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Exploring the Duality of Harm: Emotion Regulation and the Functions of Non-Suicidal Self Injury and Outward-Directed Injury in Young People in Aotearoa

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TOBEY MORRISON

Supervised by:

Dr. Cate Curtis

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Abstract

Understanding why young people engage in self-injurious behaviours is crucial for improving their well-being outcomes. While Non-Suicidal Self-Injury (NSSI) has been explored to some extent in New Zealand, research on Outward-Directed Injurious Behaviour (ODI) remains limited both within New Zealand and internationally. Although traditionally considered distinct, emerging research suggests that NSSI and ODI may share more commonalities than previously recognised, particularly regarding their role in emotion regulation. This study used Ecological Momentary Assessment (EMA) to examine the functions and emotion antecedents of NSSI and ODI among 16–30-year-olds in New Zealand. Eleven participants provided EMA data, and seven of these also participated in interviews, offering deeper insights. Findings reveal key similarities between NSSI and ODI as coping mechanisms for managing distress. NSSI was primarily used to reduce anxiety, while ODI was used to alleviate frustration. 'Neutral' emotions were the most common precursor for NSSI, while 'anger' was the main trigger for ODI. Interview material revealed that participants often felt tired, overwhelmed, anxious, or bored when selecting 'neutral,' as these emotions weren't available as response options. Feelings of shame led to a shift from urges to engage in either behaviour to NSSI, while ODI was closely associated with anger in similar situations. Despite differences in how these behaviours are expressed, both serve to regulate negative emotions, highlighting the need to consider their shared functions in therapeutic and research contexts. This is especially important for ODI, which has traditionally been viewed as a delinquent behaviour, rather than as a coping strategy.

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Table of Contents

Abstract II
Acknowledgements III
Table of Contents IV
List of Tables VIII
List of Figures IX
Chapter One: 1
Introduction 1
Overview 5
Chapter Two: 7
Literature Review 7
Section One: Definitions and Prevalence Rates 7
Definition of NSSI 7
The Differentiation in Definitions Between NSSI and Suicidal Behaviour. 8
Definition of ODI 8
ODI and NSSI Commonalities 9
Age and Prevalence of NSSI 11
Age and Prevalence of ODI 12
Section Three: Demographic Characteristics 13
Ethnicity and Risk of NSSI 13
Sexuality and NSSI 14
ODI and Demographic Characteristics 15
Sex, Gender and Risk of NSSI 15
ODI and the Influence of 'Masculine' Norms 16
Section Four: Individual Risk Factors for NSSI and ODI 18
Emotion Regulation as a Function of NSSI 18
Emotion Regulation as a Function of ODI 22
Shame and Risk of NSSI 25
Shame and Risk of ODI 25
The Relationship Between NSSI and Eating Disorders/Exercise 26
Section Five: Environmental Risk Factors 27
Social Risk Factors and NSSI 27
Social Risk Factors and ODI 30

Trauma as a Risk Factor for NSSI 31
Trauma as a Risk Factor for ODI 33
Section Five: Protective Factors 34
Protective Factors and NSSI 34
Protective Factors and ODI 36
Literature Review Summary 37
Research Question 37
Chapter Three: 39
Method 39
Positionality Statement 39
Rationale for Using EMA in This Study 39
Participants 41
Recruitment Criteria 41
Participant Demographics 41
Informed Consent, Confidentiality, and Data Security 44
Apparatus and Materials 45
Enrolment in M-path 45
Why M-Path Was Chosen to Facilitate the Study 46
Survey Design and Questionnaire 47
Data Analysis 47
Emotion Options Based on the MEQ 48
Harmful Behaviour- Types 48
Non-Suicidal Self-Injury 48
Outward-Directed Injury 49
Motivations and Functions of NSSI and ODI 49
Debrief Interviews 50
Compensation 50
Ethical Approval 50
Chapter Four: 51
Results 51
Interview Material 51
Feedback on Emotion Options Adapted from The MEQ 52
Feedback on Participant Experience of M-Path 53
Accessibility Considerations of the m-Path App 54
Eating Disorders as a Form of NSSI 55

ODI and Socio-Cultural Influences 56
Emotion Regulation Functions and NSSI and ODI 56
Primary Survey Characteristics 57
Primary demographic characteristics, NSSI, and ODI 58
Gender and NSSI 59
Gender and ODI 60
Method of NSSI 61
Method of ODI 62
Emotional Antecedents to NSSI and ODI behaviours 63
Functions of NSSI and ODI 65
Mediating Emotions in the Transition from Urge to Engagement in NSSI and ODI Behaviours 67
Wellness Indicators 68
Likert Scale Calmness and ODI/NSSI 68
Likert Scale Contentment and ODI/NSSI 69
Likert Scale Tenseness and ODI/NSSI 69
Emotional Well-being Indicators and Likelihood of NSSI engagement 70
Emotional Well-being Indicators and Likelihood of NSSI engagement 71
Summary of Results 72
Chapter Five: 73
Discussion 73
Demographic Characteristics and NSSI and ODI 73
Gender 73
Social Norms and Their Impact on Harmful Behaviours 74
The Role of Emotion Regulation in NSSI and ODI 75
Emotional Antecedents to NSSI and ODI Behaviours 77
The Role of "Overwhelm" in NSSI and ODI 78
Mediating Emotions in the Transition from Urge to Action in Harmful Behaviours 79
Interview-Based Comparison of ODI and NSSI Behaviours, and Emotion Regulation 82
Functions of NSSI and ODI Behaviours 83
Wellbeing Indicators and Their Association with NSSI and ODI 85
Exercise and Disordered Eating Behaviours as Manifestations of NSSI 86
Feedback on Emotion Options in the EMA Survey 87
Emotion Option Feedback and the MEQ 88
Feedback on Participant Experience 89

EMA and Facilitating Self-Awareness of Harmful Behaviours 90
Accessibility Feedback 91
Interview Material and Future Directions for Investigation 92
Strengths 92
Limitations 94
Theoretical Implications 95
Clinical Implications 97
Future Directions 98
Conclusions 99
References 103
Appendix 138
Appendix A 138
Participant Recruitment Flyer 138
Appendix B 139
Initial Recruitment Email 139
Appendix C 140
Consent Form and Information Sheet 140
Appendix D 143
Study Survey Components 143
Appendix E 148
Instructions for Downloading m-Path 148
Appendix F 149
Debrief Email 149

List of Tables

Table 1 Demographic Characteristics of Participant Sample 43

Table 2 Categories of Functions for NSSI and ODI and Possible Responses Under each Category 48

Table 3 Primary Survey Characteristics 56

Table 4 Gender and NSSI Crosstabulation Analysis 57

Table 5 Gender and ODI Crosstabulation Analysis 58

Table 6 Type of NSSI Used by Participants who Reported NSSI 59

Table 7 Type of ODI used by Participants who Reported ODI 60

Table 8 Reported Functions of ODI and NSSI Behaviour 62

Table 9 Emotional Mediators from Urge to Engagement in Harmful Behaviour 64

Table 10 Emotional Wellbeing Indicators and NSSI Logistic Regression 67

Table 11 Emotional Wellbeing Indicators and ODI Logistic Regression 68

List of Figures

Figure 1 Emotions Preceding NSSI and ODI Engagement 61

Chapter One:

Introduction

Adolescence is widely recognised as a developmental phase in which individuals are more prone to engaging in harmful behaviours (Kahn & Graham, 2019). Romer et al. (2017) have suggested that harmful behaviours often follow a predictable pattern, being low in childhood, increasing during puberty, and peaking in late adolescence. This puts young people at higher risk of engaging in harmful behaviours. It is important to distinguish healthy risk-taking behaviours from harmful behaviours. Healthy risk-taking behaviours involve socially acceptable actions and are considered a normative part of adolescence (Duell & Steinberg, 2019). Harmful behaviours, however, can signifcantly hinder adolescents' development.

Harmful behaviours encompass a broad range of actions that result in physical, psychological, or emotional harm, either to oneself or others. These behaviours can serve various interpersonal functions, such as establishing dominance or communicating emotional pain and distress (Shafti et al., 2021). Additionally, harmful behaviours may act as emotion regulation tools, providing relief from distressing emotional experiences or serving as coping mechanisms for trauma and underlying psychological difficulties (Fox, 2015; Hasking et al., 2017). Harmful behaviours can take many forms, including non-suicidal self-injury (NSSI), outward-directed injury (ODI), substance misuse, risky sexual behaviour, reckless driving, or gambling (Gray et al., 2020; Mashhoon et al., 2018; Shafti et al., 2021; Wu et al., 2018). Harmful behaviours have significant implications for the mental health outcomes and overall well-being of young people. NSSI and ODI are two harmful behaviours that warrant further exploration, given their documented impact on youth well-being (Shafti et al., 2021).

NSSI involves the intentional harm of one’s own body, and it occurs without suicidal intent (Nock & Favazza, 2009). NSSI is most common among adolescents (Ross & Heath, 2002). Fitzgerald and Curtis (2017) found the lifetime prevalence of Non-Suicidal Self-Injury

(NSSI) among New Zealand youth to be 38%, while Robinson and Wilson (2020) reported it to be as high as 69% in a similar population in New Zealand, challenging earlier perceptions of its limited occurrence. The rise in NSSI is a significant concern, as studies have shown it to be a significant predictor of suicidal behaviour and risk of accidental death due to complications from wounds or severe injury. This is supported by both local (Robinson et al., 2021) and international literature (Grandclerc et al., 2016; Zetterqvist, 2015). NSSI is also associated with other risk behaviours such as substance abuse, and risky sexual behaviour (Marraccini et al., 2019; Tanner et al., 2016). Additionally, individuals who engage in NSSI face an increased risk of developing other mental health disorders such as depression (Zetterqvist, 2015), and may have lower engagement with support services (Nock & Favazza 2009). Over time, NSSI can also lead to long-term difficulties with emotion regulation (Nock, 2009).

A significant body of research on NSSI suggests it functions primarily as a form of emotion regulation, with individuals engaging in NSSI as an implicit or explicit effort to process, cope with, and understand their emotions (Curtis, 2016a; Fitzgerald & Curtis, 2017; Klonsky, 2011; Klonsky & Olino, 2008; Perez et al., 2012).

Research by Kelada et al. (2018) found that maladaptive emotion regulation strategies are related to higher instances of NSSI and a slower recovery process. Other studies have pointed to previous childhood maltreatment (Kelada et al., 2018), past trauma, self-criticism, and self-blame as significant factors contributing to NSSI (Swannell et al., 2012). Often, individuals report feeling distressed prior to NSSI, with the behaviour providing some relief from this distress (Klonsky, 2009).

Because NSSI is typically recognised as an outlet for internal pain or distress, treatment approaches typically aim to increase emotion regulation skills to encourage healthier coping strategies in the face of painful emotions. These include therapies such as Cognitive

Behavioural Therapies (CBT), Dialectal Behaviour Therapies (DBT), and emotion regulation skill learning (Calvo et al., 2022). In treatment, NSSI often elicits a response focused on providing care and guidance (Shafti et al., 2021).

Outward-directed injury (ODI) refers to outward displays of harmful behaviour, such as hitting objects or people, that result in physical harm to oneself and sometimes others. This behaviour is not intended to result in death (Donahue et al., 2014; Pickard, 2015).

In contrast to NSSI, ODI remains significantly under-researched both in a New Zealand and global context. Reporting challenges thus hinder accurate determination of its prevalence, particularly in young people (Curtis, 2016a). However, the New Zealand Polices 'Crime Snapshot' report (2024) indicates an increase of assault-related crimes from 30,938 in January 2024 to 31,565 in December 2024. indicating a significant presence of ODI-type behaviours in New Zealand that may require further investigation.

A growing body of research suggests that ODI behaviours, once primarily viewed as acts of delinquency or aggression, are now beginning to be recognized as potential coping mechanisms that may serve similar emotional functions as NSSI (Donahue et al., 2014; Gomez-Leal et al., 2021; Larsen et al., 2012; Robertson, 2012; Slade, 2019). Larsen et al. (2012) note that outward aggressive acts, such as punching walls, may emerge when individuals struggle to cope with painful emotions. In this context, ODI behaviours can serve as a way to express and manage strong or uncomfortable emotions, particularly anger (Pickard, 2015). Curtis and Terry (2022) argue that emotions like anger may be just as important to regulate as emotions such as depression or anxiety, which are commonly reported before NSSI. Additionally, for those raised in environments where violent or aggressive behaviours are seen as acceptable expressions of emotion, ODI-type behaviours may serve as outlets for emotion regulation, perceived as more acceptable than healthier methods like help-seeking (Pickard, 2015). Furthermore, Green and Jakupcak (2015) note

that young people engaging in ODI behaviours are at risk of going unrecognized for clinical treatment, as these behaviours are often interpreted as senseless acts of violence, rather than as a communication of emotional pain. Due to this misinterpretation, treatment responses to these behaviours tend to be reactive, focusing on containment and punitive measures, such as disciplinary actions (Lee & Digiuseppe, 2018; Slade, 2019).

In light of recent studies indicating that ODI and NSSI may share common functions, motivations, risk and protective factors, as well as overlap in social and cognitive factors (Shafti et al., 2021), it is important to consider the theoretical implications of this.

If ODI and NSSI indeed share these characteristics, clinical prevention and intervention strategies developed for NSSI could also be applicable to ODI behaviours. The significant research gap in comparing ODI and NSSI, which have historically been viewed as distinct in both their functions and treatment approaches, may lead to untreated distress and further harm for many young people.

This study aims to answer the question: To what extent are NSSI and ODI behaviours both methods of coping with difficult emotions, and how do the antecedent emotions and functions of these overlap and unfold in real-time in a young New Zealand sample. It is expected that there will be significant overlap between ODI and NSSI in terms of risk factors, motivations, and functions. If this is the case, it will represent a significant advancement in our understanding of both issues and have important implications for interventions and treatments. By recognizing both NSSI and ODI as communicative of distress in young people, we can ensure that these behaviours do not continue to go unrecognized or untreated (Green & Jakupcak 2015).

Overview

This thesis will comprise of four chapters. The following chapter is a literature review of several relevant areas of research. These sections include descriptions of the definitions of NSSI and ODI, as well as an exploration of the shared functions and motivations behind both behaviours. This section will then cover socio-cultural, individual, and environmental risk factors for both NSSI and ODI. The literature review chapter of this thesis concludes with a summary of the main aims and objectives of the current study.

The third chapter of this thesis discusses the methods used for the current study. This chapter discusses the materials used to conduct the study, followed by a section on the rationale for choosing ecological momentary assessment to conduct the study. Participant demographic information is presented, followed by a description of how variables were coded. The method section also contains all relevant ethical approval information for the current study.

The fourth chapter of this thesis contains the results information of the current study. This chapter will explore the demographic risk factors associated with NSSI and ODI. This study analyses qualitative feedback from participants, The data is then broken down by gender to examine differences in NSSI and ODI for the three gender groups. Emotional antecedents and functions of both behaviours are identified, as well as analysis on the emotions that mediated a shift from the urge to engage in harmful behaviour to actual engagement in either NSSI or ODI.

Finally, the relationship between specific well-being indicators and both NSSI and ODI is explored. The fifth chapter of this thesis will consist of the discussion. The discussion section will expand on findings of the current study in the context of previous literature on ODI and NSSI.

The limitations and strengths of the current study are outlined, and used to guide relevant theoretical and clinical implications, as well as future research recommendations. This chapter will conclude with a summary of findings from the current research and the implications of these for further studies.

Chapter Two:

Literature Review

Section One: Definitions and Prevalence Rates

Definition of NSSI

NSSI refers to intentional harm caused to one's body, carried out without suicidal intent and not viewed as culturally or socially acceptable (Nock & Favazza, 2009). NSSI may include cutting, burning, biting, stabbing, scratching, preventing wound healing, or banging and hitting various body parts, distinct from practices that are culturally or socially accepted such as body piercing, tattooing, and religious or cultural rituals (Klonsky, 2007). Additionally, NSSI does not include injuries only occurring during psychotic episodes, which may include delirium, substance use or withdrawal. Additionally, repetitive patterns commonly associated with neurodevelopmental disorders, along with scab-picking or nail-biting, are not generally classified as NSSI behaviours (APA 2022; Nock, 2009). In their 2017 study, Kingi et al. facilitated conversations with Māori rangatahi to explore their perceptions of NSSI behaviours. They discovered that while some behaviours described were consistent with a definition of NSSI used in other studies, both nationally (Fitzgerald & Tomlinson, 2019), and internationally (Klonsky, 2007) others did not. While cutting was commonly referred to, the examples provided were broader and did not always involve direct harm to the body. Examples included "getting wasted when feeling sad" or "drinking and driving with the intention of self-harm" (Kingi et al., 2017, p. 140). The self-harming behaviour seen in NSSI is intended to cause only minimal or moderate physical harm, with no intent of causing fatal injury (McKenzie et al. 2014, Nock, 2009). As Lengel et al. (2022) explain, certain behaviours, such as scratching without breaking skin, are inconsistently classified as NSSI in the literature.

NSSI can serve various functions for individuals, such as the communication of needs, self-punishment, sensation seeking, preventing feelings of dissociation, emotion regulation, or helping resist suicidal urges (Klonsky, 2007; Taylor et al., 2018, Shafti et al., 2021). Multiple bodies of research identify a key function of NSSI to be emotion regulation, that is, to alleviate uncomfortable, negative emotions such as anger, sadness, or shame (Curtis, 2010, 2016, 2017, 2018; Taylor et al., 2018).

The Differentiation in Definitions Between NSSI and Suicidal Behaviour.

While NSSI behaviours are engaged in without intent to die, suicidal behaviours involve self-injury, such as attempts at suicide, or suicide, that are engaged in with the intent to end one's life. Suicidal behaviours include hanging, jumping from heights, severed cutting, or self-poisoning (Andover & Gibb, 2014; Hamza, 2014; Nock, 2010). Suicidal thoughts refer to thinking about, or planning behaviours to end one's life (Nock, 2008; Nock, 2010).

Definition of ODI

Outward-directed injurious behaviour (ODI) refers to aggressive acts or harmful behaviours that are directed outwardly. These can take the form of physical altercations and attacks on others, as well as behaviours such as punching walls or objects (Calvo et al., 2022; Green & Jakupcak, 2015; Pickard, 2015; Sadeh et al., 2010; Shafti et al., 2021). ODI-type behaviour is commonly observed in individuals with certain psychiatric disorders, such as intermittent explosive disorder (IED), but is not exclusively engaged in by this population. ODI can significantly impact social functioning and interpersonal relationships (DiGiuseppe et al., 2018; Green & Jakupcak, 2015; Medeiros et al., 2019).

