62. If I cannot help someone I care about
63. If I feel I have control over a situation
64. When I feel like others aren't listening to me
65. When others don't take my opinion seriously
66. If I am worried other people will see my scars
67. When I have seen someone else has self-injured
68. When I have seen a post online about self-injury
69. When I am having trouble with my friends/parents/partner
70. When I have no viable means to self-injure
71. When I believe I can resist the urge to self-injure
72. If I have other coping strategies I can use
73. When I focus on my inner strength
74. When I reach out for support

75. If I feel alone
76. When I have other coping strategies
77. When I have someone I can talk to
78. When I do not have the preferred means to do so
79. When I can't think of any other strategies
80. When I have a strong urge
81. When I am in a supportive environment
82. When I have a supportive person
83. When I want to feel a sense of belonging
84. When I consider self-injury a part of who I am
85. When I am distracted by other things
86. When I am watching T.V.
87. When I can't stop going over and over things in my mind
88. It has become a ritual
89. When I am reminded of self-injury through a video or song
90. When I see images of self-injury
91. When I feel a sense of control over my self-injury
92. When I feel I have no control over my self-injury
93. When I want to distract myself from my emotional pain
94. If I started a new job/school
95. When I want to show someone else that I am in pain
96. When I have no privacy
97. When I need comfort
98. When it seems like no one cares about me
99. When I overthink a situation

Is there anything else you would like to add about the items/questionnaire?

Appendix O

Final item pool for measure of self-efficacy to resist NSSI (Chapter 6)

Please rate how confident are you that you could resist the urge to self-injure given the following situations described below.

Please note that many items are repetitive

1 2 3 4
 Not at all confident Somewhat confident Moderately confident Extremely confident

	Comments:
1. When I feel angry	
2. When I feel sad	
3. When I feel depressed	
4. When I feel worthless	
5. When I feel hopeless	
6. When I feel ashamed	
7. When I feel lonely	
8. When I feel embarrassed	
9. When I feel guilty	
10. When I feel frustrated	
11. When I feel like everything I do is pointless	
12. When I feel fed up	
13. When I feel in control of my situation	
14. When I feel calm	
15. When I feel relaxed	
16. When I feel nothing at all	
17. When I feel alienated	
18. When I feel different from everyone else	
19. When I feel numb	
20. When I feel disconnected from my body	
21. When I feel connected to my body	
22. After having an argument with a friend	
23. After arguing with a family member/s	
24. When someone reassures me	
25. When I know I can talk to a friend about my problem	
26. When I feel abandoned	
27. When a friend abandons me	
28. When someone I love is angry with me	
29. When someone I love is there to support me	
30. When I am by myself	
31. When I am at home	
32. When I am in the shower	
33. When I am in the bathroom	
34. When I am out with friends	
35. When I am in a group	

36. When I know no one will find out	
37. When other people are around	
38. When it's the middle of the night and I can't sleep	
39. When I think I am not good enough	
40. When I think I am a burden to someone else	
41. When I think I am not loveable	
42. When I have no control over a situation	
43. When I have no other option	
44. When I feel powerless	
45. When other people don't understand me	
46. When I don't want to live	
47. When I think I have no other options	
48. When I think I have a better way to cope	
49. When I keep busy	
50. When I have been crying	
51. When I have been drinking	
52. When I am drunk	
53. When I am motivated to resist self-injury	
54. When I have been thinking about self-injury for a long time	
55. When I have been trying to resist the urge for a long time	
56. When I have been avoiding suicidal thoughts	
57. When I have been taking drugs	
58. When I withdraw myself from others	
59. When I have just engaged in self-injury	
60. When I am feeling pressure from work/school/university	
61. When I have hurt someone I care about	
62. When I cannot help someone I care about	
63. When I feel I have control over a situation	
64. When I feel like others aren't listening to me	
65. When others don't take my opinion seriously	
66. When I am worried other people will see my scars	
67. When I have seen someone else has self-injury scars	
68. When I have seen a post online about self-injury	
69. When I am having trouble with my friends/parents/partner	
70. When I have no viable means to self-injure	