ODI behaviours can involve risk-taking, impulsivity, or aggression and can occur in various different contexts, such as interpersonal conflicts or high-risk activities and thrill-seeking behaviours (Shafti et al., 2021). Unlike NSSI, ODI may be more externally focused and socially reinforced, sometimes even being framed as acceptable in certain environments,

such as within peer groups, or sports teams (Green & Jakupcak, 2015). The social context wherein ODI behaviours occur can significantly influence whether these behaviours are seen as normal, or a cause for concern (Green & Jakupcak 2015). This may prevent early intervention or recognition of the underlying emotional drivers of these behaviours. ODI behaviours may be motivated by an attempt to regulate emotions in times of distress, in a similar way to NSSI (Donahue et al., 2014).

A clinical case by Green and Jakupcak (2015) illustrates ODI behaviours in a university student who, despite raising clinical concerns, did not meet the current diagnostic criteria for NSSI disorder (APA, 2022). The student had sustained multiple injuries, including a sprained ankle from jumping off a wall, a head injury from a fall, and broken bones from punching a wall. He also sought fistfights in bars, expecting to be sore and injured afterward. This highlights the complexity of defining ODI, while these behaviours share similarities with NSSI in terms of injury and emotion regulation factors, they involve externalized aggression and risk-taking behaviours, such as initiating fights with the expectation of harm (Green & Jakupcak, 2015). Additionally, commonly used tools for assessing NSSI, such as Gratz and Roemer's (2004) DSHI, generally do not assess ODI in the context of emotion regulation functions.

ODI and NSSI Commonalities

Research has typically viewed NSSI and ODI as two distinct behaviours, which may be related to the wider perceptions around harmful behaviour (Shafti et al., 2021). Where ODI-type behaviour is seen as unreasonable violence toward others, NSSI is perceived as a sign of distress and an act of violence against the self (Slade, 2019). Despite this, emerging research suggests that NSSI and ODI, while distinct in their manifestations, may share underlying mechanisms, particularly in their links to emotion dysregulation and impulsivity, with both behaviours serving as coping strategies for painful or uncomfortable emotions (Hamza et al.,

2015; Victor et al., 2012). Additionally, ODI and NSSI may share multiple risk factors. Adolescents engaging in ODI- type behaviours often experience social rejection, which reinforces negative cognitive biases and increases their risk of NSSI (Wolff et al., 2014). Perceived family support and cognitive distortions may be key mechanisms in this relationship (Wolff et al., 2014). Jordan and Samuelson (2016) note that ODI and NSSI share risk factors related to negative childhood experiences, and research has shown that higher levels of impulsivity are correlated with both behaviours (Jordan & Samuelson, 2016; Terzi et al., 2017). Shafti et al. (2021) note that similar maladaptive schemas are associated with both NSSI and ODI, such as a hostile perception of the world and others, a lack of self-control strategies, reduced fear of pain, and the view of harmful behaviours as an escape from emotional pain. Studies indicate a strong relationship between NSSI and ODI, with people who engage in ODI-type behaviours being more likely to also report engaging in NSSI (Slade, 2019; Shafti et al., 2021). Similarly, Fliege et al. (2009) identified aggression as a significant proximal risk factor for NSSI in adolescents.

While NSSI is often associated with sadness or anxiety, ODI is more frequently linked to emotions such as anger or humiliation (Pickard, 2015). However, both behaviours may serve to regulate overwhelming emotions, including anger (Curtis & Terry, 2022). Despite this, ODI is often perceived as impulsive aggression rather than self-harm, which can lead to differing clinical responses (Curtis & Terry, 2022).

Social perceptions further complicate how ODI is understood. Behaviours such as wall punching are often seen as expressions of aggression rather than signs of distress, particularly in men, who may use ODI to project strength when feeling emotionally vulnerable (Fitzgerald & Curtis, 2017; Green et al., 2018; Inckle, 2014). As a result, ODI is more likely to be met with punishment rather than support, increasing the risk that those engaging in

these behaviours will not receive appropriate mental health care (Curtis & Terry, 2022; Green & Jakupcak, 2015, Slade, 2019).

Age and Prevalence of NSSI

Adolescent age has been identified in the literature as a significant risk factor for NSSI (Swannell et al., 2014). A sample of adolescents with previous psychiatric diagnoses have shown prevalence rates of as high as 60% for a single event of NSSI, and approximately 50% for multiple instances of historical NSSI behaviour (Kaess et al., 2013). Research has suggested that adolescents have a lower capacity to regulate their emotional experiences than adults. As a result, NSSI tends to peak in mid-adolescence at ages 15-16, before gradually declining around age 18 (Moran et al., 2012; Swannell et al., 2014). Adolescence is also a particularly vulnerable period, given its association with heightened levels of both emotional reactivity, and impulsivity, this is due to processes in brain development (Casey et al., 2008). Concern regarding NSSI among young people continues to rise given that multiple studies indicate that a large sample of adolescents engage in NSSI at some point in their lives, and because NSSI is a significant predictor of later suicidal behaviour (Muehlenkamp et al., 2012; Whitlock et al., 2013).

The prevalence of NSSI has risen significantly over the past two decades. Recent research suggests lifetime NSSI prevalence rates ranging from 38% to 69% among young people, as reported by Fitzgerald and Curtis (2017) and Robinson & Wilson (2020) respectively. Garisch and Wilson (2015) observed a lifetime NSSI rate of approximately 50% among young people aged 16-18 in their New Zealand based study. Additionally, statistics from 2016 reveal that adolescents in New Zealand aged 15–29, faced the highest rate of severe injuries from NSSI, with 27.8 serious injuries occurring per 100,000 adolescents. Despite comprising less than 15% of total serious injuries, this age group accounted for over one-third of severe injuries resulting from NSSI in New Zealand (Statistics New Zealand, 2021).

Age and Prevalence of ODI

In 2021, the New Zealand Police recorded 23,689 incidents categorised as 'acts intended to cause injury.' The survey documented various offenses, with harassment, threatening behaviour, and burglary accounting for 51% of incidents, some of which might involve ODI-type actions. The Crime at a Glance report by the New Zealand Police (2020) indicated that in the year ending 2020, there were 21,202 reported cases of serious assault causing injury, representing a 12.4% increase compared to the previous 12 months. The recent ‘Crime Snapshot’ report from the New Zealand Police (2024) reveals a further increase of assault crimes from 30,938 in January 2024 to 31,565 in December 2024. ODI behaviours can reflect the wellbeing of the individuals engaging in them and may involve harm to others, making them an important area of study. However, it is challenging to determine the prevalence of ODI in the age group examined in the current study due to the lack of current data on ODI in young people in New Zealand. Additionally, behaviours like wall punching or fist fights often go unreported.

Emotion Regulation

Emotion regulation is broadly defined as an ability to process or cope with an emotional experience, negative or positive (Gross et al., 1998; Gross, 2002). Emotion regulation is necessary because emotions are not always beneficial. Emotions can be overly intense, come at the wrong time, or are not the right type of emotion, like feeling angry when you are in a calm space (Ekman, 2003). Many people regulate their emotions daily, but even those who are equipped with the best emotion regulation tools do not always implement them well in every situation (Côté et al. 2010). Regardless, healthy emotion regulation skills are associated with higher wellbeing scores (Gross & John, 2003). Emotion regulation processes can function to alter both the experience of emotions, as well as the way these are expressed outwardly through language or action (McKenzie & Gross, 2013).

While studies typically concentrate on the regulation of negative emotions, it's important to note that positive emotions also require regulation, such as by modifying the expression of intense joy or excitment when in the presence of someone going through a personal tragedy (Mckenzie & Gross, 2014). Gross's (2012) emotion regulation model suggests that emotion regulation can occur at any time during an emotional experience, either before or after the emotion has occurred. This model outlines five emotion regulation strategies: situation selection, which refers to the choice to either engage in, or avoid situations based on their anticipated emotional impact; situation modification, which involves changing a situation to alter the way it affects emotions; attentional deployment, the process of redirecting one's focus within a situation to something less emotionally provoking; cognitive change, which involves changing one's assessment of a situation; and response modulation, which involves the intentional modification of emotional responses (Giuiani et al., 2008).

Kozubals (2023) study found that higher emotional intensity made people more likely to ruminate and less likely to use reappraisal to reframe their emotions in a healthier way. This link was also explored by Vanderlind et al. (2020), who found that people with mental health disorders such as depression may struggle to utilise healthy emotion regulation strategies to manage intense emotions. In summary, emotion regulation plays a significant role in wellbeing outcomes and is crucial for maintaining mental health. Deficits in this skill can have detrimental effects, including an elevated risk of reliance on maladaptive coping strategies such as NSSI or ODI (Kraiss et al., 2020).

Section Three: Demographic Characteristics

Ethnicity and Risk of NSSI

The Youth Wellbeing Survey (Fitzgerald & Tomlinson, 2019) revealed that among Māori rangatahi, 32% had either engaged in NSSI before, or contemplated it (7%). Additionally, 71% of surveyed Māori rangatahi knew someone personally who had engaged in NSSI.

Mendiola (2011) found that cultural influences, such as matakite (seeing spirits or visions of the future or past), were reported by whānau as one reason their rangatahi had intentionally harmed themselves. In Curtis and Fitzgerald's (2017) study, participants who identified themselves as being either a New Zealander of European origin or Indigenous Māori were at greater risk of NSSI than those who did not. Reporting for Māori was not higher than for Europeans.

Peiris-John et al. (2021) also found that NSSI rates among students in New Zealand were consistently high across various ethnic groups. Specifically, within the last 12 months, 23% of East Asian students, 21% of South Asian students, 23% of Chinese students, and 21% of Indian students reported engaging in NSSI.

Sexuality and NSSI

Multiple studies have indicated that certain challenges associated with LGB sexual orientation may increase this populations risk for NSSI. Adolescents from sexual minority groups are at a significantly higher risk of NSSI than heterosexual people (Fraser et al., 2017, Whitlock et al., 2011). The minority stress model, along with its adaptation for transgender individuals, suggests that social stigma, discrimination, and prejudice contribute to a hostile environment, thereby increasing the risk of negative mental health outcomes among sexual and gender minority youth (Liu et al., 2019; Meyer, 2003).

Research suggests that bisexual people are particularly vulnerable to elevated rates of NSSI. Fraser et al. (2017) observed that people who identify as bisexual or not solely heterosexual or gay show increased rates of NSSI compared to those who are heterosexual or gay. This finding is further corroborated by Dunlop et al. (2020), who observed that bisexual youth are up to six times more likely to engage in NSSI than their heterosexual, gay, or lesbian peers. Tsypes et al. observed in their (2016) study that that among sexual minority young adults, bisexual and same sex attracted individuals may be at higher risk of NSSI than

their sexual minority counterparts. Curtis et al.'s (2017) New Zealand study also found a significantly increased risk of NSSI among females who identify as bisexual or lesbian. Moreover, Green et al. (2018) revealed that bisexual men are more prone to chronic NSSI, a finding supported by research from Gollust et al. (2008), King et al. (2008), and Skegg et al. (2003).

Research highlights specific risk factors related to NSSI for LGBT youth, including experiences of discrimination, victimisation, rejection, hiding sexual orientation, and internalised homophobia or transphobia (Meyer, 2003; Testa et al., 2016). Additionally, feelings of shame may contribute to the heightened risk of NSSI related to internalised homophobia (Taylor et al., 2018).

A study examining NSSI and LGB status in students discovered that even after accounting for depression, anxiety, belongingness, and self-esteem as mediators, the risk of NSSI remained elevated. Notably, a link was found between self-esteem and NSSI risk among LGB students (Gibbs & Goldbach, 2015). In summary, a significant body of research emphasises the need for focused attention on LGB young people to support and protect them from the elevated risk of NSSI highlighted in previous literature.

ODI and Demographic Characteristics

Due to the limited research on ODI-type behaviours, specific subsections addressing the intersections of ODI with factors such as LGBT identity, age, and ethnicity are not included in this thesis. This highlights a gap in the literature that warrants further exploration.

Sex, Gender and Risk of NSSI

Female gender has been identified as a risk factor for NSSI. In their meta-analysis, Bresin and Schoenberger (2015) found that females were more likely to engage in NSSI behaviours than their male peers, and this finding was more pronounced in clinical populations over the general population. In their recent New Zealand based study, Curtis and Fitzgerald (2017)

found that among the 767 university students surveyed, a total of 38.2% reported a history of NSSI. Notably, males were significantly less likely (29.4%) than females (41.7%) to report having engaged in NSSI. Additionally, there were differences in the age at which both genders first engaged in NSSI. In the Youth 19 New Zealand study sample, self-harm was significantly more prevalent among females than males of East Asian, South Asian, Indian, and Chinese backgrounds (Peiris-John et al., 2021). Research has also brought attention to sex differences in NSSI methods and characteristics. While Men are more likely to report burning and head banging, Women are more inclined towards cutting, biting, scratching, hair pulling, and interfering with wound healing (Bresin and Schoenberger, 2015). Secondly, men tend to target different body areas for NSSI than woman, including the face, chest, or genitals, whereas women are more inclined to injure their arms and legs (Sornberger et al., 2012). Thirdly, Whitlock et al. (2011) observed that young men were more likely than women to engage in NSSI after drinking alcohol and when with others. Additionally, Claes et al. (2006) found that female participants were more inclined to engage in NSSI to avoid feeling negative emotions and to self-punish compared to males, although both genders reported using NSSI to relieve tension. As Levant et al. (2011) suggest, men might find it easier than women to draw attention away from their NSSI wounds by attributing them to occurring during activities such as physical labour or contact sports. Whitlock et al.'s (2011) study of university populations showed that women were more likely to report self-control, emotion regulation, or feeling a strong urge as reasons for NSSI engagement. Men on the other hand, were more likely to report a 'rush' as a reason for NSSI.

ODI and the Influence of 'Masculine' Norms

While the literature notes that NSSI is predominantly observed in females, ODI-type behaviours are more commonly observed in males (Green & Jakupcak, 2015). This was reinforced by Andover et al.'s (2010) findings, that men are considerably more likely than

woman to report ODI behaviours, such as punching walls or objects, or hitting things. Green et al. (2018) note that some men may engage in ODI such as wall-hitting, in order to cope with feeling emotionally vulnerable.

ODI-type behaviour can serve multiple functions, especially for males, such as asserting social or interpersonal dominance, often by conforming to cultural stereotypes or expectations of masculinity (Pickard, 2015). These behaviours may provide a socially acceptable way for men to engage in NSSI, as aggression and violence are often framed as masculine traits (Pickard, 2015).

Men who have grown up in environments where violence is normalised to cope with emotional volatility or distress may have trouble resisting ODI in the face of painful emotions such as shame or fear. For these men, ODI behaviour can serve various individual and interpersonal psychological purposes, including as a tool for emotion regulation (Evans & Wallace, 2008).

Refraining from violent behaviour when faced with difficult emotions may require men to endure emotional distress, due to rage, anger, shame or fear using emotion regulation strategies or help-seeking actions. However, for some men, discussing difficult feelings or seeking help may be perceived as a loss of masculine power (Evans & Wallace, 2008).

Furthermore, men's engagement in ODI-type behaviours may go unnoticed or unrecognized if it aligns with behaviours thought of at times as normal for men (Slade, 2019). Green and Jakupcak (2015) argue that behaviours such as punching walls, smashing beer cans, or performing dangerous stunts are often perceived as natural expressions of masculinity and not as indicators of underlying emotional distress.

Social perceptions of ODI behaviour further complicate their identification as expressions of distress. Research has shown that such behaviours are often viewed as expressions of anger and violence, rather than cries for help (Green et al., 2018). Inckle (2014) suggests that

a broader societal reluctance to acknowledge vulnerability in men may reinforce the interpretation of these behaviours as acts of violence or aggression, rather than as signals of distress or emotional pain.

Curtis and Terry (2022) found that wall-punching behaviour, especially in men, is often seen as unacceptable and is frequently met with punitive responses rather than being viewed as a sign of emotional distress. This suggests that the scope of harmful behaviours linked to difficult emotions may be broader than currently acknowledged, and behaviours like wall punching could be misunderstood as violent or senseless rather than self-regulatory (Slade, 2019).

Pickard (2015) emphasizes also that the prevalence of aggressive behaviours in media, such as in action films and video games, further reinforces the social acceptability of violence as a masculine trait. This portrayal can contribute to the normalisation of ODI behaviours and complicate the distinction between these behaviours and NSSI. Seidler (1992) suggests that the fear of confronting challenging emotions, like guilt, might contribute to the tendency of males to engage in ODI, as many young men struggle to be vulnerable with their emotions.

Section Four: Individual Risk Factors for NSSI and ODI

Emotion Regulation as a Function of NSSI

A growing body of research across diverse populations and employing various methods suggests that a primary function of NSSI behaviour is to cope with painful emotions and alleviate the resulting distress (Curtis & Terry, 2022; Klonsky, 2007; Klonsky, 2010; Klonsky & Olino, 2008; Fitzgerald & Curtis, 2017; Bentley et al., 2014; Groschwitz et al., 2015; Laye & Schonert-Reichl, 2005; Zetterqvist et al., 2013). Emotion regulation through NSSI behaviour enables some individuals to process or tolerate challenging emotions in a manner that feels more manageable to them (Gross, 2012). That is, NSSI may serve as a tool for regulating emotions, whether to enhance positive affect or relieve negative affect from

painful or uncomfortable emotional states (Nock & Prinstein, 2004). Some people also report other functions of their NSSI behaviours, such as boredom, however emotional relief is the most reported function (Houben et al., 2017).

The affect regulation hypothesis consistently presents evidence for NSSI functioning as an emotion regulation mechanism used to cope with intense negative emotions. According to this hypothesis, individuals engage in NSSI to regulate or alleviate intense negative emotions, with emotions preceding NSSI typically being perceived as overly distressing or overwhelming, while feelings afterward may reflect reduced distress or temporary relief (Hasking et al., 2017; Kuehn et al., 2022). Houben et al. (2017) note that the emotional antecedents and consequences of NSSI behaviour are the best predictors of future NSSI. This is because the cycle of experiencing emotional distress and then finding temporary relief through NSSI can reinforce the behaviour. As individuals learn that NSSI reduces their emotional pain, they may be more likely to use it again in the future when faced with similar emotional experiences.

Recent studies using ecological momentary assessment (EMA) methods consistently report heightened emotional experiences, such as loneliness, overwhelm, and sadness, preceding NSSI (Nock & Prinstein, 2009). Kuehn et al. (2022) observed elevated negative affect before NSSI and a decrease afterward, a trend also noted by Armey et al. (2015).

NSSI is not solely engaged in to regulate negative emotions; it can also serve to express or make sense of confusing emotions, including positive affect (Hasking et al., 2017). NSSI has also been linked to self-punishment. Research suggests some individuals engage in NSSI to regulate self-critical feelings and as a form of self-punishment (Burke et al., 2020). In a study examining the relationship between self-critical thoughts, self-punishment, and NSSI urges, self-punishment thoughts were strongly related to the urge to engage in NSSI (Burke et al., 2020). Klonsky (2007) argues that a desire for self-punishment may be a primary

precursor to NSSI. Polk and Liss (2009) observed that 10% of adolescents surveyed who engaged in NSSI did so for this reason. However, Klonsky (2007) notes that most adolescents with a history of NSSI identify emotion regulation as their primary motive, with self-punishment playing a secondary role, suggesting significant overlap between these functions.

Emotional avoidance is another key function of NSSI. When individuals are unable to regulate certain emotions, they may resort to harmful behaviours like NSSI in an attempt to avoid them (Gratz & Roemer, 2004). Experiential avoidance, which involves shifting focus from internal emotional distress to physical sensations, reinforces NSSI behaviour by temporarily reducing negative affect through sensation seeking (Hasking et al., 2016). Negative family experiences, such as emotional invalidation or maltreatment, have also been shown to contribute to poor emotion regulation skills and increase reliance on maladaptive coping strategies like NSSI to reduce emotional distress (Nock, 2009).

One's ability to tolerate distress is also a significant predictor of NSSI behaviour. Distress tolerance refers to an individual's capacity to cope with and tolerate uncomfortable emotional situations (Leyro et al., 2010). Research consistently supports distress tolerance as a key factor contributing to NSSI, with some studies showing that individuals with a history of NSSI report lower distress tolerance than those without a similar history (Anestis et al., 2013; Leyro et al., 2010). Slabbert et al. (2022) observed that individuals who perceived their distress as shameful were more likely to report recent NSSI engagement. This aligns with the emotional cascade model (Selby et al., 2009), which posits that low distress tolerance can trigger a cycle of intense rumination and negative emotion, leading to NSSI. Longitudinal studies, like that of Lin et al. (2018), have observed that low distress tolerance ratings can predict future NSSI behaviour, emphasising its role in the maintenance of NSSI over time.

Although the link between negative affectivity and NSSI is well documented in the literature, the role of positive affectivity before NSSI is also important to consider. Jenkins

and Schmitz (2012) conducted an analysis of self-report adjectives used after events of NSSI and found that ‘happy’, ‘interested’ and ‘in a good mood’ were the most frequently used. More neutral words, such as ‘calm’ ‘content’ or ‘tranquil’ were not used more frequently. This suggests that after engaging in NSSI, individuals experienced increased positive emotion, rather than just a reduction in negative affect. In such cases, NSSI may function as a way to increase positive emotions through positive reinforcement, rather than solely to reduce uncomfortable emotions through negative reinforcement (Hasking et al., 2018; Nock & Prinstein, 2009). Jenkins and Schmitz (2012) discovered that positive affect, more so than negative affect, was a strong predictor of a higher number of NSSI acts over the course of a lifetime. Multiple studies have echoed the finding that some individuals do in fact experience a boost in positive affect following NSSI. (Claes et al., 2006; Jenkins & Schmitz, 2012; Nock & Prinstein, 2009). This indicates that a deficit in positive affect may be a predictive factor for NSSI.

Gratz (2006) found that individuals with a significant history of NSSI exhibited lower positive emotion levels compared to those without as significant of a NSSI history. Cohen et al. (2015) highlighted that positive affect, rather than negative affect, influenced the relationship between rumination and NSSI frequency in adolescents, with this relationship becoming most obvious at lower levels of positive affect. In an ecological momentary assessment study, Muehlenkamp et al. (2009) found a decline in positive affect preceding NSSI, followed by an increase in positive affect immediately afterwards. These findings suggest that positive affect plays an important role in the maintenance of NSSI behaviour, highlighting the need for interventions that address not only the regulation of negative emotions but also the increase of positive emotions through emotion regulation techniques.

Emotion Regulation as a Function of ODI

Several studies support the notion that negative affect and difficulties with emotion regulation may elevate the risk of ODI- type behaviour in some people (Donahue, 2014; Roberton et al., 2012; Larsen et al., 2012). Emotion dysregulation has been linked to ODI, as difficulty managing distress and inhibiting impulses can lead some individuals to engage in aggressive behaviour as a coping mechanism (Roberton et al., 2012).

People who struggle to accept difficult emotions may suppress them instead of processing them in a healthy way. This emotional non-acceptance can lead to avoidant or aggressive behaviours to cope (Larsen et al., 2012). Gómez-Leal et al. (2022) highlight the significant role of emotional suppression in ODI-type behaviours, noting that individuals who regularly suppress uncomfortable emotions may be more likely to engage in maladaptive coping mechanisms, such as aggression, compared to those with stronger emotion regulation skills. ODI has effective affect regulation purposes as it can help individuals express and release strong emotions, particularly anger (Pickard, 2015). The positive association between ODI-type behaviours and negative affect has been shown in a large body or research (Gómez-Leal et al., 2022; Megias-Robles et al., 2018; Shorey et al, 2015;).

A wealth of research supports the notion that individuals who struggle to effectively manage uncomfortable emotions may engage in ODI-type behaviour to alleviate, or cope with emotional distress (Donahue et al., 2014; Larsen et al., 2012; Roberton et al., 2012). Pickard (2015) notes that it can be extremely difficult for some to desist from ODI behaviour in the face of strong emotions, particularly when they lack the emotion regulation skills to do so. In this way, ODI behaviour serves an emotion regulation function as a way of managing, coping with and sometimes expressing painful emotion. For these individuals, resisting ODI behaviour may involve confronting unbearable emotions like anger, rage, fear, shame, and humiliation, which can feel intolerable when they do not have other tools to cope (Evans &

Wallace, 2008). Chine et al. (2017) furthered this finding, noting that seeking to alleviate emotions such as boredom, anger or despair can contribute to ODI-type behaviour. Many people who engage in ODI behaviour have not had the chance to learn healthier emotion regulation strategies, leading them to believe that enduring intense emotional pain or resorting to ODI is their only option (Pickard, 2015).

An inability to effectively use emotion regulation strategies when faced with distressing emotional experiences has been linked to ODI- type behaviour in a large range of populations, which include psychiatric patients, adolescent offenders, and undergraduates (Donahue et al., 2014; Garofalo et al., 2016; Roberton et al., 2012).

Additionally, emotion dysregulation played a moderating role in the connection between negative emotionality and violent, ODI-type behaviour in a sample of juvenile offenders (Miller et al., 2012). In this study, heightened emotion dysregulation strengthened the positive relationship between negative emotionality and ODI-type behaviour. A study by Garofalo et al. (2016) found that emotion dysregulation may help explain the link between negative emotionality and ODI, with low self-esteem, significantly linked with negative emotionality, playing an indirect role.

Roberton et al. (2012), referencing the General Aggression Model (GAM; Anderson & Bushman, 2002), explain that a person's internal emotional state strongly influences how they react to situations. For some people who struggle to regulate their emotions in a healthy way, the discomfort caused by unmanaged or suppressed emotions can increase the likelihood of ODI- type behaviour. This inclination increases when people believe that aggressive behaviour can relieve their current emotional distress (Roberton et al., 2012). In line with this, there is evidence that indicates that some individuals do engage in aggressive behaviour in the hope that it will alleviate painful emotions through positive reinforcement afterward. Bushman et al. (2001) found that people who believed that aggressive actions would make

them feel less angry were more likely to behave aggressively when provoked. When the possibility of feeling better was removed, aggressive responses decreased.

Moreover, studies have shown that for some people, engaging in ODI-type behaviour can be driven by a desire to pursue fun, or feelings of pleasure or excitement (Graham et al., 2013; Miller et al., 2014). Donahue and Khan (2023) found however, that aggressive or violent acts did not typically improve positive affect in a sample of perpetrators.

Contrary to this, ODI-type behaviours can induce positive feelings indirectly, by strengthening perceptions of self-worth through the sense of power they can provide (Quansah & Gagnon, 2023).

Positive emotional responses to ODI-type behaviour can also be indirectly triggered through certain activities such as watching violent contact sports or playing first-person shooter games, where some people find pleasure or emotional release from vicariously experiencing ODI (Atkinson & Rodger, 2016; Hartmann & Vorderer, 2010).

There is growing research demonstrating links between emotion dysregulation and impulsivity disinhibition, which in turn lead to ODI- type behaviours (Long et al., 2014; Preston & Anestis, 2020). According to Donahue and Khan (2023), individuals who perceived their emotions as intolerable were more likely to act impulsively and aggressively. This tendency reduced their ability to tolerate distress and increased their likelihood of using ODI-type behaviour as a method to cope. Evidently, emotion regulation is a significant function in both ODI and NSSI behaviours, as both are often driven by difficulties in coping with, managing, or expressing intense emotions. Given their shared underlying mechanisms, treatment approaches aimed at improving emotion regulation skills could be similarly effective for both behaviours.

Shame and Risk of NSSI

Shame has been identified in the literature as a primary antecedent emotion to instances of NSSI, making it an important emotion to consider, especially in the context of the current study, which seeks to understand emotional experiences preceding NSSI.

Berenbaum and Schoenleber's (2012) study found that individuals may engage in NSSI to manage feelings of shame. This was supported by a more recent study by Sheehy et al. (2019), who found that individuals who had a history of NSSI reported higher levels of shame proneness. Elevated levels of shame have been frequently reported in studies of people with histories of NSSI (Kealy, 2019; Milligan & Andrews, 2005; Wielgus et al., 2019). Literature has also indicated shame to have a stronger link to NSSI than guilt (Sheehy et al., 2019). Cameron et al. (2020) found that shame-proneness was a predictor of later NSSI behaviour in a population with borderline personality disorder (BPD) even when accounting for the severity of BPD symptoms. Shame can increase feelings of self-consciousness that can heighten BPD symptoms of chronic shame. Furthermore, emotional instability may increase the likelihood of individuals using NSSI to cope with shame (Cameron et al., 2020).

Shame and Risk of ODI

ODI behaviour has also been shown to proceed feelings of shame. Tice et al. (2007) note that not all instances of ODI are attempts to regulate negative emotions like rage, anger, or frustration. While these emotions are commonly linked to increased aggression, emotions such as shame can also cause emotional distress that may trigger ODI behaviours.

Howells et al. (2004) observed that shame can precede ODI-type behaviour due to insufficient emotion regulation skills. This link has also been demonstrated in studies by Elison et al. (2014), and Ribeiro da Silva et al. (2015).

Tangney et al. (2007) characterise ODI-type behaviours as an ineffective coping mechanism that arises from difficulties in managing feelings of shame. Following the

experience of a shameful event, individuals may initially internalise feelings of anger or shame. However, given time to reframe and reconsider the situation, they may shift blame onto others, leading to reactive ODI-type behaviour (Elison et al. 2006).

This idea was observed again by Scheff (2009), who found that when shame is turned into outward-directed anger, it may lead to aggression behaviour toward others in an attempt regulate feelings of shame. Tangney et al. (2007) echoed this finding, observing that both inward and outward aggression in response to shame can function as ways of coping with the emotional pain of humiliation. Furthermore, Elison and Harter's (2007) study found that feelings of humiliation were strongly associated with violent thoughts toward oneself and others, with embarrassment and shame being slightly less predictive of similar aggressive ideation.

The Relationship Between NSSI and Eating Disorders/Exercise

Recent research has highlighted a significant relationship between binge eating, restrictive eating and compensatory behaviours, and NSSI. These behaviours often co-occur and share commonalities, including the physical damage they can cause (Fox et al. 2019). Washburn et al. (2023) found that behaviours such as binging, purging, over-exercising, or restrictive eating may function for some as a form of NSSI. This study found that in a sample of patients in partial hospitalisation or intensive outpatient treatment for NSSI, nearly one third of these had engaged in disordered eating behaviours intending to cause pain or damage to their bodies. Laye-Gindhu and Shonert-Reichls (2005) study found that there was a slight percentage (7%) of adolescents who reported engaging in disordered eating behaviours to injure their body. Fox et al. (2019) found more recently in their study of adults that engaged in disordered eating behaviours, that many did so with at least some intent to cause immediate, physical harm to themselves. Findings from Fox et al.'s (2019) study suggest that while disordered eating behaviours may have other, distinct motivations beyond intent to

cause short term physical harm, it is important to consider that there are people engaging in disordered eating behaviours as a form of NSSI to harm themselves in ways aligning with current diagnostic criteria for NSSI (APA, 2022). Furthering this, results from Laye- Gindhu and Shonert-Reichls (2005) study also found that restrictive eating was more closely linked to NSSI than binge eating. In this sample, restrictive eating was also associated with a stronger desire to inflict long-term physical harm, as well as a greater awareness and expectation for negative consequences resulting from these behaviours.

Additionally, over exercising, while not commonly recognised as a form of NSSI, can function as such, particularly for people already engaging in disordered eating (Fabiano, 2024). These studies suggest that it may be meaningful to consider the possibility of disordered eating and exercise behaviours functioning as a method of NSSI for some people.

Section Five: Environmental Risk Factors

Social Risk Factors and NSSI

The social environment of young people includes several potential risk factors that should be considered in the context of NSSI. Social modelling theory may highlight specific social risk factors influencing young people engaging in NSSI. Social modelling theory proposes that individuals learn behaviours within their social environments, through processes of observation and imitation (Bandura, 1969). Consistent with this theory, Wolff et al. (2014) highlight that peer support may, under specific circumstances, serve to reinforce harmful NSSI behaviour among adolescents as peers may model these behaviours. In a study by Deliberto and Nock (2008), 38.3% of adolescents with a history of NSSI reported learning the behaviour by observing their peers. A large number of young people engaging in NSSI in Heath et al.'s (2004) study reported learning about this behaviour through peers, but also the media.

Jarvi et al. (2013) furthered the idea of NSSI being a behaviour affected by social influence, describing it as a ‘social contagion’, due to the way NSSI behaviours are normalised, and rapidly communicated in media content. Exposure to movie scenes depicting NSSI has been linked to participant engagement in NSSI, however this relationship is moderated by strong levels of self-efficacy (Hasking & Rose, 2016). Jarvi et al. (2013) identified four factors that may lend support to the theory of NSSI as a social contagion, where it spreads through social networks. Firstly, they found that individuals who engage in NSSI tend to have friends who self-injure, indicating that social influence could reinforce this behaviour. Secondly, a pattern was found where an individual's NSSI behaviour may occur after observing similar NSSI behaviours in their friends, suggesting that social connections may play a role in sustaining NSSI. Additionally, friends who engage in NSSI tend to use similar methods, suggesting there may be a relationship between the adoption of NSSI behaviour, and social learning or imitation (Jarvi et al., 2013). Prinstein et al.’s (2010) study found evidence that the more peers who engage in NSSI, the higher the likelihood that an individual engages in NSSI themselves. However, self-efficacy in resisting NSSI behaviours can influence the connection between the number of friends who engage in NSSI, and prevalence of NSSI among university students (Hasking & Rose, 2016). Steinberg and Monahan (2007) suggest that young people may struggle to negotiate the impact of peer pressure until they reach late adolescence. This means they may be more susceptible to the harmful effects of peer pressure or influence in their youth. As a result, adolescents who have peers who engage in NSSI may be more likely to also partake in these behaviours themselves.

Radovic & Hasking (2013) foud that exposure to movies featuring scenes of NSSI was positively related to engagement in NSSI, with an even stronger relationship observed when individuals felt they identified with the character who was engaging in NSSI. However, they emphasised the complexity of this finding, as some individuals with a history of NSSI noted

that film portrayals of NSSI led them to seek help to stop their own NSSI behaviour. Others noted that these films helped them to feel less isolated in their pain and provided them with the courage to stop NSSI. Other participants expressed disapproval on the way the films appeared to 'normalise' NSSI behaviour, leading to the triggering of further episodes of NSSI for these participants. Therefore, exposure to film portrayals of NSSI have the potential to both increase and decrease the risk of individuals engaging in NSSI.

It is also important to consider that for some, NSSI functions as a form of social communication. In their study of young people who had a history of NSSI, Scoliers et al. (2009) found that most participants identified a "cry for help" as at least one reason for engaging in NSSI. These findings are consistent with Nocks (2009) study, which indicated that feeling unheard may be a significant risk factor for NSSI. This aligns with the social signalling hypothesis, which suggests that for some people, NSSI serves as a means of social communication, often used when healthy forms of communication have not received a constructive response due to an invalidating social environment (Nock, 2008; Wedig & Nock, 2007). Hagen et al. (2008) note that because NSSI is more of a confrontational and violent act compared to verbal communication, it is more likely to elicit responses from others. It is important then, to consider the context of social relationships and the support networks available to young people who engage in NSSI, as perceived social support has been identified as a significant predictor of subsequent NSSI behaviour (Nock, 2008). This could be particularly relevant for LGBTQ+ adolescents, since those perceived by others as 'different' during early adolescence are more vulnerable to bullying, and challenges related to social support and acceptance (Williams et al., 2005). Muehlenkamp et al. (2015) highlight that while LGBTQ+ individuals may share risk factors for NSSI with heterosexual people, such as emotion dysregulation, unique social stressors increase their risk regardless of their existing coping strategies. This was also observed in Jackman et al.'s (2018) study of people

on the transmasculine spectrum. This study found that participants viewed NSSI as a coping mechanism for regulating emotions. Importantly, participants stressed that their NSSI indicated a need for higher social support elsewhere. While considering social risk factors in NSSI, it is important to consider that social motives may not be as significant a predictor of risk as other processes such as emotion regulation, which is a type of automatic reinforcement. Nock and Prinstein (2004) note that seeking automatic reinforcement was the primary factor that determined NSSI in a sample of people with a history of this behaviour. This finding reinforces the idea that maladaptive coping mechanisms, and emotion dysregulation may be better predictors of NSSI behaviour than social environments. For many, NSSI feels necessary to cope with difficulties related to emotion dysregulation (Nock & Prinstein, 2004). Regardless, the social environment surrounding a young person engaging in NSSI is an important area for further study. This is because, as the literature suggests, social environments can either worsen existing risk factors or, on the other hand, offer protective factors such as social support or a sense of belonging that may help prevent NSSI, even when other risk factors are present (Zhou et al. 2024).

Social Risk Factors and ODI

Young people who engage in ODI-type behaviour are often influenced by a range of social factors that can heighten their risk. These factors, which include peer and family relationships, and broader social pressures, may contribute to the development and maintenance of these behaviours.