71. When I believe I can resist the urge to self-injure	
72. If I have other coping strategies I can use	
73. When I focus on my inner strength	
74. When I reach out for support	
75. If I feel alone	
76. When I have other coping strategies	
77. When I have someone I can talk to	
78. When I do not have the preferred means to do so	
79. When I can't think of any other strategies	
80. When I have a strong urge	
81. When I am in a supportive environment	
82. When I have a supportive person available	
83. When I want to feel a sense of belonging	
84. When I consider self-injury a part of who I am	
85. When I am distracted by other things	
86. When I am watching T.V.	
87. When I can't stop going over and over things in my mind	
88. When it has become a ritual	
89. When I am reminded of self-injury through a video or song	
90. When I see images of self-injury	
91. When I feel a sense of control over my self-injury	
92. When I feel I have no control over my self-injury	
93. When I want to distract myself from my emotional pain	
94. If I started a new job/school	
95. When I want to show someone else that I am in pain	
96. When I have no privacy	
97. When I need comfort	
98. When it seems like no one cares about me	
99. When I overthink a situation	
100. When I am in my bedroom	
101. When I am at work/school	
102. When I feel anxious	
103. When I feel scared	
104. When I feel nervous	
105. When I am worried	
106. After arguing with people at work/school	

107.	After arguing with a romantic partner	
108.	When someone I love is disappointed in me	
109.	When I am out in public	
110.	In the morning	
111.	In the afternoon	
112.	In the evening	
113.	Late at night	
114.	When I feel bored	
115.	When I am high	
116.	When I am worried other people will see my injuries/wounds	
117.	When I see someone else has self-injury wounds	
118.	When I have access to means to self-injure	
119.	When I hate myself	
120.	When I want to punish myself	
121.	When I see a reminder of a past time I self-injured	
122.	When I see my own scars	
123.	Before social situations	
124.	After social situations	
125.	When I see my own injuries	

Appendix P

Ethics approval letter (Chapters 6 & 7)



Office of Research and Development

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Perth Western Australia 6845

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Web research.curtin.edu.au

04-Sep-2018

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

Dear Penelope Hasking

RE: Amendment approval
Approval number: HRE2018-0536

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

Your amendment request has been reviewed and the review outcome is: **Approved**

The amendment approval number is HRE2018-0536-01 approved on 04-Sep-2018.

The following amendments were approved:

Addition of four scales: an item asking whether participants have been diagnosed with a mental illness, and three validation questions to the questionnaire. The four scales added are the Perth Alexithymia Questionnaire (24 items), the Forms of self-criticism/attacking and self-reassuring scale (24 items), the Functions of self-criticising/attacking scale (21 items), and the Self-Efficacy to Resist NSSI scale (125 items).

Any special conditions noted in the original approval letter still apply.

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.

Should you have any queries regarding consideration of your project, please contact the Ethics Support Officer for your faculty or the Ethics Office at hree@curtin.edu.au or on 9266 2784.

Yours sincerely



Catherine Gangel
Manager, Research Integrity

*Appendix Q**Information sheet, consent and questionnaires used for Chapters 6 & 7*

Social, Cognitive, and Emotional Factors Underlying Health Risk Behaviours - Copy

Start of Block: 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

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.

Consent: 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 (1)

I do not agree (2)

Skip To: End of Survey If I have received information regarding this research and had an opportunity to ask questions. I be... = I do not agree

End of Block: Information sheet and consent

Start of Block: Demographics

Curtin Student Are you a Curtin student participating for SONA points?

Yes (1)

No (2)



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

Gender What is your sex?

Male (1)

Female (2)

Another gender, please specify? (3)

Prefer not to say (4)

Q57 Do you consider yourself to be:

- Heterosexual (1)
- Homosexual (2)
- Bisexual (3)
- Another orientation, please specify? (4)
-

- Prefer not to say (5)

Postcode What is your postcode?

Country of birth What country were you born in?

Indigenous Do you identify as Aboriginal or Torres Strait Islander?