Various studies have found a connection between social exclusion and increased aggression in young people, which in turn leads to ODI-type behaviours (DeWall et al., 2010; Kirkpatrick et al., 2002; Reijntjes et al., 2010). Williams (2007) noted that for some people, ODI behaviour can help fulfil needs they feel have not been met, due to factors such as social exclusion or insufficient peer support. In this context, the needs identified were the need for

personal control and to feel valued and worthy. Through engaging in ODI behaviour, individuals might satisfy their needs for control or social attention (Williams, 2007). The dual-failure hypothesis contradictorily suggests that ODI-type behaviour can intensify young people's social isolation, contributing to increased peer rejection and decreased support. This results in a self-reinforcing cycle of ODI and social isolation (Wolff et al., 2014). McDonald and Leary (2005) found that aggressive behaviour was frequently used by people who felt completely shamed, rejected and stigmatised, these people felt that social connection was unattainable. This is reiterated by previous findings that ODI behaviours can be a response not only to physical pain but also to the emotional pain that can proceed social exclusion (Elison & Harter, 2007).

Interestingly, aggression was reduced in a sample following a small expression of acceptance from a stranger (Dewall et al., 2010). This highlights the potential significance of social acceptance in reducing ODI. Gómez-Leal et al. (2022) found in their regression analysis that an increased tendency for fantasising was linked to a heightened risk of ODI-type behaviour. This study found that individuals who strongly identify with fictional scenarios may experience more social dysfunction, potentially contributing to the development of aggressive tendencies. Varker and Devilly (2007) support the positive relationship between fantasy and aggression, finding that a higher tendency to immerse oneself in the feelings and actions of fictional characters can be associated with social dysfunction, including ODI-type behaviours.

Trauma as a Risk Factor for NSSI

Multiple studies indicate that trauma-related factors serve as a significant risk factor for NSSI (Muehlenkamp et al., 2019). Harned et al. (2010) conducted a study which compared a sample of female outpatients with comorbid PTSD and BPD to a sample with BPD only. All participants reported recent NSSI behaviours. Those with BPD and PTSD reported

significantly more trauma related triggers for NSSI, including flashbacks, nightmares or thoughts of sexual abuse. Similarly, Rusch et al. (2007) found that NSSI behaviours were more prevalent in participants with comorbid PTSD and BPD. This suggests that past trauma plays a significant role in NSSI engagement.

NSSI can function for some as an emotion regulation tool to manage overwhelming emotions linked to reliving traumatic memories. The subsequent decrease of painful thoughts proceeding NSSI can contribute to a reinforcing cycle, where individuals continue to use NSSI as a coping mechanism in response to trauma symptoms (Smith et al., 2013). This perspective aligns with the experiential avoidance model (Hayes et al., 1996), which may be especially relevant people who struggle to confront distressing emotional states. According to this model, NSSI functions as a coping strategy to regulate and reduce uncomfortable emotions (Muehlenkamp et al., 2010). Additionally, individuals with a history of NSSI tend to demonstrate reduced acceptance of painful emotions, and suppress negative thoughts more than those without a similar history of NSSI (Victor & Klonsky, 2014).

Smith et al. (2013) found that NSSI can serve multiple maladaptive functions for individuals seeking to cope with trauma symptoms, such as providing an escape from traumatic memories or thoughts, or by creating physical feeling during times of numbness or dissociation. Gratz et al. (2002) found that dissociation was a strong predictor of NSSI for both men and women. Tolmunen et al. (2008) echoed this finding, observing a relationship between elevated levels of dissociation and an increased risk of self-cutting. A study by Shenk et al. (2010) found that trauma symptoms were the primary factor linking childhood maltreatment to NSSI, with these symptoms being a stronger predictor of NSSI behaviour than depression symptoms.

Adverse childhood events such as parental abuse or neglect have been identified as strong predictors of later NSSI behaviour(Yates et al., 2008). A strong association between critical

or uncaring parenting approaches and NSSI has been observed in adolescent samples (Kaess et al., 2013). Other studies have shown that other forms of childhood maltreatment, such as exposure to domestic abuse was significantly associated with NSSI (Kaess et al., 2013).

Trauma as a Risk Factor for ODI

As with NSSI, there is evidence that past traumatic experiences function as a risk factor for later engagement in ODI behaviour. Several factors, including biological mechanisms, link early traumatic experiences like childhood maltreatment to aggressive behaviour. These can involve changes in brain function and difficulties with emotion regulation (Bird & Manuch, 2014). It has also been observed that negative childhood experiences can interact with genetic factors, increasing the likelihood of ODI-type behaviour in response to certain stressors such as painful emotions (Bird & Manuch; Ferguson et al., 2008). Negative childhood experiences are linked to deficits in emotion regulation, which can increase reactivity and lead to ODI-type behaviour (Pechtel & Pizzagalli, 2011). These impairments may increase the likelihood of ODI-type behaviour being used when people are confronted with difficult emotional experiences or environments (Fox et al., 2015). Mendes et al. (2009) conducted a review which identified various traumatic childhood events as risk factors for the later development of a tendency toward ODI-type behaviour. These factors were identified as dysfunctional family dynamics, poverty, and difficulties at school. Additionally, men raised in communities that had limited support for the development of non-violent anger management techniques face multiple risk factors, including psychiatric disorders, low distress and anger tolerance, substance abuse, impulsivity, decreased self-esteem, and social isolation (Pickard, 2015) Duke et al. (2010) conducted a study involving 135,549 students which revealed a significant link between early traumatic experiences and ODI-type behaviour during adolescence. The study defined these experiences as physical abuse, sexual abuse, and household dysfunction. The risk of violent behaviour increased from 35% to

144% for each type of traumatic event reported by participants. Furthermore, several other studies support the influence of negative childhood experiences within families, such as abuse, early neglect, and authoritarian discipline measures on aggression (Lansford et al., 2007; Milaniak & Widom, 2015; Topitzes et al., 2012).

Section Five: Protective Factors

Protective Factors and NSSI

Given NSSI's association with various harmful outcomes, including an increased risk of later suicidal behaviour and engagement in risk-taking behaviours, it is essential to identify and incorporate protective factors into interventions targeting these behaviours (Grandclerc et al., 2016; Robinson et al., 2021). There has been a large body of research investigating protective factors against NSSI for LGBT youth in particular, given their elevated risk for NSSI (Jackman et al., 2018). A 2019 study by Taliafero et al. (2019) found that feeling safe at school was an important protective factor mitigating risk of NSSI among gay and lesbian youth, consistent with findings from Ceatha et al. (2021). Feeling safe at school emerges as a logical protective factor against NSSI, given previous research indicating that 43.3% of LGBT students felt unsafe at school because of their gender expression (Kosciw et al., 2016). Taliafero et al. (2019) suggest that a sense of belonging, purpose and safety is essential to protect young transgender people against vulnerabilities that may increase their risk of NSSI. Additionally, school staff should prioritise transgender safety, which would likely involve efforts to ensure an inclusive, accepting, and safe school environment (Taliafero et al., 2019). This suggestion was repeated by Meyer (2003).

Xavier et al. (2016) highlight that self-compassion is a valuable protective factor against NSSI, as it helps to reduce high levels of self-criticism, shame, and emotion dysregulation which may be present in those engaging in NSSI behaviours. Incorporating compassion in therapeutic interventions targeted at reducing NSSI can further protect against negative

outcomes. Fisher et al. (2017) found that that friends who provide physical and emotional comfort or distraction to young people engaging in NSSI can serve as important protective factors. Nemati et al. (2020) supported this finding, observing that peer psychological support is a key protective factor against NSSI, particularly when participants perceive and value this support. Fisher et al. (2017) note that when young people disclose NSSI to trusted adults, It can help them connect to professional support which can act as an important protective factor. Despite this, all participants in this study showed some reluctance to involve an adult, likely because doing so may be perceived as them failing to be a supportive friend. Hasking et al. (2015) found that disclosing NSSI to peers can encourage help-seeking and improve coping skills and health outcomes. Aggarwal et al. (2017) found that having three or more friends was associated with a decreased risk of repeated NSSI events, and having six or more friends reduced the likelihood of having even a single event of NSSI. McEvoy et al.'s (2023) review concluded that having a strong and reliable support network of family and friends is a significant protective factor against future NSSI engagement. Interventions intended to reduce NSSI in young people should involve a diverse network of different professions, such as psychologists, nurses and doctors, and social workers to achieve the best outcomes (McEvoy et al., 2023). Furthermore, research has shown that school-based interventions aimed at reducing NSSI in adolescent populations has been effective in the past (Morken et al., 2020). Kress et al. (2015) found that life satisfaction, and a feeling of purpose were significant protective factors against NSSI in a sample of university students. This finding has valuable therapeutic implications, with Kress et al. (2015) suggesting that therapeutic interventions be designed to help young people develop goals and strategies to help enhance their life satisfaction and personal sense of purpose. Additionally, engagement in college clubs or activities that nurture a sense of belonging and encourage goal setting could also be beneficial protective factors.

Protective Factors and ODI

The literature on protective factors against ODI-type behaviours is limited. However, a recent study by Gómez-Leal et al. (2022) identified several protective factors primarily related to emotion regulation. They found that higher levels of emotional intelligence may help people to regulate their emotions, and avoid acting impulsively on these emotions. This study also highlighted that a type of empathy related to trying to understand other peoples perspectives serves as a protective factor against ODI-type behaviours. Seeking to see situations from other people's point of view reduces the likelihood of ODI behaviours by increasing awareness of their negative consequences on others. Relatedly, people who experience distress when asked to imagine the harm ODI behaviour has on others are less likely to engage in it (Gómez-Leal et al., 2022). Additionally, emotion regulation skills, including the ability to reframe uncomfortable emotions or difficult situations positively, can help prevent aggressive responses (Donahue et al., 2014). This has important implications for the treatment and reduction of ODI behaviours, as previous studies have observed that intervention programs aimed at improving emotional intelligence and impulsivity management, have been effective in reducing ODI-type behaviours (Castillo et al., 2013; Denson et al., 2011). Stuewig et al. (2010) suggest that while shame is positively related to ODI-type behaviour, feelings of guilt may act as a protective factor. Guilt may indirectly reduce ODI behaviour by increasing feelings of empathy, which may reduce the likelihood of one externalising blame when experiencing distress. Because guilt encourages empathy and self-reflection, interventions that help individuals develop these skills may be particularly effective in reducing ODI behaviour. Stuewig et al. (2010) also highlight that promoting healthy self-reflection can be a valuable component of treatment.

Literature Review Summary

This literature review has explored current understandings of NSSI and ODI behaviours, their shared risk factors, and the functions that underlie both of these behaviours. Both NSSI and ODI have been associated with negative childhood experiences, impulsivity and impairments in psychological functioning (Jordan & Samuelson, 2016; Terzi et al., 2017). Despite being commonly viewed as distinct behaviours, recent research has observed that these behaviours may frequently co-occur, particularly in high-risk populations such as adolescents (Shafti et al., 2021; Slade, 2019). Additionally, emotion regulation appears to be a primary function for both NSSI and ODI (Shafti et al., 2021; Velotti et al., 2020). However, tools that assess NSSI, such as the DSHI (Gratz & Roemer, 2004), rarely explore the emotion regulation functions of ODI, and ODI continues to be ignored as a signal of distress (Larsen, 2012). Given these findings, there is a clear need for research that explores the intersection between NSSI and ODI in relation to shared risk and protective factors, as well as their underlying functions. Investigating these commonalities and differences could provide a more comprehensive understanding of their shared risk factors and emotional functions and ultimately inform more effective clinical interventions to improve wellbeing outcomes for young people in New Zealand engaging in these behaviours.

Research Question

This study aims to explore the extent to which NSSI and ODI behaviours serve as methods of coping with difficult emotions, focusing on identifying the emotional triggers and functions of these behaviours, as well as their shared risk and protective factors. Using EMA methods, this research seeks to gather real-time data on the emotional states that precede injurious actions in a young New Zealand sample. By understanding how these behaviours relate to the experience of difficult emotions, the findings could significantly enhance existing intervention strategies for young people in New Zealand. This study is necessitated

by its potential to provide new insights into the functions of NSSI and ODI in relation to emotional distress, an area that remains underexplored within New Zealand's adolescent population, and could lead to improved health outcomes for this group.

Chapter Three:

Method

Positionality Statement

As a researcher with a psychology background and as a Pākehā woman, I recognise that my personal experiences have shaped my approach to studying NSSI and ODI. My academic experience has provided a framework for understanding these issues, informed by psychological theories on emotion regulation, and the influence of context on behaviour.

My work in mental health settings and my own identity and relative perspectives shape how I understand emotional expression and coping strategies. They inspire me to advocate for inclusivity and to focus on diverse experiences in my research.

In acknowledging the privilege that comes with my Pākehā identity, I took deliberate steps to address potential biases in my research. I integrated the principle of kaitiakitanga, which emphasises upholding Māori cultural rights, ways of knowing, and language, as a fundamental part of my approach. This meant that I was committed to ensuring matauranga Māori was genuinely respected and included throughout my research and whenever necessary, I consulted with this project's cultural advisors.

My motivation for this research stems from a strong commitment to improving mental health outcomes for rangatahi and developing more effective intervention and prevention strategies to support their wellbeing.

Rationale for Using EMA in This Study

The use of Ecological Momentary Assessment (EMA) in this study is grounded in its ability to capture real-time data on participants' emotional states and behaviours within multiple environments in their daily lives (Schatten et al. 2020). EMA is particularly suitable for this research due to several benefits. EMA limits recall bias by collecting data on the

immediate experiences of participants, reducing the inaccuracies often present in retrospective self-reports (Robison & Lore, 2007) as cited in Shiffman (2007). As Gorin and Stone (2001) noted, memory is reconstructive, which means it can introduce errors into data even when participants are intending to provide accurate information. EMA's focus on capturing participants' real-time experiences minimises the risk of these biases.

Victor and Klonksy (2014) emphasise the importance of minimising recall bias in studies involving NSSI, as people engaging in this behaviour may be more likely to have trouble expressing or identifying their emotions.

EMA also enhances the ecological validity of studies by gathering data in real-world settings, ensuring the data reflects the actual context and environment in which emotions and behaviours occur, allowing for a more nuanced understanding of their functions. This is crucial for understanding harmful behaviours and emotional experiences, which fluctuate often, and are context-dependent (Scott-Parker, 2017; Shiffman 2007).

EMA offers the advantage of collecting data with high temporal accuracy, allowing the researcher to gain an in depth understanding of the dynamic relationship between emotion and behaviour (Shiffman, 2007).

Psychological constructs, such as emotions, thoughts, and behaviour, are often significantly influenced by context, and thus can only be fully understood when examined within these contexts (Davis et al., 2015). EMA methods are ideal for assessing dynamic constructs such as emotions or behaviours that change over time and can sometimes do so quite rapidly (Ebner-Priemer et al., 2009). For this reason, EMA is especially effective for measuring concepts like emotion regulation, as it captures assessments of experiences in the contexts where they occur (Gee et al. 2020). The use of EMA in this study is more appropriate than traditional methods such as interviews or retrospective questionnaires because these approaches often require participants to think back over their past experiences,

or the emotions that were involved with these experiences. This can introduce recall bias, and answers could also be influenced by assessment settings that do not feel natural to the participant (Shiffman, 2007).

Several recent EMA studies have examined the functions of NSSI behaviour, which informed the decision to utilise EMA in this study (Coppersmith et al., 2023; Rodriguez-Blanco et al., 2018; Briones-Buixassa et al., 2021; Santangelo et al., 2017; Armey et al., 2015; Selby et al., 2022;). However, research on ODI using ecological momentary assessment remains limited (Neukel et al., 2022; Cheng et al., 2024; Byrd et al., 2021), highlighting the novel contribution of this study.

Participants

Recruitment Criteria

Recruitment was carried out through a variety of channels, including a recruitment poster (see Appendix A) and various social media advertisements. To ensure a diverse sample of young people, participants aged between 16 and 30 years were included. In an attempt to recruit participants who could provide enough data on both ODI and NSSI behaviours, many of the participants were recruited from an earlier portion of the SHInE project, a large-scale online survey, wherein these participants indicated current engagement in both behaviours. Participants were screened based on their current engagement in harmful behaviours, with the aim of selecting those likely to have enough instances to provide meaningful data through the repeated EMA prompts sent to their phones.

Participant Demographics

Participant demographics of the current study are included below in Table 1. A total of 11 participants began and completed the 14-day EMA survey period. The majority identified as female (n=5, 45.5%), followed by non-binary (n=4, 36.4%) and male (n=2, 18.2%). In terms of ethnicity, most participants identified as of European (Pākehā) descent (n=6, 54.5%),

while four identified as Māori or Māori and European (36.4%). One participant identified as Middle Eastern/Latin American/African (9.1%), and four participants reported multiple ethnic affiliations (36.4%). Most of the participants were aged between 21 and 25 years old (n=5) 4 of the participants were aged between 26 and 30, 2 participants were aged between 18 and 20.

Most of the participants were in part-time paid employment (n=5, 45.5%), with four of these also studying full-time. Two participants reported full-time paid employment (18.2%). One participant indicated they were employed but on a career break for mental health reasons (9.1%), while another reported doing unpaid work (e.g., childcare) or being unemployed but seeking work (9.1%). One participant self-identified as "very disabled".

In terms of annual salary, most participants reported earnings under $20,000 (n=5, 45.5%). Four participants earned between $60,000 and $69,000 (36.4%), while one earned between $40,000 and $49,000, and another between $50,000 and $59,000.

Table 1

Demographic Characteristics of Participant Sample

Demographics	Number	Percentage
Gender		
Female	5	45.5
Male	2	18.2
Non-Binary	4	36.4
Ethnicity		
NZ-Māori	3	27.3
NZ- European	6	54.5
Māori	1	9.1
Other	1	9.1
Age		
18-20	2	18.2
21-25	5	45.5
26-30	4	36.4
Employment status		
in paid employment part time	1	9.1
in paid employment full time	1	9.1
In paid employment part time, studying full time	4	36.4
Studying full time	1	9.1
Doing unpaid work ie childcare, unemployed but wanting to work	1	9.1
Employed but on career break for mental health	1	9.1
Other		
Income		
Under 20,000	5	45.5
40,000 to 49,000	1	9.1
50,000 to 59,000	1	9.1
60,000 to 69,000	4	36.4

Note: If participants marked themselves as having more than one ethnic identity, they were included in both or all categories they included.

Informed Consent, Confidentiality, and Data Security

Participants who indicated interest in the project through recruitment channels were sent the initial recruitment email (see Appendix B), inviting them to take part in the Zoom screening call. The zoom call was undertaken to ensure participants were aware of the sensitive nature of the study's questions. Participants who indicated further interest via email were emailed a copy of the project consent form and information sheet in advance (see Appendix C) If these documents were not available to the participants' during the Zoom screening call, they were shared on-screen for review. The information sheet was read to the participant. Participants were required to complete and return the consent form before receiving instructions for downloading the m-path application via email. Completed consent forms were then filed.

A list of services was provided at the end of each survey for participants if they felt the survey had raised any issues for them (see Appendix D).

The project email address was re-shared at the end of each prompt for participants to utilise if they had any questions or concerns. During the Zoom screening call, it was also emphasized that participants could email the researcher directly if any issues arose during the survey period, and some participants did reach out for assistance.

When participants completed the questionnaire for the first time, it included the key elements of the consent form, allowing their consent to be documented directly in the database. Participants were informed of the project's confidentiality guidelines, assured that their information would not be shared with anyone, and notified that they could withdraw their information from use up to four weeks after the initial prompts began without consequence. They could do this by emailing the researcher with this request and this would be honoured with no consequence. Ethical considerations were of the utmost significance in

the current study given the very sensitive nature of the information shared by participants. All procedures in this study adhered to strict ethical guidelines.

Apparatus and Materials

The EMA surveys were administered through the m-Path mobile application. Participants received five prompts at randomly assigned intervals between the hours of 10am to 10pm everyday over a 14-day period, allowing for data collection across various environments and emotional states in the participants daily lives.

Enrolment in M-path

Instructions for downloading the m-Path app were provided verbally during the participants' initial screening zoom call. Once the participants consent forms had been received through email after the zoom call, an email with an instruction document for downloading m-path was sent to the participants (see Appendix D). Participants were offered an event-based sampling option during the initial screening. This allowed them to report harmful behaviours occurring outside of scheduled prompts by using a designated button on the app’s home screen. Event-based sampling enabled the collection of real-time data immediately following an episode of non-suicidal self-injury (NSSI) or outwardly directed injury (ODI). This provided valuable insight into the emotions preceding these behaviours, enhancing the understanding of their function in relation to specific emotional states.

Participants downloaded the free m-Path app on their smartphone from either the Google Play Store for those with an Android-brand phone, or the App Store for those using Apple phones. In the screening interview, participants were informed that when they launched the app for the first time, it was important that they allow it permission to send notifications to ensure they received the EMA prompts. On Android phones, this permission was granted by default.

After downloading the m-Path app, participants were prompted to enter their designated alias which was provided in the email containing the app download instructions. Following their review and agreement to the general terms and conditions, a unique recovery code was provided on screen to enable account and data recovery in case any damage occurred to participants phones. Participants then entered the SHInE project code which was provided in the email proceeding the initial screening call and were automatically added to the researchers' study workspace.

The researcher then scheduled the prompts from one device. Initially, the demographic survey was scheduled, and if participants had indicated that they wanted the option to report harmful behaviour outside of scheduled prompt times, the researcher enabled the event-based sampling button on the apps home screen. The EMA survey prompts were scheduled at random intervals five times a day for 14 days between the hours of 10:00 AM and 10:00 PM. Participants received notifications on their mobile phones at the time these prompts were scheduled and encouraged to fill out the surveys. If participants did not complete the surveys at this time, a reminder prompt was sent 30 minutes after the original prompt. Completion of the demographic survey was mandatory, and if it was not filled out upon its initial scheduled time, reminder prompts were sent at 30, 60 and 90-minute intervals.

Upon completing the questionnaire for the first time, participants answered five demographic questions. Subsequent prompts consisted of six questions: two assessing emotions, drawn from the Multidimensional Emotion Questionnaire (Klonsky et al., 2019) alongside the work of Koenig et al. (2021). There were also two questions for the purpose of examining injurious behaviours, these were adapted from the Inventory of Statements About Self-Injury (ISAS; Klonsky & Olino, 2008); and a final question seeking to link behaviours to emotional states (see Appendix D).

Why M-Path Was Chosen to Facilitate the Study

M-Path is a mobile app that was developed to take advantage of the growing reliance on mobile technology globally, making it widely accessible, particularly to the demographic sample of this study (Turner, 2018). M-path was designed to provide a free and user-friendly app framework for ecological momentary assessment studies (Mestdagh et al., n.d.).

M-path was a valuable application for use in this study as it facilitated EMA surveys successfully. The app offered the researcher an understanding of the timing of harmful behaviours, their emotional antecedents, and the functions of any harmful behaviours in relation to prior emotional experiences (Trull & Ebner-Priemer, 2013). Inviting participants to download the EMA app for free on their cell phones allowed for the researcher to schedule multiple prompts one device. The app includes digital timestamps, which help to identify exactly when participants initiate and complete each EMA survey (Trull & Ebner-Priemer, 2013). This feature is beneficial as it completely eliminates the possibility of back-filled EMA responses, which has been identified in the literature as a potential limitation with EMA pen-and-paper methods (Stone et al., 2007). For EMA methods to be successful, they rely on participants to accurately report their experiences in real time in response to the scheduled prompts (Shiffman, 2007). Additionally, an online connection guarantees that all EMA responses are recorded in a database, and regularly backed up to prevent loss of dtaa due to phone damage or any other malfunction (Dejonckheere & Erbas, 2021).

Survey Design and Questionnaire

Data Analysis

Data were initially gathered using m-Path, following data collection, the data were securely transferred to a device for analysis with Excel and IBM SPSS software. To assess participant demographics and other relevant factors, descriptive statistics were applied. Additionally, Binomial Logistic Regression Analyses were performed using IBM SPSS

Statistics for Windows, Version 29.0. This software package is widely used for statistical data analysis.

Emotion Options Based on the MEQ

The emotion scale used in the survey was based on the Multidimensional Emotional Questionnaire (MEQ) (Klonsky et al., 2019).

Participants were asked to rate the extent to which they experienced these emotions over the past week. Emotions were measured by one multiple choice and text option question 'Since the last prompt, have you mostly felt…" Options for this question included happy; excited; enthusiastic; inspired; sad; angry; afraid; ashamed; lonely; neutral. Only one option could be chosen.

Harmful Behaviour- Types

Types of harmful behaviour were measured by a multiple-choice question 'Since the last prompt have you actually engaged in any of the following behaviours to deliberately harm or injure yourself, but without suicide intent.' NSSI related behaviours included 'cutting', 'burning', 'severe scratching', 'swallowed a harmful substance', 'Bit yourself', 'Hit yourself (including with an object).' ODI related behaviours were 'Punched or kicked an object', 'Started a fight', 'Verbally abused or annoyed someone with the expectation that they might physically harm or hurt you', and 'Physically assaulted someone'. Other options included 'other'. The same answers were given as options under the question 'Since the last prompt, have you felt an urge to engage in any of the following behaviours to deliberately harm or injure yourself, but without suicide intent, but didn't actually do so.'

Non-Suicidal Self-Injury

Non-suicidal self-injury was recorded as present (1) or absent (0) for each participant. If a participant indicated that they had engaged in any of the listed methods or had included an NSSI behaviour in the 'other' box, these were coded as 'present'. For participants who had

not engaged in any of the behaviours listed and reported no other methods, were coded as ‘absent’.

Outward-Directed Injury

Outward directed injury was recorded as present (1) or absent (0) for each participant. If a participant indicated that they had engaged in any of the listed methods or had included in the ‘other’ category a method of self-injury which fit an ODI definition, these were coded as ‘present’. For participants who had not engaged in any of the behaviours listed and reported no other methods, were coded as ‘absent’.

Motivations and Functions of NSSI and ODI

The functions and motivations for engagement in NSSI and or ODI were measure by a multi choice and text-based option The categories of these functions and possible responses are shown below in Table 2 . These functions were categorised into three groups emotion regulation (escape), included to ‘reduce sadness/ depression,’ ‘reduce suicidal feelings,’ ‘reduce frustration,’ reduce anxiety/ worry, reduce anger.” The emotion regulation (induce) function includes ‘Have fun/ for enjoyment (rather than to reduce unpleasant emotions).’ For the current study, a third category of ‘other’ was added to account for the text-based response option.

Table 2

Categories of Functions for NSSI and ODI and Possible Responses Under Each Category

Emotion regulation -Escape	Emotion regulation - Induce	Other
Reduce Sadness/Depression	Have fun/ for enjoymenr (rather than to reduce unpleasant emotions)	Other- Text Option
Reduce Suicidal Feelings		
Reduce Frustration		
Reduce Anxiety/ Worry		
Reduce Anger		

Debrief Interviews

Two days before the end of their 14-day survey period, participants were invited via a check-in email to participate in a Zoom debriefing interview to discuss their experiences completing the survey (see Appendix F). These interviews were conducted with those who agreed, providing qualitative data to triangulate with the results of the EMA. At the start of each interview, participants gave consent for their responses to be recorded using voice recording software for later transcription. For participants who declined the Zoom debriefing, an email debrief was provided to thank them for their time and participation in the study. Of the total eleven participants, seven agreed to take part in the Zoom debrief interviews.

Compensation

Participants were compensated at a rate of one dollar per completed survey. Compensation could exceed the 70-prompt limit if participants reported harmful behaviour using the event contingency function outside of the scheduled prompts. The number of vouchers sent to participants was documented on a voucher acknowledgment form, which participants could return via email or the provided return envelope with their mailed vouchers.

Participants provided their preferred mailing address for the vouchers through a separate email thread. Warehouse vouchers were couriered to the participants' addresses. A photograph of the vouchers, courier package, and mailing address was taken to maintain a record, should the acknowledgement form not be returned. Emails containing participants' addresses were deleted once the vouchers were sent.

Ethical Approval

The current study was granted ethical approval by the University of Waikato Human Research Ethics Committee (HREC(Health)2023#32). It forms part of the broader SHInE project, led by Dr. Cate Curtis, a Senior Lecturer and Associate Dean Academic within the

Division of Arts, Law, Psychology, and Social Sciences at the University of Waikato. Dr. Curtis obtained ethical approval for this research, which is covered under the same approval.

The following chapter will present the results from these EMA surveys and the subsequent analyses conducted to address the research question and aims.

Chapter Four:

Results

This chapter will begin by summarising qualitative material collected from the debrief interviews. It will then discuss analysis of the relationships identified between specific demographic characteristics and engagement in both NSSI and ODI. It will then explore the relationship between NSSI, ODI, and their functions concerning emotion regulation, which was a primary objective of this study. This chapter will also investigate what emotions mediated a shift from urge to engage in a harmful behaviour, to engaging in NSSI or ODI. Finally, this chapter will investigate the relationship between specific wellbeing indicators and NSSI and ODI. It is important to note that due to the small sample size of this study, and the low frequency of reported ODI behaviours in the EMA survey (n=9), findings regarding ODI should be interpreted with caution. The limited data may not fully capture the complexity of ODI motivations.

Interview Material

Debrief interviews were conducted with participants to triangulate the data and expand on the EMA survey findings as well as to obtain feedback on the data collection process in general and the m-Path app specifically. The following section will summarise the key findings from the interviews.

Feedback on Emotion Options Adapted from The MEQ

During the debrief interviews, many participants highlighted that a broader range of multiple-choice emotion options would have reduced their reliance on selecting “neutral” as their ‘most felt’ emotion.

One participant mentioned that while the emotion question in the survey asked about the strongest emotion that she felt at that time, she “Always experienced a combination of different ones.” The participant went on to say, “For me, feeling overwhelmed is the

accumulation of those different feelings, so when I have too many of the other ones then that's when it tends over towards being overwhelmed, um, but it was more just like okay then which one is the most," This participants feedback reflects that in these moments, choosing the 'most' felt emotion became a challenge that may have affected the accuracy of her final choice. This is important to consider, as the full depth of emotional experience leading up to injurious events may not have been fully captured by the single emotion chosen by participants.

Another participant echoed this, noting of her self-harming behaviours, "It's not like you "just feel sad at that moment, it is usually a whole combination of things."

Another participant said that "I did feel like there were some times when I felt like none of the emotions really fit what I was actually feeling at that time so I did feel like I was choosing neutral a lot but in reality I might have been feeling slightly more tired for example… there was more to it than just feeling neutral but I didn't resonate with any of the other options."

One participant noted that the main emotion she felt regularly that was not listed was anxious, "to me there is a distinction between anxious and afraid so I ended up putting neutral a lot of the time." This participant also noted that feeling tired predominates any other emotion that she might feel. This participant agreed that 'bored' was an emotion she felt regularly that was not listed. Other participants chose 'neutral' when they were not sure what they were feeling, despite it not being a totally accurate label for their experience "there were times when I felt like I didn't have any emotion but I just kind of ticked neutral for that."

Another participant reflected that, "I didn't feel like, specifically angry or specifically sad. It was just a combination of being overwhelmed by a whole combination of feelings. I definitely think overwhelmed could have been there" continuing, "I do feel like overwhelmed was probably one that would have, you know if we went back through my survey data and all the ones that I've probably ticked neutral- if overwhelmed was there I'm sure it would have

been overwhelmed." Another participant said "I feel overwhelmed quite a lot so I would have pushed that more if it was there over neutral. 'cuz like, I don't know I wasn't afraid but I also wasn't neutral, I was just kind of a bit overwhelmed I guess, sometimes" This was reiterated by another participant who noted that "Absolutely. Overwhelmed is a hundred percent what I would say would have fit a lot of mine. That's where a lot of my anger does come in and a lot of like, when I do want to like, hit things or anything like that… that is directly because I am so overwhelmed like I just need to get myself out of that space by doing that outwardly because it helps, which it doesn't but you know, that's my way of processing it".

This interview material suggests that the emotion options provided in the EMA survey were potentially not sufficient to reflect the emotional experiences of participants.

Feedback on Participant Experience of M-Path

There was considerable positive feedback regarding the structure and usability of the EMA prompts. Participants noted its ease of use, describing it as "pretty straight forward, I just got the notification and clicked on it" and "I felt like the notifications were not at all annoying it just became a part of my day." Other participants appreciated the real-time nature of the prompts, with one reflecting "It was a lot easier for me to report what I was feeling at that time than retrospectively going back and doing it." Another participant mentioned that while she often found it difficult to recall her feelings, the app's real-time nature was helpful, stating "I do find that quite hard ay. When I am in therapy, I say I don't know a lot, and they find that really frustrating. - I'm a people-pleaser too so I find it hard to be honest but when you're like telling an app it's a lot easier to be honest especially when you have to choose one of the given things". Despite some initial hesitation, one participant remarked that the process was "easy and fun, dare I say." There was also some feedback regarding potential improvements to be considered in future studies. One participant suggested that including a gauge for the severity of behaviours when reporting NSSI would have been helpful, as there

were times during the current study where they would spend the entire time between prompts engaging in the NSSI behaviour, whereas other times they would only spend a few minutes. Another participant noted that the timing of the prompts was not always ideal, as they would sometimes receive three prompts in the morning and two in the afternoon, which they felt did not provide a comprehensive picture of the range of emotions experienced throughout the day.

Participants also reported that the m-Path prompts helped to facilitate self-awareness of their own harmful behaviours. One participant reflected that, “If I was feeling overwhelmed and a prompt came through, it sort of, you know like, brang me back into like almost no like okay I am actually feeling like this and what am I going to do about it. That’s if it hadn’t got to the point where I had already hit something.” Continuing that “Being able to pinpoint or acknowledge that there was an emotion there and what I was feeling was like a thing was quite good.” The largely positive feedback regarding the m-Path app has important implications for its inclusion in future studies.

Accessibility Considerations of the m-Path App

Qualitative data was also collected regarding the accessibility of the EMA survey for neurodiverse participants. One participant, who disclosed that she has autism, noted that the prompts helped initiate some helpful conversations with her mental health nurse, allowing them both to explore her harmful behaviour and its triggers using insights she had gained during the study. This participant reflected on the insight gained during the 14-day survey period, noting “I think it was quite cool, just like being more aware of what I’m thinking and feeling”. Another participant echoed that having to acknowledge an emotion was present was helpful, noting that “I find it really hard to identify my emotions ‘cuz I’m autistic so I find it really hard. When you’re given a certain amount of things you’re like… well I’m definitely not that or that, I don’t know if I’m that but maybe I’m this.” This participant felt this made it

a lot more accessible to her, “Instead of being like, here is all the emotions in the world you have to pick the one that you are”. This participant continued by saying, “It does really help with the reflection and understanding and it helps you realise what you’re feeling in the moment definitely.” Another participant noted that the timing of the prompts helped her to notice certain patterns to her emotional behaviour, “Towards the end of the day was when I had more anger and in the morning, I felt more anxious.” This interview material has important implications for future studies, especially concerning potential adaptions of the m-Path app to improve accessibility.

Eating Disorders as a Form of NSSI

There was also interview material from a participant regarding their perception of behaviours that were not listed as NSSI or ODI but which they identified and defined as such in their responses to the survey prompts. One participant noted that on more than one occasion during the survey, she typed in a behaviour that was not listed, this being purposefully over-exercising or overexerting oneself, she went on to say, “I have always classified that as a self-harm behaviour because it tends into over-exertion and under eating,” these being an intentional effort to cause harm to the body. The participant added that “Other than adding overwhelmed as an emotion, I would personally add over-exertion as a self-harm behaviour.” This interview material is significant as it suggests that the range of NSSI behaviours among young people in New Zealand may be more diverse than those behaviours previously identified in literature.

ODI and Socio-Cultural Influences

A participant with ADHD, who is medicated and takes her medication regularly, but does not take usually take it when at home, shared, “If I wasn’t taking my medication during the day that would also lead to a sense of more, be more likely to become overwhelmed and want to just hit something or hit myself or whatever.” She noted that her reactions were different in

the first week of the study compared to the second week. In the first week, she was at home, and in the second week, when at work, she felt that her response to feeling overwhelmed was different. She suggested this could be due to her awareness of the social perception that while at work in a professional career, hitting something is not very acceptable. The participant stated that " I wonder if it's because I know the societal perception would be" that this behaviour was not acceptable at work, though she found it interesting on a personal level. The participant concluded by saying that she wonders if she feels more comfortable processing emotions by hitting something when she is in her own space. "I wonder if its just that I feel more comfortable doing it in my own space." She continued, "I thought I didn't have any control over how I retaliated but obviously maybe I do. I don't do it at school, so I don't know… When I am in my own space, I am a lot more likely to engage in that sort of behaviour." This interview material suggests that the social perception of ODI behaviours can have a significant influence on when are where these behaviours are expressed.

Emotion Regulation Functions and NSSI and ODI

One participant, when asked to reflect on whether NSSI and ODI behaviours share any functions, reflected that "Yes and no, I think I think of ones where it's more like outward as being the anger type behaviours whereas the other being the… obviously, both have like anxiety overlap, but the other one obviously you ruminate a lot more if you're internally ruminating so that's kind of where I see the slight difference but to me they're all the same umbrella category anyway." This participant went on to reflect on gender distinctions regarding both behaviours, stating that "I know there's the bias towards thinking that like male tend towards the outward and females tend towards inward, I don't know how true that is." This interview material suggests that the participant sees both NSSI and ODI as serving similar functions in emotion regulation, and they may not fully agree with the traditional gender-based distinctions often made between these behaviours

Primary Survey Characteristics

As stated in the methods chapter, each participant received five prompts daily for two weeks, totalling 70 prompts per participant and 770 in total for the sample. A total of 628 responses to prompts were received from the whole sample, being a mean of 57.09 (sd= 16.05) per participant. The primary survey characteristics are shown below in Table 3. Although a total of 70 prompts were scheduled for each participant, they had the option to install a button on the M-Path home screen for event-based responses, allowing them to report harmful behaviours occurring outside the scheduled prompt times. This explains why one participant filled out a total of 74 prompts. A total of nine events of ODI and a total of 82 events of NSSI were reported in the current study. Participants were allowed to report multiple different events of ODI, NSSI, or both in response to a single prompt. In instances where each occurrence of NSSI or ODI was counted separately for analysis, this is specified. This approach was used because, between prompts, a participant could have engaged in both NSSI or ODI, or used different methods.