- Yes (1)
- No (2)

University Which Australian university are you currently enrolled in?

Course What course are you currently studying?

Level of study At what level are you currently studying?

- Associate Degree (1)
- Bachelor Degree (2)
- Graduate Certificate (3)
- Graduate Diploma (4)
- Master Degree (5)
- Doctoral Degree (6)

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

- Yes (please specify) (1) _____
- No (2)

End of Block: Demographics

Start of Block: NSSI

Q13

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.

NSSI thoughts Have you ever thought about engaging in self-injury?

Yes (1)

No (2)

NSSI Have you ever engaged in nonsuicidal self-injury?

Yes (1)

No (2)

Skip To: NEQ If Have you ever engaged in nonsuicidal self-injury? = No

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

None (1)

Once (2)

Twice (3)

Three times (4)

Four times (5)

5 or more times (6)

<p>ISAS 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):</p>	<p>Click to write (1)</p>
<p>Cutting (1)</p>	
<p>Biting (2)</p>	
<p>Burning (3)</p>	
<p>Carving (4)</p>	
<p>Pinching (5)</p>	
<p>Pulling hair (6)</p>	
<p>Severe scratching (7)</p>	
<p>Banging or hitting yourself (8)</p>	
<p>Interfering with wound healing (9)</p>	

Rubbing skin against rough surface (10)	
Sticking yourself with needles (11)	
Swallowing dangerous substances (12)	
Other (13)	

NSSI main form 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 (1)
- Biting (2)
- Burning (3)
- Carving (4)
- Pinching (5)
- Pulling hair (6)
- Severe scratching (7)
- Banging or hitting yourself (8)
- Interfering with wound healing (9)
- Rubbing skin against rough surface (10)
- Sticking yourself with needles (11)
- Swallowing dangerous substances (12)

Other (13)

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

Click to write (1)

First injure yourself? (1)

Most recently injure yourself? (2)

NSSI Pain Do you experience physical pain during self-injury?

Yes (1)

Sometimes (4)

No (5)

NSSI Alone When you self-injure are you alone?

Yes (2)

Sometimes (3)

No (4)

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

- (1)
 - 1-3 hours (2)
 - 3-6 hours (3)
 - 6-12 hours (4)
 - 12-24 hours (5)
 - >1 day (6)
-

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

- Yes (1)
- No (2)

<p style="text-align: center;">NEQ</p> <p>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.</p> <p>How likely is it that after self-injuring:</p>	Extremely unlikely (1)	Somewhat unlikely (2)	Somewhat likely (3)	Extremely likely (4)
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"/>

Validation 1 Please answer 3 to this question.

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

SERN					
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.		Not at all confident (1)	Somewhat confident (2)	Moderately confident (3)	Extremely confident (4)
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"/> |
| 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"/> |

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|-----|--|-----------------------|-----------------------|-----------------------|-----------------------|
| 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"/> |

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|-----|---|-----------------------|-----------------------|-----------------------|-----------------------|
| 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"/> |

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|------|--|-----------------------|-----------------------|-----------------------|-----------------------|
| 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"/> |
| 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"/> |

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|------|--|-----------------------|-----------------------|-----------------------|-----------------------|
| 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"/> |

<p style="text-align: center;">SERS</p> <p>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.</p>	<p>Very uncertain (1)</p>	(2)	(3)	(4)	(5)	<p>Very certain (6)</p>
<p>How certain are you that you will not self-injure in the future? (1)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>If at some point in the future you had self-injurious thoughts, how certain are you that you could resist self-injury? (2)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>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? (3)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>How certain are you that you could control future thoughts of self-injury if you were experiencing physical pain? (4)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>How certain are you that you could control future self-injurious thoughts if you lost an important relationship? (5)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>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? (6)</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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

Yes (1)

No (2)

Skip To: End of Block If Are you aware of either of your parents having engaged in self-injury? = No

NSSI parents 2 Which parent/s have engaged in self-injury?

Mother (1)

Father (2)

Both parents (3)

NSSI Parents 3 At what age did your parent/s engage in self-injury?