Table 3

Primary survey characteristics

Statistic	Total Prompts	Total NSSI incidents	Total ODI incidents	Mean (SD)
Total Responses	628	82	9	56.5 (SD = 16.7)
Mean Responses per Participant	57.09	7.45 (SD = 7.77)	0.82 (SD = 1.11)	

Primary demographic characteristics, NSSI, and ODI

Due to the small sample size in this study (*n*=11), only gender was included as a relevant demographic variable in the analysis of NSSI and ODI behaviours and urges. Other demographic variables collected in the study, such as age, ethnicity, and income were not included in the analysis because the small sample size would have limited statistical power. Additionally, including multiple demographic variables could have led to unreliable results, as small sample sizes do not provide sufficient power to detect meaningful relationships when multiple variables are considered. A logistic regression comparing all three gender groups was not run due to the small sample size of each category. The decision to focus on gender was made to maintain the reliability of the analysis, while also addressing constraints posed by the small sample size. Gender is also particularly relevant to address, given commonly held beliefs linking NSSI and ODI behaviours to specific gender groups, men are often perceived as displaying outward aggression, while women are more frequently associated with inward-directed NSSI behaviours (Curtis & Terry, 2024).

Gender and NSSI

A crosstabulation analysis was conducted to examine the relationship between gender identity and engagement in NSSI. The results of this are presented below in Table 4. A total of 641 responses were included in the analysis, with 559 responses indicating no NSSI and 82 events of NSSI reported. This total exceeds the 628 total prompts answered in the survey, because multiple instances of NSSI within a single prompt were counted as separate events of NSSI.

Table 4

Gender and NSSI Crosstabulation Analysis

Count				
		NSSI		Total
		Absent	Present	
Gender	Male	111	22	133
	Female	288	10	298
	Non-Binary	160	50	210
Total		559	82	641

Among male participants, 22 out of 133 responses indicated NSSI, while 111 indicated no NSSI. Female participants provided 298 responses, with 10 indicating NSSI and 288 indicating no NSSI. Non-binary participants gave 210 responses, with 50 indicating NSSI and 160 indicating no NSSI.

The percentage of NSSI responses was significantly highest among non-binary participants (60.98%), followed by males (26.86%) and females (12.20%). These findings suggest that non-binary participants reported NSSI at a higher rate compared to male and female participants and male rates appear to be more than double that of females.

The Chi-Square Test of Independence revealed a significant association between gender and NSSI (Pearson Chi-Square = 48.31, $p < .001$), indicating that gender is related to the likelihood of engaging in NSSI. Specifically, there was a higher prevalence of NSSI among non-binary individuals compared to males and females, as observed in Table 4.

Gender and ODI

A crosstabulation analysis was also conducted to examine the relationship between gender identity and ODI behaviours, shown below in Table 5. As with the NSSI and gender analysis total of 641 responses were included in the analysis, with 632 instances of no ODI and nine events of ODI reported. As with the NSSI gender crosstabulation, multiple instances of ODI within a single prompt were counted as separate events.

Table 5

Gender and ODI crosstabulation analysis

Count		ODI		Total
		Absent	Present	
Gender	Male	131	2	133
	Female	293	5	298
	Non-Binary	208	2	210
Total		632	9	641

The crosstabulation of gender and ODI behaviours showed that the majority of responses across all genders did not report ODI: 98.5% of male responses, 98.3% of female responses, and 99.0% of non-binary responses. Overall, 98.6% of the 641 valid responses indicated no ODI, and 1.4% reported ODI.

The Chi-Square Test of Independence found no significant association between gender and ODI behaviours (Pearson Chi-Square = 0.48, p = 0.79), and both the likelihood ratio test and linear-by-linear association also showed no significant relationships (p = 0.78 and p = 0.62, respectively) indicating no gender differences in ODI behaviours.

In summary, the chi-square analysis did not identify a significant relationship between gender identity and engagement in ODI behaviours in this sample.

Method of NSSI

The following section outlines the specific methods of Non-Suicidal Self-Injury (NSSI) reported by participants who engaged in NSSI, this is presented in Table 6. There was a total of 82 events of NSSI reported in the current study. Participants were allowed to report multiple methods of NSSI in response to a single prompt and also had the option to specify additional methods. Each instance of NSSI was recorded in this analysis as a separate occurrence, even if it occurred in the same prompt. That is, between one prompt and the next a participant may have engaged in NSSI multiple times and/ or used multiple methods. Among the methods reported, the most common behaviour was skin picking (29.27%), which occurred 24 times. Other frequently cited methods included hitting oneself (13.33%), cutting (9.76%), and biting oneself (9.76%).

Table 6

Type of NSSI used by Participants who reported NSSI

Type of NSSI	Overall n=82	%
Skin picking	24	29.27%
Hitting oneself (including with an object)	13	13.33%
Biting oneself	8	9.76%
Cutting	8	9.76%
Severe scratching	7	8.54%
Restrictive eating	7	8.54%
Over exercising	3	3.66%
Binge eating	1	1.22%
Trying to make oneself faint	1	1.22%
Picking at existing self-harm scab	1	1.22%
Rubbing ones face really hard and digging nails into scalp	1	1.22%

Note: some of the listed methods do not fit usual definitions of NSSI behaviours, but were identified as such in the current study

Method of ODI

Table 7 below presents the types of ODI events reported in the current study out of a possible nine events. Some of these behaviours were reported together in the same prompt but were recorded as separate events of ODI. The most reported behaviour was punching or kicking an object (55.6%), followed by verbally abusing or annoying someone with the expectation of provoking a physical response (22.3%).

Table 7

Type of ODI engaged in by Participants who reported ODI

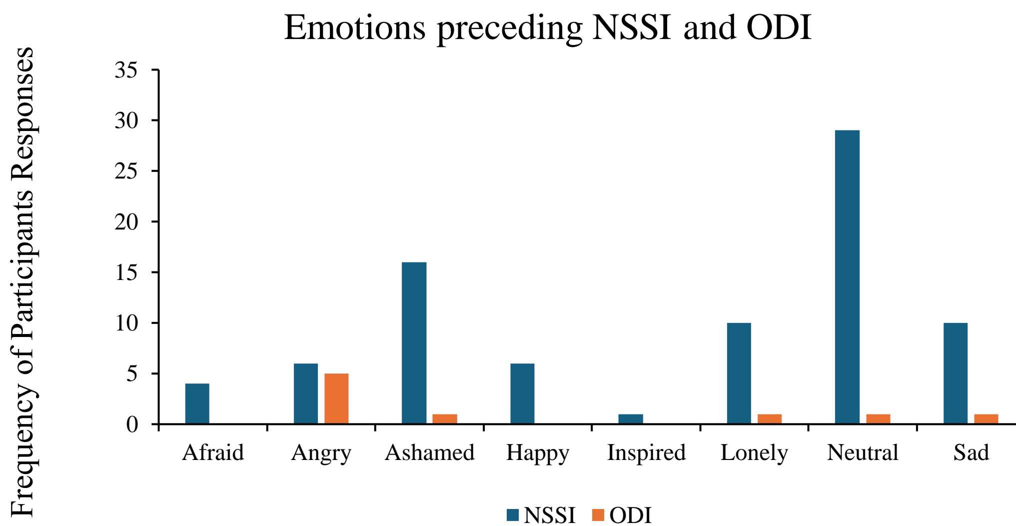
	Overall n=9	
Type of ODI reported	n	%
Punched or kicked an object	5	55.56%
Verbally abused or annoyed someone with the expectation that they might physically harm or hurt you.	2	22.22%
Physically assaulted someone	1	11.11%
Started a fight	1	11.11%

Emotional Antecedents to NSSI and ODI behaviours

To further explore the relationship between NSSI and ODI, a cross-tabulation analysis was conducted on the emotions that preceded each event of NSSI (82) and ODI (9) The result of this analysis is presented in Figure 1.

Figure 1

Emotions preceding NSSI and ODI engagement



Participants emotions before engaging in NSSI or ODI

'Neutral' emotion was the most frequently reported emotional antecedent to NSSI engagement (n=29), followed by 'ashamed' (n=16), with 'lonely' and 'sad' tied for the third most common antecedents (n=10 each). The emotions 'happy' and 'angry' both preceded NSSI engagement in six instances each. 'Inspired' was the least likely to precede NSSI engagement, with only one occurrence.

Regarding ODI engagement, 'angry' was the most common antecedent emotion (n=4), followed by 'inspired,' 'lonely,' 'neutral,' and 'sad,' which were equally represented with one

occurrence each. Notably, no positive emotions were reported as antecedents to ODI engagement.

A chi-square test of independence was conducted to further explore the relationship between emotions and ODI or NSSI. The test yielded $\chi^2(7) = 14.36$, $p = 0.045$, suggesting marginal significance. Symmetric measures showed a moderate association (Phi = 0.40, Cramer's V = 0.40, $p = 0.045$). However, assumptions for the test were violated, as 62.5% of cells had an expected count below 5, with a minimum expected count of 0.09.

While these results suggest a potential relationship between emotions and behaviour type, the violation of assumptions alongside the marginal significance compromise the reliability of these findings. As a result, the findings of this analysis suggest that in the current sample, emotions alone may not significantly predict whether an individual engages in NSSI or ODI behaviours as a result.

Functions of NSSI and ODI

In order to further understand the functions of reported events of NSSI and ODI, reported functions were counted as presented in Table 8. This table presents the most endorsed functions for both urge to engage in NSSI and ODI behaviour, as well as for reported events of ODI and NSSI.

Table 8

Reported functions of ODI and NSSI behaviour

	Functions of NSSI and ODI	n			
		Urge NSSI	Urge ODI	Actual NSSI	Actual ODI
1	Reduce Sadness/ depression	47	10	35	4
2	Reduce Anxiety/ worry	80	14	52	3
3	Reduce Frustration	42	22	24	6
4	Reduce Anger	28	9	20	5
5	Reduce Suicidal Feelings	24	9	15	4
6	Have fun/ for enjoyment (rather than to reduce unpleasant emotions)	7		4	
7	Other	3		4	1
	Total	231	64	154	22

Note: *Functions are counted for each behaviour within a prompt. If multiple behaviours are linked to the same function, the function is counted once per behaviour.*

For each instance of ODI or NSSI behaviour, multiple functions could be cited as contributing to the behaviour. Therefore, if a participant reported more than one function for a particular behaviour (e.g., 'reduce anxiety/worry' and 'reduce frustration'), each function was tallied separately. This means that the total count of functions does not represent the total number of unique behaviours, but rather the frequency of functions reported across all behaviours.

The most reported function for NSSI urges was ‘reducing anxiety/worry’ (n = 80), followed by ‘reducing sadness/depression’ (n = 47) and ‘reducing frustration’ (n = 42). For

ODI urges, the most frequent functions were ‘reducing frustration’ (n = 22) and ‘reducing anxiety/worry’ (n = 14). In terms of behaviour, events of NSSI were most often linked to ‘reducing anxiety/worry’ (n = 52) and sadness or depression (n = 35). Events of ODI were most commonly associated with frustration (n = 6) and anger (n = 5). Functions related to suicidal feelings were more frequently reported for NSSI (n = 24 urges, 15 actions) than ODI (n = 9 urges, 4 actions). Few urges or actions were associated with the function of ‘Have fun/ for enjoyment (rather than to reduce unpleasant emotions).’

Overall, NSSI was predominantly used to regulate emotions of anxiety or worry, whereas ODI was more commonly linked to frustration and anger. One participant utilised the text-option box, writing ‘I wanted to feel in control’ as a function of ODI behaviour. As was noted in the introduction of this chapter, the small amount of reported ODI behaviours limits the reliability of this finding.

Mediating Emotions in the Transition from Urge to Engagement in NSSI and ODI Behaviours

To examine whether certain emotions were more likely to result in a shift from a harmful urge to engagement in NSSI or ODI behaviour, a crosstabulation analysis was conducted, this is shown in Table 9 below. Each prompt was counted as a single instance of an emotion, even if multiple urges were present. If an urge resulted in behaviour, the corresponding emotion was counted as having led to action.

Table 9

Emotional mediators from urge to engagement in harmful behaviour

Emotion	Total Urges	NSSI Actions	ODI Actions	Total Actions	% Urges → Behaviour
Afraid	19	3	0	3	15.8%
Anger	30	6	1	7	23.3%
Ashamed	28	16	0	16	57.1%
Enthusiastic	5	0	0	0	0%
Excited	1	0	0	0	0%
Happy	20	6	0	6	30.0%
Inspired	7	1	0	1	14.3%
Lonely	21	9	1	10	47.6%
Neutral	92	25	1	26	28.3%
Sad	36	5	2	7	19.4

Note: urges are counted once per emotion per prompt, regardless of the number of urges reported

The majority of behaviours recorded were NSSI-related. Emotions such as ashamed, lonely, and neutral had the highest percentages of mediating an urge to engage in either of the two harmful behaviours to actual engagement in NSSI. Specifically, 57.1% of urges linked to ashamed resulted in NSSI, followed by 47.6% for lonely and 28.3% for neutral. Anger and sadness were also linked to NSSI, but to a lesser extent, with 20.0% for anger and 13.9% for sad.

For ODI behaviours, the total percentage of urges to engage in harmful behaviour leading to ODI was much lower. Only 5 instances of ODI behaviour after an urge were recorded, resulting in a total percentage of 1.9%. These were associated with anger (3.3%), loneliness (4.8%), neutral (1.1%), and sadness (5.6%).

Wellness Indicators

Emotion states before engaging in NSSI and ODI behaviours were further explored using multiple likert-scale ratings to better understand the participants' levels of calmness, contentment, and tension immediately preceding events of NSSI and ODI. The following analyses explore participant ratings of their emotional states on three different dimensions: calmness to agitated, contentment to discontent, and relaxed to tense. Descriptive statistics for these factors were calculated, with means and standard deviations reported below to give an overview of how participants generally ranked themselves on each scale.

For the calm to agitated dimension, the mean score was 2.78 (SD = 1.13), indicating a moderate level of calmness across participants. The content to discontent dimension had a mean of 2.89 (SD = 1.17), suggesting that participants were, on average, slightly more content than discontent. On the relaxed to tense scale, the mean score was 2.98 (SD = 1.11), reflecting a tendency towards a relaxed state, though some participants did report feeling more tense.

The following analyses outline the results of Mann-Whitney U tests which were conducted to compare these emotional states between participants who engaged in NSSI and those who engaged in ODI.

Likert Scale Calmness and ODI/NSSI

In order to further explore the emotional state of participants before engaging in NSSI and ODI behaviours, a Mann-Whitney U test was conducted to compare Likert-scale calmness scores measured immediately prior to each behaviour. The occurrence of each behaviour was

recorded as either "yes" (indicating the behaviour occurred) or "no" (indicating the behavior did not occur).

The results of the analysis revealed a significant difference in calmness scores between the two groups, with the ODI group (Mean Rank = 55.0) reporting significantly higher calmness scores than the NSSI group (Mean Rank = 37.7), U = 156.0, Z = -2.17, p = 0.03. To conclude, this suggests that participants reported feeling significantly calmer immediately before engaging in ODI behaviours compared to NSSI behaviours.

Likert Scale Contentment and ODI/NSSI

To assess potential differences in the emotion states between participants who engaged in NSSI and those who engaged in ODI, a Mann-Whitney U test was conducted to compare content-to-discontent scores. The content-to-discontent scale ranged from 1 (content) to 5 (discontent), with higher scores indicating greater feelings of discontent.

The results showed that participants who engaged in NSSI (Group 1, n = 70) had a mean rank of 38.09, while participants who engaged in ODI (Group 2, n = 8) had a mean rank of 51.88. The Mann-Whitney U statistic was 181.0, with a Z value of -1.72, and the asymptotic significance (two-tailed) was 0.09.

Given that the p-value (0.09) exceeded the conventional significance level of 0.05, there was no statistically significant difference between the content-to-discontent scores of individuals who engaged in NSSI and those who engaged in ODI. These results suggest that the level of contentment or discontentment, as measured by the content-to-discontent scale, does not differ significantly between the two groups in this sample.

Likert Scale Tenseness and ODI/NSSI

A Mann-Whitney U test was conducted to compare the tense scores between participants in the NSSI group and the ODI group. The tense scores were recorded immediately before the behaviour occurred.

The results showed a significant difference between the two groups. The Mann-Whitney U test revealed a U value of 136.50, the Wilcoxon signed-rank test yielded a W value of 2621.50, and the Z value was -2.47. The p-value was 0.01, indicating that the difference was statistically significant. The negative Z value suggests that participants in the NSSI group reported lower tension levels compared to the ODI group, who reported higher tension levels right before engaging in ODI.

Emotional Well-being Indicators and Likelihood of NSSI engagement

A logistic regression presented in Table 10 was conducted to assess the relationship between emotional well-being indicators and the likelihood of engaging in NSSI. The emotional states measured were calm-agitated, content-discontent, relaxed-tense, and well-unwell, all assessed using likert scales. The regression model revealed no statistically significant predictors of NSSI behaviour.

Table 10

Emotional wellbeing indicators and NSSI logistic regression

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp (B)
Step 1a	Calm to Agitated	0.46	0.60	0.59	1.00	0.44	1.58
	Content to Discontent	0.40	0.58	0.49	1.00	0.49	1.50
	Relaxed to Tense	0.92	0.64	2.12	1.00	0.15	2.52
	Well to Unwell	0.07	0.50	0.02	1.00	0.88	1.08
	Constant	11.12	2.52	19.45	1.00	<.001	0.00

a. Variable(s) entered on step 1: CalmAgitatedLikert, ContentDiscontentLikert, RelaxedTenselikert, WellUnwellLikert

The analysis showed that the emotion states such as calm-agitated, content-discontent, relaxed-tense, and well-unwell did not significantly predict NSSI behaviour, with all p-values exceeding typical significance thresholds. The constant term was significant ($p < 0.001$), indicating a baseline probability for NSSI.

In summary, these results suggest that the emotion indicators examined did not significantly predict NSSI behaviours in the sample. However, the relationship with relaxed-tense approached statistical significance, which may warrant further investigation with a larger sample size.