NSSI parents 4 If you were born at the time, what age were you when your parent/s engaged in self-injury?

End of Block: NSSI

GSE Indicate how true each of the following statements are of you.	Not at all true (1)	Hardly true (2)	Moderately true (3)	Exactly true (4)
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"/>

Regulatory SE How well can you?	Not at all well (1)	(2)	(3)	(4)	Very well (5)
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"/>				

RSE

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 (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
On the whole I am satisfied with myself. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At times I think I am no good at all. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I have a good number of qualities. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am able to do things as well as most other people. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel I do not have much to be proud of. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I certainly feel useless at times. (6)	<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. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wish I could have more respect for myself. (8)	<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. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I take a positive attitude towards myself. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<p>LCS</p> <p>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.</p>	Strongly disagree (1)	Generally disagree (2)	Somewhat disagree (3)	Somewhat agree (4)	Generally agree (5)	Strongly agree (6)
I can anticipate difficulties and take action to avoid them. (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A great deal of what happens to me is probably just a matter of chance. (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Everyone knows that luck or chance determines one's future. (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can control my problem(s) only if I have outside support. (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I make plans, I am almost certain that I can make them work. (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My problem(s) will dominate me all my life. (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My mistakes and problems are my responsibility to deal with. (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Becoming a success is a matter of hard work, luck has little or nothing to do with it. (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My life is controlled by outside actions and events. (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People are victims of circumstance beyond their control. (10)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To continually manage my problems I need professional help. (11)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am under stress, the tightness in my muscles is due to things outside my control. (12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<p>I believe a person can really be the master of his fate. (13)</p>	<input type="radio"/>					
<p>It is impossible to control my irregular fast breathing when I am having difficulties. (14)</p>	<input type="radio"/>					
<p>I understand why my problem(s) varies so much from one occasion to the next. (15)</p>	<input type="radio"/>					
<p>I am confident of being able to deal successfully with future problems. (16)</p>	<input type="radio"/>					
<p>In my case maintaining control over my problem(s) is mostly due to luck. (17)</p>	<input type="radio"/>					

Validation 3 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 (1)
- No (2)

End of Block: Social/Personality

Start of Block: Contact details

Display This Question:
If Are you a Curtin student participating for SONA points? = Yes

Student ID 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.

Name: (1) _____

Student ID (2) _____



Display This Question:

If Are you a Curtin student participating for SONA points? = No

Contact details 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: (1) _____

Email: (2) _____

Q77 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](#)

End of Block: Contact details

Appendix R

Ethics approval letter (Chapter 8)



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12-Apr-2017

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

Dear Penelope Hasking

RE: Amendment approval
Approval number: HRE2017-0156

Thank you for submitting an amendment request to the Human Research Ethics Office for the project **Beliefs about self-injury**.

Your amendment request has been reviewed and the review outcome is: **Approved**

The amendment approval number is HRE2017-0156-01 approved on 12-Apr-2017.

The following amendments were approved:

1. Jessica Dawkins has been added as a co-investigator.

Any special conditions noted in the original approval letter still apply.

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.

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 or on 9266 2784.

Yours sincerely



Dr Catherine Gangell
Manager, Research Integrity

*Appendix S**Information sheet, consent, and questionnaires used in Study 8*

Beliefs about self-injury

Start of Block: Default Question Block

BELIEFS ABOUT SELF-INJURY

Participant Information Sheet

HREC Project Number:

HRE2017-0156

Project Title:

Beliefs about self-injury

Principal Investigator:

Associate Professor Penelope Hasking

Co-Investigators:

Dr Mark Boyes

Dr Camilla Luck

Jessica Dawkins

Version Number: v1.0

Version Date: 2 December 2016

Up to one third of university students engage in NSSI (the deliberate destruction of bodily tissue without intent to die), which is associated with a range of social, emotional and psychological outcomes. Theoretical accounts suggest that the beliefs we form about self-injury might play a role in why some people self-injure, but it is not really clear which

beliefs are most salient. By better understanding these relationships we will be better placed to identify factors to focus on in prevention and early intervention initiatives.

You are invited to take part in this study. Please read this Information Sheet in full before making a decision. If you have any questions you would like to ask before participating please contact the Principal Investigator.

Who can participate in this research?

All undergraduate students enrolled in the Curtin University Psychology and Speech Pathology Undergraduate Participant Pool are eligible to participate. To effectively answer our research questions we need both people who self-injure and people who do not self-injure to participate.

What does the research involve?

You are invited to participate in a lab-based study that will take approximately 90 minutes of your time. In this study you will be asked to complete 4 computer-based tasks. One will ask you to indicate whether a sentence is correct or incorrect, by pressing the appropriate key on the keyboard. Another 2 will ask you to match pictures of self-injury, furniture or household items with words like Relief or Pain. In another task you will be presented with a series of paired words and pictures and asked to estimate how often different stimuli appear together. Finally you will be asked to complete some questionnaires about your history of self-injury (if applicable), what you think about self-injury, whether any of your family or friends self-injure and your own emotional experience.

Possible benefits

While you may not personally benefit from participating in this study the results will help us better understand the factors that initiate and maintain self-injury. Furthering our understanding of this complex behaviour will help us develop more effective prevention and early intervention initiatives to help those who want to stop self-injuring.

You will be awarded 6 credit points for participating in this study.

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. Some of the images might also be confronting. Examples of the images we use in this study are shown below. 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 the study any time before your data is

recorded. 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. No information that could identify any participant will ever be released to a third party or made public in any way. Data collected will be stored in accordance with Curtin University regulations, kept on University premises, in a password protected file for up to 8 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 2017.

Example images

Thank you,

A/Prof Penelope Hasking Ph: 9266 3437 E: Penelope.Hasking@curtin.edu.au

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 9266 2784 or by emailing hrec@curtin.edu.au.

[Useful resources](#)

[Self injury fact sheet](#)

[A guide for young people](#)

Page Break

Q5 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 (1)

I do not agree (2)

Page Break

Q49 Participant Number

Q7 Before we get started we just need some background information about you.

What is your gender?

Male (1)

Female (2)

Another gender (3) _____

Q9 Date of birth? (dd/mm/yyyy)

Q11 What is your postcode?

Q13 What country were you born in?

Q15 Do you identify as Aboriginal or Torres Strait Islander?

Yes (1)

No (2)

Q17 What year are you in at university?

- 1st (1)
- 2nd (2)
- 3rd (3)
- 4th (4)
- other (5)

Q19 Are you studying full time or part time?

- Full time (1)
- Part time (2)

Q21 Where are you living?

- At home with parents/family (1)
 - In university accommodation (2)
 - With flatmates (3)
 - On your own (4)
 - With a partner (5)
 - Other (please specify) (6)
-

Q23 In this next section we will ask you questions about your experience with self-injury. We will ask about your personal experience of self-injury, and whether your friends or family self-injure.

If you become upset at any stage we suggest taking a break or completely stopping the questionnaire. Remember there are some resources you might find useful that are free to

download at end of this questionnaire. We also have some hard copies if you would like to take this list with you.

Self-injury refers to directly and intentionally hurting yourself (such as by cutting, burning, excessively scratching, etc.) *without* the intention of killing yourself.

Have you ever seriously considered self-injuring but not acted on those thoughts?

Yes (1)

No (2)

Q25 Have you ever engaged in self-injury?

Yes (1)

No (2)

Skip To: Q45 If Have you ever engaged in self-injury? = No

Q27 What age did you start to self-injure?