Emotional Well-being Indicators and Likelihood of NSSI engagement

A logistic regression was conducted to examine the relationship between emotional well-being indicators and the likelihood of engaging in ODI behaviour. The results of this analysis are presented in Table 11. The emotional states measured were calm-agitated, content-discontent, relaxed-tense, and well-unwell, all assessed using Likert scales.

Table 11

Emotional wellbeing indicators and ODI logistic regression

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1a	Calm to Agitated	-0.06	0.18	0.11	1.00	0.74	0.94
	Content to Discontent	0.42	0.18	5.72	1.00	0.02	1.53
	Relaxed to Tense	0.04	0.18	0.04	1.00	0.84	1.04
	Well to Unwell	0.29	0.17	2.92	1.00	0.09	1.34
	Constant	-4.16	0.52	63.60	1.00	<.001	0.02

a. Variable(s) entered on step 1: CalmAgitatedLikert, ContentDiscontentLikert, RelaxedTenselikert, WellUnwellLikert.

The analysis found that contentment significantly predicted ODI behaviour, with higher contentment increasing the likelihood of engagement in ODI ($p = 0.02$). However, emotional states like calm-agitated and relaxed-tense were not significant predictors. The well-unwell

emotional state showed a trend towards significance ($p = 0.09$) but did not meet the threshold. The constant term indicated a low baseline probability for ODI behaviour. These results highlight the importance of contentment in predicting ODI, while other emotional states were less influential.

Summary of Results

There was a total of 11 participants in the current study. There was a total of 641 responses to the prompts out of a total possible 770 prompts not accounting for additional instances of harmful behaviour reported outside of the scheduled prompts using the M-path home screen reporting button. There were a total of 82 instances of NSSI reported in the current study, and nine instances of ODI reported. Non-binary participants were more likely to report engaging in NSSI behaviours than male or female participants and male participants were more than twice as likely to report NSSI than female participants. The sample size for ODI engagement was too small to provide meaningful analysis in regard to gender. Both NSSI and ODI were found to primarily function as emotion regulation strategies, with NSSI most commonly linked to anxiety reduction and ODI associated with frustration relief. Emotional antecedents for NSSI included shame, while anger was the most reported emotion preceding ODI engagement.

Additionally, feeling ashamed was associated with a shift from an urge to engage in either behaviour to engaging in NSSI, and feeling angry was associated with ODI behaviour in the same circumstance. Skin-picking was the most frequently reported NSSI behaviour, whereas punching or kicking objects was the most common form of ODI behaviour reported.

Qualitative data revealed that disordered eating and excessive exercise were considered by some participants as forms of NSSI. Results showed that ODI was associated with higher calmness levels before the behaviour compared to NSSI. Participants who engaged in ODI also reported higher pre-behaviour tension than those who engaged in NSSI.

Chapter Five:

Discussion

The current study examined the extent to which NSSI and ODI behaviours serve as methods of coping with difficult emotions, with a particular focus on identifying the emotional antecedents and functions of these behaviours, as well as their shared risk and protective factors within a New Zealand context, utilizing ecological momentary assessment with a sample of 11 participants aged 16 to 30 years. The study also aimed to identify commonalities in risk and protective factors to inform future therapeutic interventions for both forms of harmful behaviours. The findings of the current study provide initial-stage insights into the shared and distinct functions underlying these behaviours, particularly the role of emotion regulation. This chapter will consider the results of the current study with regard to existing literature. It will also highlight any theoretical and practical implications, as well as address any possible limitations of the current study that have provided insight into potential opportunities for further research.

Demographic Characteristics and NSSI and ODI

Gender

In this study, non-binary participants reported a significantly higher percentage of NSSI instances (60.98%) compared to male (26.83%) and female participants (12.20%). Interestingly, this study's findings differ from those of Curtis and Fitzgerald (2017), who found that female participants were significantly more likely to engage in NSSI compared to males. However, this finding largely supports previous research that individuals identifying outside the binary of male or female experienced higher rates of NSSI than those identifying as male or female (Calvete et al., 2023; Veale et al., 2017; Surace et al., 2021). This elevated risk has been identified in previous literature as being because of higher levels of victimisation for non-binary people, which is strongly linked to depression and NSSI (Calvete et al., 2023). This finding offers a valuable direction for further research, particularly

given that gender-nonconforming individuals report a broader range of functions for NSSI compared to cisgender individuals such as to relieve gender dysphoria. This was further supported by Mirabella et al. (2020) and Morris & Galupo (2019), both of which found that body dissatisfaction and gender dysphoria contribute to elevated levels of NSSI among non-binary people. Future research could explore whether non-binary individuals engage in NSSI for functions not identified in the current study, such as coping with gender dysphoria, asserting bodily autonomy, or navigating identity distress.

In contrast, the number of participants reporting ODI in this study was too small for meaningful statistical analysis related to gender identity. It could be useful for further studies to examine the impact of intersectionality regarding gender, such as sexual orientation. Fitzgerald and Curtis's (2017) study found that participants who identified with a minority sexuality had higher rates of NSSI. In addition, multiple studies have found that the challenges associated with being a part of LGBT sexuality groups may exacerbate the risk of NSSI, particularly for bisexual adolescents (Curtis, 2017; Green et al., 2018; King et al., 2008; Skegg et al., 2003). It may be valuable for future research to explore the influence of gender norms on the functions of ODI behaviours in particular. While this was initially within the intended scope of the current study, the small sample size reduced this focus. Further analysis of gender norms and their impact on ODI could provide valuable insights. Comparative research across different cultural, gender, or socio-cultural groups could also provide an understanding of how varying norms and key values within these groups shape the functionality of ODI that occurs here, as well as their acceptability.

Social Norms and Their Impact on Harmful Behaviours

Interview material regarding the impact of societal perception on ODI behaviours is meaningful to consider. While NSSI behaviours have been found to be influenced by peer and social factors (Heilbron & Prinstein, 2008), there has been limited research into similar influences on ODI. One participant highlighted that her career and position mean she makes

intentional efforts to suppress her ODI behaviour until she is in her own home, which may suggest that some ODI behaviours are going unreported due to individuals' awareness of consequent stigma. Larsen et al. (2012) note that when individuals suppress negative the emotional nonacceptance that occurs can lead to the adoption of avoidant or ODI-type behaviours to cope instead. This suggests that societal norms around ODI behaviour may exert a significant influence on the way these behaviours are expressed. For example, some individuals may suppress ODI behaviours in public environments, making these behaviours more likely to occur within a private setting after a prolonged emotional suppression.

This also connects to Curtis and Terry's (2022) study, which explored how societal perceptions can influence the acceptability of certain ODI-type behaviours, such as wall-punching. Their findings suggest that societal norms shape how these behaviours are interpreted, often more than the emotional context or the person's intentions. Wall-punching is generally viewed as an unacceptable way to cope with emotions, but these judgments are influenced by cultural attitudes toward aggression and emotional expression. Due to social stigma, such behaviours are often hidden or suppressed, especially among men, who are typically labelled as violent or threatening when displaying them. This stigma creates additional barriers for people engaging in ODI in private, preventing open discussion of their distress and limiting their access to healthier coping mechanisms (Patel et al., 2022).

The Role of Emotion Regulation in NSSI and ODI

Results from the current study indicated that the most reported type of NSSI was skin picking (n = 24, 29.27%), followed by cutting and biting oneself, which were reported at equal rates (n = 8, 9.76%). The prominence of skin picking in this study warrants further investigation, particularly given the ongoing debate in the literature regarding its classification as NSSI rather than as a distinct disorder (Lengel et al., 2022). Nock (2009) notes that skin picking disorders are not consistently classified as NSSI, as the DSM-5

classifies skin picking or excoriation disorder under obsessive-compulsive and related disorders (APA, 2022). However, despite its separate categorisation from NSSI in the DSM-5, recent studies suggest that skin-picking fits a broader spectrum of NSSI behaviour, as it involves similar regulatory functions and intentional, non-fatal injury to the body (Grant & Collins, 2024). The decision to include skin-picking as a form of NSSI in this study was made to advance the understanding of NSSI and broaden its scope. Multiple studies have highlighted the role of emotion regulation in skin-picking (Anderson & Moffitt, 2018; Twohig & Hayes, 2008; Keuthen et al. 2010). Grant and Odlaug (2009) found that skin-picking serves emotion regulation functions similar to those of cutting or burning. Grant and Collins (2024) study observed that NSSI-related skin-picking may be linked to difficulties with impulse control and emotion regulation. This is consistent with several studies highlighting the crucial role of impulse control in NSSI, particularly in relation to emotion regulation. Liu et al. (2022) further suggest that a combination of high impulsivity and emotion dysregulation may serve as an additional risk factor, especially for adolescents engaging in NSSI behaviours. Further studies could seek to further explore how the relationship between the impulse control and emotion regulation functions of NSSI and their similarities to ODI, as impulse control difficulties in the face of difficult emotions have recently been identified as a shared mechanism influencing ODI also (Donahue et al., 2014).

The most frequently reported ODI behaviour in the current study was ‘punched or kicked an object’, with five participants who reported ODI engaging in this behaviour. Two participants reported ‘verbally abused or annoyed someone with the expectation that they might physically harm or hurt you.’ While one participant each reported ‘started a fight’ or ‘physically assaulted someone.’ Although the sample of participants who reported ODI behaviours was small, the finding that ‘punching or kicking an object’ was the most frequently reported behaviour aligns with previous literature on ODI- type behaviour, which

suggests that aggression toward objects, such as hitting walls, can function for emotion regulation purposes. This finding suggests that ODI behaviours such as hitting walls can serve as a form of emotion regulation to process emotions without causing harm to others (Garofalo et al., 2016). The low sample size could be influencing the low reporting of more severe behaviours, as well as potential self-report bias. However direct physical aggression toward others is less common than aggression toward objects in this sample.

Emotional Antecedents to NSSI and ODI Behaviours

Crosstabulation analysis revealed that ‘neutral’ emotion was the most reported emotional antecedent to NSSI engagement (n=29) for participants who reported NSSI. This is particularly important to consider considering the qualitative feedback from participants suggesting that their choice of the ‘neutral’ emotion would not have been favoured had there been a wider range of emotion options to choose from. Interview material showed that tired, overwhelmed, anxious and bored were emotions felt when ‘neutral’ was selected. Therefore, it is important to consider that neutral was selected when participants felt a range of emotions that were not listed. This is especially relevant given that this section of the data collection was based on a commonly used emotion assessment tool, the MEQ (Klonsky et al., 2019). The emotions that participants reported feeling when choosing ‘neutral’ all have previously investigated links to NSSI, making them important to consider. Yusoufazai et al. (2022) found that boredom has a causal relationship with NSSI, acting as an emotion that motivates individuals, particularly those with a history of NSSI, to seek painful stimulation. Guan et al. (2024) emphasize that anxiety is a common emotion reported in relation to NSSI. Hughes et al. (2019) note that feeling overwhelmed was a strong predictor of NSSI behaviour in their EMA study. This highlights the importance of future studies including a wider range of emotion options to further explore these relationships. In the current study it appears that the

inclusion of emotions tired, overwhelmed, bored, and anxious may have provided more detailed analysis.

In the current study, 'anger' was the most commonly reported emotion before engaging in ODI behaviour. However, the reliability of this finding may be limited due to the small number of total ODI instances (n = 9) in the study. Regardless, this finding is consistent with previous literature, which suggests that difficulties regulating emotions such as anger or frustration have been found to precede aggressive behaviours (Baumeister et al. 2007) Interestingly, there were no instances of positive affect reported before ODI behaviour, which opposes Chine et al.'s (2017) finding, that the desire for fun or thrill has been identified as a core antecedent to ODI behaviour. Other studies have confirmed that engaging in ODI-type behaviour such as fistfights can often be initiated in the pursuit of positive emotion experiences such as for pleasure, excitement or fun (Atkinson & Rodger, 2016; Hartmann & Vorderer, 2010).

There were a few instances of positive affect reported preceding NSSI engagement, these were 'happy' and 'inspired'. This reflects previous findings by Muehlenkamp et al. (2009), who, utilising an ecological momentary assessment approach, found a decline in positive affect preceding NSSI, followed by an increase immediately afterwards.

The Role of "Overwhelm" in NSSI and ODI

Interview material indicated that participants would have frequently selected "overwhelmed" instead of "neutral" if it had been an option, as they often described their emotional experience preceding harmful behaviour using that term. This material is meaningful to consider, as it aligns with previous findings from Klonsky (2009), who identified "overwhelmed" as the most reported emotion state preceding NSSI. Klonsky also found that the emotion "overwhelmed" showed the largest decrease in intensity following engagement in NSSI, which highlights its significant role in the maintenance and function of

NSSI behaviour. Future research could consider the role of "overwhelm" by using it as a distinct emotion option in the EMA survey. This could provide deeper insight into its influence on engagement in not only NSSI but ODI also.

Future research could also consider the specific combinations of emotions that contribute to a feeling of overwhelm, as interview material suggests it may not be an intense experience of a singular emotion but rather a combination of multiple feelings, potentially becoming unbearable. Participants in the current study described overwhelm as a state of emotional overload or confusion, often caused by a mix of several emotions or a few experienced at extreme levels. Investigating how different emotional combinations shape this experience could deepen our understanding of what overwhelm means in the context of harmful behaviour.

Overwhelm was also mentioned in relation to ODI, with one participant explaining that she engages in ODI to escape the distress feeling overwhelmed causes her. While she acknowledged that it doesn't help, she described it as her way of processing the emotion. This participants reflections align with findings from Roberton et al. (2012), who note that ODI behaviours are more pronounced when people believe they will alleviate distress, this was reflected by this participants belief that hitting things would make her "feel better" when overwhelmed. These findings, along with previous research, suggest that overwhelm plays a role in triggering events of ODI. When individuals struggle to manage overwhelming emotions, they may turn to ODI to regain a feeling of control and find relief (Williams, 2007).

Mediating Emotions in the Transition from Urge to Action in Harmful Behaviours

In the current study, an analysis was conducted to examine the role of different emotions on mediating the shift from an urge to engage in NSSI or ODI to engagement in either behaviour. Ashamed emotions were most strongly associated with NSSI, with 57.1% of urges

to engage in either NSSI or ODI while feeling ashamed leading to NSSI. This finding aligns with previous research suggesting that shame often acts as a significant emotion trigger for NSSI, with studies finding that individuals use various methods of NSSI to cope with feelings of shame (Gratz, 2003). Interview material provided deeper insight into the relationship between shame-related experiences and NSSI. One participant noted that, while the EMA prompting did not help her to recognise any new behavioural patterns within herself, it reinforced her understanding of the shame associated with NSSI. This feedback underscores the role of shame regulation as a key driver of NSSI, consistent with Sheehy et al.'s (2019) review, which found a positive association between shame and events of NSSI. Shame has also been identified in multiple studies as a key emotional state preceding NSSI (Schoenleber et al., 2014; Wielgus et al. 2019). As Wielgus et al. (2019) suggest, further investigation into the role of shame as a risk factor for NSSI would be valuable, particularly in exploring whether shame precedes NSSI or if NSSI leads to heightened shame, creating a cyclical pattern. While this study did not find a direct link between shame and ODI behaviours, further research on the commonalities between shame as a risk factor for ODI and NSSI would beneficial. Tangney et al. (2011) conducted a review that suggested that a predisposition to shame is often directly linked to aggression. Additionally, Stewing et al. (2010) found that shame was significantly related to aggression in all researched groups. ODI-type behaviour preceded by feelings of shame often functions to help maintain self-esteem and image. When individuals experience shame, they may respond defensively by externalising blame and, in some cases, engaging in ODI-type behaviour (Bennett et al., 2005; Thomaes et al., 2008).

Lonely emotions also led to NSSI after a harmful urge in 42.9% of cases, reflecting the well-established link between loneliness and NSSI engagement (Costa et al., 2021; Zhang et al., 2023). Interestingly, happy emotions were associated with 30.0% of harmful urges

turning into NSSI behaviour. This could suggest that NSSI is not solely driven by negative emotions, as research has previously demonstrated that people may also engage in NSSI during periods of emotional hyperarousal (Peterson et al. 2008).In contrast, the emotions "afraid," "inspired," and "sad" were associated with lower rates of mediating the transition from harmful urges to NSSI behaviour, suggesting that NSSI is not typically driven by these emotions in this sample.

Regarding ODI, "anger" led to 3.3% of ODI behaviour in response to an urge to engage in harmful behaviour, while "neutral" emotions were linked to 1.1% of events of Odi in similar circumstances. The fact that only 15.8% of "afraid" urges led to any behaviour suggests that fear may not be a strong motivator for NSSI or ODI. This is consistent with previous research indicating that fear is less likely to result in the same harmful behavioural responses as anger and shame (Nock, 2010). In this study, the emotional state of "neutral" was associated with 27.2% of NSSI actions, which supports the notion that NSSI can sometimes arise in the absence of intense emotional distress but rather as a coping mechanism employed during periods of either emotional numbness or boredom (Nixon et al., 2008) This could also be due to participant selection of ‘neutral’ emotion in place of more accurate labels, as previously discussed.

Additionally, it is noteworthy that no "enthusiastic" or "excited" emotions resulted a shift from an urge to engage in harmful behaviour, to engagement in NSSI or ODI. This aligns with previous research suggesting that these behaviours serve primarily to regulate negative emotions during experiences of emotional distress (Shafti et al., 2021). This finding suggests that NSSI and ODI are more commonly linked to negative emotional states or difficulties in regulating emotions, rather than occurring during periods of positive mood.

Interview-Based Comparison of ODI and NSSI Behaviours, and Emotion Regulation

Interview material on the harmful behaviours that were listed in the EMA surveys revealed some key insight into participants perceptions of ODI and NSSI.

When asked their thoughts regarding the difference between ODI and NSSI behaviours, one participant noted that while they believe that ODI tends to be related to emotions such as anger, and NSSI primarily with anxiety or rumination, both belong in the same classification. That is, both behaviours function to escape from or cope with certain emotions. This participant suggested that there may be a significant overlap in the function of anxiety regulation for both behaviours, which aligns with previous literature that shows that regulating anxiety is a common function for both NSSI, (Bentley et al., 2015) and ODI (Keyes et al., 2016). This participant also noted that while it was typically thought that males engage in more ODI behaviours, and females in NSSI behaviours, she doesn't feel this is always the case. This interview material is reflective of previous findings by Klonsky (2011), who found that on average, males may be more prone to engaging in ODI- type behaviours to regulate emotions such as frustration and anger, while females may be more prone to more internalising NSSI behaviours such as cutting to regulate emotions such as anxiety or depression. While these findings suggest there are certain gender patterns surrounding ODI and NSSI, this may not be entirely accurate. This participant questioned the validity of these traditional gendered assumptions, and recent research supports this scepticism. Bresin and Schoenleber's (2015) meta-analysis found that while women are more likely to report a history of NSSI, men also engage in NSSI, albeit in different forms and frequencies. Given that research has started to challenge gendered distinctions surrounding NSSI, it would be valuable for future studies to explore similar gender dynamics in relation to ODI.