Q29 How many times have you self-injured **in the last year?**

None (1)

Once (2)

Twice (3)

Three times (4)

Four times (5)

5 or more times (6)

Q31 Please only endorse a behaviour if you have done it intentionally (i.e., on purpose) and without suicidal intent (i.e., not for suicidal reasons). Please estimate the number of times **in your life** you have intentionally (i.e., on purpose) performed each type of non-suicidal self- injury (Please write a number)

- Cutting _____
- Biting _____
- Burning (3) _____
- Carving (4) _____
- Pinching (5) _____
- Pulling hair (6) _____
- Severe scratching (7) _____
- Banging or hitting yourself (8)

- Interfering with wound healing (9)

- Rubbing skin against rough surface (10)

- Sticking yourself with needles (11)

- Swallowing dangerous substances (12)

- Other (13) _____

Q33 If you feel that you have a *main* form of self-injury, please indicate from the list below the behaviour(s) that you consider to be your main form/s of self-injury

- Cutting (1)
- Biting (2)
- Burning (3)
- Carving (4)
- Pinching (5)
- Pulling hair (6)
- Severe scratching (7)
- Banging or hitting yourself (8)
- Interfering with wounds healing (9)
- Rubbing skin against rough surface (10)
- Sticking yourself with needles (11)
- Swallowing dangerous substances (12)
- Other (13)

Q35 Do you experience physical pain when you self-injure?

Yes (1)

No (2)

Q37 When you self-injure are you alone?

Yes (1)

No (2)

Q39 Typically how much time elapses from the time you have the urge to self-injure until you act on the urge?

< 1 hour (1)

1-3 hours (2)

3-6 hours (3)

6-12 hours (4)

12-24 hours (5)

> 1 day (6)

Q41 Do/did you want to stop self-injuring?

Yes (1)

No (2)

Page Break

Page Break

Q45 Have any of your friends ever engaged in self-injury?

Yes (1)

No (2)



Q47 How many of your friends have self-injured?

Q68 Has anyone in your family ever engaged in self-injury?

Yes (1)

No (2)

Q69 How many of your family members have self-injured?

<p>Q49</p> <p>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.</p> <p>How likely is it that after self-injuring:</p>	Extremely likely (1)	Somewhat likely (2)	Somewhat unlikely (3)	Extremely unlikely (4)
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"/>

Q67 Thank you for taking the time to complete this questionnaire.

So we can award you credit in SONA please enter you full name and student ID. Identifying information will be permanently removed from the data set as soon as grades are ratified at the end of semester.

The following pages provide some resources you may find useful.

Full name (1) _____

Student ID (2) _____

Q70 [Useful resources](#)
[A guide for young people](#)
[Self injury fact sheet](#)

End of Block: Default Question Block

*Appendix T**Co-authors' approval to include papers in thesis*

27/02/2020

Mail - Jessica Dawkins - Outlook

Permission to include Applying a Cognitive-Emotional Model to Nonsuicidal Self-Injury In Jessica Dawkins Thesis

Danyelle Greene <danyelle.greene@postgrad.curtin.edu.au>

Fri 21/02/2020 6:45 PM

To: Jessica Dawkins <jessica.c.dawkins@postgrad.curtin.edu.au>

I, Danyelle Jayne Greene give Jessica Dawkins permission to include the article "Applying a Cognitive-Emotional Model to Nonsuicidal Self-Injury" (published in Stress and Health) of which I am a co-author in her PhD thesis.

Danyelle Greene

27/02/2020

Mail - Jessica Dawkins - Outlook

PhD

Chantelle Passchier <chantelle.passchier@gmail.com>

Wed 29/01/2020 10:56 AM

To: Jessica Dawkins <jessica.c.dawkins@postgrad.curtin.edu.au>

Hi Jess

Please consider this my express permission to include any papers with my previous involvement in your PhD thesis. Best of luck!

Kind regards
Chantelle Passchier

27/02/2020

Mail - Jessica Dawkins - Outlook

Co-authored article inclusion in thesis

Camilla Luck <c.luck@curtin.edu.au>

Thu 27/02/2020 2:19 PM

To: Jessica Dawkins <jessica.c.dawkins@postgrad.curtin.edu.au>

Hi Jessica,

I am happy for you to include the paper 'Implicit Assessment of Self-Injury Related Outcome Expectancies: A Comparison of Three Behavioural Tasks' which I co-authored in your thesis.

Kind Regards,

Camilla Luck

Camilla Luck

BSc, BPsySc, PhD

Postdoctoral Research Associate

School of Psychology

Curtin University

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