Functions of NSSI and ODI Behaviours

The most frequently reported function of both NSSI and ODI behaviours was related to the regulation of negative affect. Reducing anxiety/worry was most associated with NSSI engagement, reported alongside 52 events of NSSI. This finding is supported by Nock and Prinsteins (2004) study which suggests that a desire to reduce negative emotions such as anxiety is a primary function of NSSI behaviour. Bentley et al. (2015) found that NSSI is strongly correlated with generalised anxiety disorder, suggesting that some individuals who engage in NSSI may do so to reduce anxiety or cope with anxiety-related symptoms.

Reducing frustration was the most reported function of ODI behaviour, identified after six instances of ODI. This aligns with a recent study from Baumeister et al. (2007) who found that frustration was commonly associated with engagement in ODI-type behaviour. Despite the differing expressions of ODI and NSSI, both behaviours in the current study serve as emotion regulation strategies aimed at managing negative affect. While both behaviours can function to regulate negative emotions, the functional distinction aligns with previous literature. ODI is more likely to arise in response to emotions such as rage and frustration (Green & Jakupcak 2015), whereas NSSI may be more commonly used to cope with ruminative emotions like depression or anxiety (Guan et al. 2024; Serra et al., 2022). While both behaviours serve emotion regulation functions, the emotions they regulate may influence how they are perceived. Feelings of frustration are often more visible to others than feelings of anxiety. As a result, ODI behaviours that are an attempt regulate anger could be mistakenly linked to violence or deviance, despite their functioning to reduce distress and pain associated to anger (Slade, 2019). Green and Jakupcak (2015) point out that this societal perception can lead to a misunderstanding of ODI, with young people who engage in these behaviours being wrongly labelled as delinquent, rather than being recognized as individuals who need care and support.

Interestingly, neither ODI nor NSSI behaviours were primarily linked to functions related to inducing positive affect. However, ‘have fun/ for enjoyment (rather than to reduced unpleasant emotions)’ was reported as a function of NSSI four times. The role positive affect in NSSI was investigated in Muehlenkamp et al.’s (2009) study, which found a decline in positive affect preceding NSSI events and an increase immediately afterward. Jenkins and Schmitz (2012) found that participants experienced positive affect after engaging in NSSI, not just a decrease in negative affect. This finding is significant as it suggests that inducing positive affect may be a motivating factor for NSSI engagement. However, due to the limited occurrences of NSSI events where inducing positive affect was cited as a function, further exploration of this is outside the scope of the current study.

One participant used the text-box option in the functions question of the EMA survey to self-identify the function of their ODI behaviour. They described the function of their ODI behaviour 'verbally abusing or annoying someone with the expectation that they might physically harm or hurt you' as serving the function of 'wanting to feel in control.’ This response aligns with Williams’ (2007) findings, which suggest that behaving in an aggressive way can help individuals gain control, replacing needs that arise when they feel a loss of power or have been made to feel unworthy.

Similar findings have been observed in relation to NSSI. Peel-Wainwright and Hartley’s (2021) study found that participants engaged in NSSI to gain a feeling of control over themselves and sometimes others, in an effort to fulfil their emotional needs and communicate distress. Further research into the specific situations or emotions that lead participants to seek control would be valuable to understand whether this motivation is rooted in social, interpersonal, or emotional factors.

Wellbeing Indicators and Their Association with NSSI and ODI

Results revealed that emotional contentment appears to be more closely linked with ODI than NSSI. ODI behaviours were associated with significantly higher calmness levels before the behaviour compared to NSSI behaviours, which is particularly surprising given that ODI in the current study was found to primarily proceed feelings of anger. However, this finding is likely skewed due to the difference in number of instances of ODI (n=9) and NSSI (n=82) in the current study. Previous research that contrasts with these findings indicates that individuals engage in ODI with the belief that it will help alleviate anger (Busman et al., 2001), or when uncomfortable emotional states build to the point of becoming intolerable (Larsen et al., 2012). Therefore, it is reasonable to expect that levels of calmness would not be high prior to engaging in ODI in many instances. Donahue and Khan's (2023) finding supports this, noting that individuals were more likely to engage in ODI-type behaviours when they assessed their own current emotional state as unbearable.

Participants in the current study reported lower levels of tension before engaging in NSSI compared to those who engaged in ODI, who indicated higher levels of tension. This finding is interesting, particularly as it contrasts recent research that links elevated stress levels with a heightened risk of NSSI (Liu et al., 2016; Wei et al., 2022). While the research exploring the direct relationship between tension and ODI is limited, recent studies suggest that stress may contribute to various forms of ODI-type antisocial behaviour (Takahashi et al., 2018). Further research with a larger sample size and more balanced events of both behaviours included in the data is needed to clarify the direct link between NSSI, ODI, tension and calmness levels to understand how clinical interventions such as stress management training could be implemented into the treatment of both behaviours.

Exercise and Disordered Eating Behaviours as Manifestations of NSSI

Dysfunctional eating and exercise behaviours were listed in the text box option multiple times in the EMA data. These were binge eating, restrictive eating/ starving, and over exercising. The interview material revealed that while disordered eating and excessive exercise are typically motivated by different mechanisms compared to NSSI, the intention behind these behaviours is meaningful to consider, as some engage in these behaviours for the same purpose as other NSSI behaviours (Fox et al. 2019). Research by Muehlenkamp et al. (2012) emphasises that when considering whether a behaviour constitutes as NSSI, it is important to consider not just by the behaviour itself, but by the underlying intent, especially when the behaviour is used as a way to regulate emotions or cope with distress. Interview material revealed that participants did feel that these behaviours functioned as a form of NSSI, which aligns with Washburn et al.'s (2023) finding, that for some, disordered eating or exercise behaviours can serve this purpose. it was deemed appropriate to include these behaviours in the current study, as their primary intent was emotion regulation rather than body image concerns.

This finding is significant in light of previous research highlighting exercise as an effective intervention for reducing NSSI in young people; however, the association is more complex (Kookalani et al., 2020). A recent study found that physical activity can have both positive and negative effects in relation to NSSI. While exercise can reduce stress and potentially lower the frequency of NSSI urges, it can also increase the risk of NSSI individuals use it as a coping mechanism for emotional distress, much like other strategies (Kookalani et al., 2020).

In this case, exercise might function similarly to other NSSI methods, for emotion regulation purposes (Zhou et al. 2024). Zhou et al. (2024) observed that more frequent physical activity directly increased NSSI frequency, while also reducing perceived stress.

This duality may have may have emerged because exercise was used as an alternative to other NSSI methods that reduce stress. Furthermore, the study found that social support was crucial in reducing NSSI engagement, as it weakened the link between stress and NSSI.

This research highlights a key consideration for the intervention of NSSI behaviours, that some of the treatment methods deterpreviously seen as beneficial may, in fact, contribute to worsening NSSI in some cases. Based on these findings, further research into the dual role of exercise and eating behaviour in relation to NSSI would be valuable.

While the current study did not directly examine the role of exercise or eating behaviours in relation to ODI, existing research suggests that exercise may reduce ODI in some people. For instance, Pels and Kleinert (2016) found that exercise generally reduced feelings of aggression in their sample, with the key determinant of this being the satisfaction and enjoyment participants derived from the exercise.

Feedback on Emotion Options in the EMA Survey

The difficulty some participants had when asked to select a singular ‘most felt’ emotion could be considered in the context of Scherer’s (2009) componential theory of emotions, which understands that emotions are complex and dynamic processes.

This theory suggests that in moments where emotions are heightened, such as before engagement in NSSI or ODI behaviours, many individuals experience complex emotion experiences, this can make it difficult to describe these experiences using simple terms such as ‘sad’ or ‘happy’, which may feel reductive.

During the debrief interviews, participants frequently reported that feelings of overwhelm, anxiety, boredom and fatigue were meaningful emotions driving urges to engage in both NSSI and ODI behaviours. However, chose “neutral” instead, despite its inapplicability. While "neutral" was intended to represent a lack of strong positive or negative emotion, participants often used it when experiencing mixed emotions or when none of the available

categories felt like a good fit. Future research could consider how including more emotion options may provide participants with labels that better reflect their experience. This could enhance the ecological validity of EMA data collection in future research (Shiffman, 2007), as well as build on existing understandings on the function of emotion regulation on NSSI and ODI behaviours. Future research could explore methods to distinguish between neutral emotions, emotional ambivalence, and intentional efforts to suppress negative emotions when they occur (Wang et al., 2018).

Emotion Option Feedback and the MEQ

To further investigate the interview material on the emotion options listed in the EMA surveys, it is relevant to consider the measure that this question was adapted from. The emotional categories used in the EMA prompts were based on the Multidimensional Emotion Questionnaire (MEQ). The MEQ was developed by Klonsky et al. (2019) as a psychometric tool for assessing emotion across multiple dimensions, capturing both emotion valence and intensity. The MEQ provides a nuanced approach to measuring emotional experiences by incorporating a range of distinct emotions rated on a Likert scale. It has been widely used due to its reliability and its ability to capture both momentary emotional states and patterns of emotional fluctuation over time (Raharjanti et al., 2023).

In adapting the MEQ for use in the EMA survey in this study, the scale was simplified to a smaller set of discrete emotions. These were afraid, happy, sad, angry, lonely, excited enthusiastic, frustrated, inspired, ashamed, enthusiastic and neutral. Participants selected their 'most felt' emotion during the time since their last completed EMA prompt. It is meaningful to consider interview material suggesting that these categories did not sufficiently capture the complexity of participants emotional experiences. For instance, one participant reported defaulting to selecting "neutral" when she felt anxious, as she perceived "afraid" as too intense to reflect her state. This interview material reflects a limitation in the adapted version of MEQ used in the current study. The MEQ was originally designed to measure multiple

aspects of emotions, such as their intensity, influence, and whether they are positive or negative, allowing participants to report multiple emotions at varying intensities (Klonsky et al., 2019). By shifting to a forced-choice format of emotion options, participants were required to select a single emotional state rather than expressing their intensity or any other related factors. This significantly limited the depth of analysis possible regarding the relationship between emotion, ODI and NSSI. This is especially true for emotions like anxiety, which is a mix of fear and arousal, making it difficult to categorise (Lang et al., 2009). The adaption of the MEQ in the current study also failed to account for any coexistence of positive and negative affect (Larsen et al., 2012).

Since the original Multidimensional Emotion Questionnaire (MEQ) assesses multiple dimensions of emotion, it is reasonable to consider, given participant feedback, that the adapted version used in this study may have been too limited in scope. Future studies could benefit from incorporating these dimensions to provide a more comprehensive understanding of emotional experiences. Integrating a dimensional scale to measure both the intensity and perceived nature of emotions has the potential to better capture their complexity.

Additionally, the 10 discrete emotions included in the original MEQ questionnaire were: happy, excited, enthusiastic, proud, inspired; sad, afraid, angry, ashamed, and anxious. This is important in the context of the interview material, which indicated that one participant frequently selected "neutral" because "anxious" was not listed as an option in the EMA survey. Given that "anxious" was included in the original MEQ, this provides further justification for ensuring that future adaptations more closely align with the original measure to avoid limiting participants' ability to accurately report their emotional states.

Feedback on Participant Experience

There was significant positive feedback collected in the interview material regarding the structure and usability of the m-Path app, which facilitated the EMA study. Many participants

noted its ease of use, and appreciated the regular prompts provided by the app. Feedback on the ease of use of m-Path is optimistic, especially given that EMA methods of research require consistent participation from participants to be successful (Singh et al. 2019). This consistency is important for several reasons related to ensuring reliability and validity of the data. First, EMA methods aim to capture the variability of experiences across different environments, with the goal of understanding the dynamic nature of emotions and behaviours (Shiffman, 2007) To achieve this, data must be collected consistently over a specific period, in the current study this was over 14 days. Inconsistent response data over this time period would have led to skewed understandings of how emotions and behaviours may be dynamic over different environments and mood states (Van Berkel et al., 2020). Secondly, EMA methods are useful for capturing longitudinal data, which can help to identify any trends over time (Johal et al., 2023). If participants were to drop in and out of the study over the 14-day survey period, this would affect the researcher's ability to track meaningful shifts in behavioural or emotional patterns. Finally, to draw reliable conclusions from the data, consistent participation ensures that the conclusions drawn from the data are inclusive of a full set of emotion and behaviour experiences, rather than from various isolated instances.

EMA and Facilitating Self-Awareness of Harmful Behaviours

It was evident from the interview material that the EMA prompts facilitated by the m-Path app helped to facilitate self-awareness in the participants, with many reporting a newfound understanding of their behavioural and emotional patterns related to harmful behaviours by the end of the study period. This aligns with research suggesting that interventions aimed at increasing emotional awareness can serve as an important step in regulating behaviours such as NSSI and ODI, which can at times be impulsive (Blair, 2016; Ip et al., 2024). While it was outside the scope of the current study to actively facilitate self-awareness in participants regarding their ODI or NSSI behaviours, this was an unexpected benefit. It suggests that real-

time assessment methods, such as EMA, can not only enhance ecological validity and reduce recall bias (Schatten et al., 2020), but may also actively improve self-awareness and potentially aid in emotion regulation. This finding points to the potential value of incorporating EMA into future studies. Additionally, the user-friendly interface of the m-Path app for delivering prompts facilitated this process, reinforcing its potential for inclusion in future studies.

Accessibility Feedback

While much of the interview material reflected a preference for a wider range of emotions to choose from in the EMA survey, interview material from a participant with autism emphasised the benefit of having a structured, narrow set of emotion options to choose from. For this participant, the simple emotion range made the EMA tool more accessible, and less overwhelming. Gray (1994) suggests that simplifying the range of emotional options in a psychological measurement tool can make it more accessible, particularly for individuals who struggle with identifying their feelings during periods of heightened emotion. This, in turn, can improve emotional awareness in relation to harmful behaviours within these populations (Morie et al., 2019). Making this tool more accessible for neurodiverse people is crucial, given the elevated risk of NSSI among autistic people. This increased risk may be linked to several factors associated with neurodiversity, including alexithymia, as well as higher rates of depression and anxiety (Moseley et al., 2019). This research would extend to ODI in a meaningful way also, given that some autistic people react to emotional overwhelm or pain with ODI-type behaviours such as banging or hitting floors, walls, or other people (Tahir, 2023).

Additionally, this feedback highlights the importance of designing interventions that are considerate of the needs of diverse populations. While some participants expressed a preference for a larger range of emotion options, it is crucial to consider the other participant

who favoured the narrow selection available in the current study. Addressing these preferences by incorporating features such as a text option for 'self-identified' emotions could enhance the inclusivity of future studies, thereby optimising participant engagement and the generalisability of the self-report data. Future research could further explore how EMA methods can be tailored to meet the needs of individuals with specific emotion regulation difficulties, such as those related to autism.

Interview Material and Future Directions for Investigation

There was also interview material regarding potential improvements to the EMA surveys to be considered in future studies. One participant suggested that including a gauge for the severity of behaviours when reporting NSSI would have been helpful. Another participant noted that the timing of the prompts was not always ideal as they felt unbalanced at times and did not capture their experience well. This interview material suggest that special attention should be paid to the prompt schedule, ensuring they are easily spread out throughout the day between 10am and 10pm. This feedback is important for future studies, as it has direct implications for the validity and reliability of the data in understanding participants' emotional experiences across a wide range of times and environments. Given that one reason the EMA method was chosen for the current study was to enhance its ecological validity (Shiffman, 2007), it is crucial for future studies to balance the timing of prompts throughout the survey period. Emotional experiences vary from day to day, and also during the day, and inconsistent prompting may result in missing important emotional or behavioural shifts and events (Aan Het Rot et al., 2012).

Strengths

There are several strengths to the current study. Firstly, research examining ODI and its functional similarities to NSSI as well as similarities in protective and risk factors is limited within both a New Zealand and international context. Therefore, the topic of the current study

is novel and warrants further exploration. The current study contributes to a growing body of research redefining and expanding the boundaries of what are considered harmful behaviours, and the functions of these for young people. This is important, especially given Curtis and Terry's (2022) suggestion, that the scope of harmful behaviours young people are engaging in is much broader than previously thought.

Despite the limited number of participants reporting ODI in this study, these findings help address a significant gap in the literature and provide a valuable foundation for future research, particularly on the shared role of emotion regulation for these behaviours.

The ethical considerations and participant-centred design of this study, such as the use of reminder prompts, helped to ensure that participants' felt supported throughout the process of the study. Attention to participant experience, especially during the 14-day survey period, which may be considered a relatively long duration for participants to remain engaged (excluding the initial Zoom calls and debrief meetings), was critical to ensure sustained participant involvement. Relying on participant motivation to complete prompts could have led to higher dropout rates, but by offering consistent prompt reminders, the current study minimised this risk. This approach helped participants stay connected to the study even when they encountered challenges, potentially increasing adherence and engagement. These strategies may enhance the effectiveness of future EMA-based research on NSSI and ODI.

The use of EMA methods in the current study represents a significant strength, as it helps reduce recall bias, and captures more ecologically valid insights that traditional retrospective methods (Stinson et al., 2022). Employing EMA in this study was a novel approach that has the potential to provide rich and detailed insights into the real-time experiences of participants. Participant feedback indicated a generally positive experience with the EMA process, reinforcing the feasibility and acceptability of this method for studying harmful behaviours in this demographic population.

Limitations

There are several limitations to the current study. Firstly, one limitation may be the smaller sample size compared to what was initially anticipated given the method of recruitment. Despite initial interest through recruitment channels such as social media advertisements, many potential participants did not respond to follow-up emails after receiving further details about the project. While the debrief interviews were intended to triangulate the findings from the EMA, the final sample size limited the breadth of data available for analysis. The smaller sample size also limited the generalisability of any findings and somewhat affected the statistical power of the analyses (Brysbaert, 2019). This was particularly true when making subgroup comparisons, such as gender differences between NSSI and ODI behaviours, However, the small sample size in the current study was ameliorated by the data from the debriefing interviews.

Notably, the limited number of instances of ODI (only 9) hindered the ability to draw definitive conclusions regarding this behaviour. This was a surprising limitation considering the recruitment methods utilised in the current study, as many of the participants were recruited from an earlier stage of the study, the large-scale online survey and these participants had indicated here that they had engaged in ODI in the preceding two weeks.

Additionally, the differences in participant response rates to the EMA prompts may have caused a compliance bias (Van Berkel et al., 2020). This is where differences in response rates cause more responsive participants to have a larger impact on the final conclusions of the study. In the current study, some participants filled out all possible prompts as well as reported harmful behaviour using the event-based sampling button, while the participant who was least responsive completed only 15 prompts. This, paired with the small sample size, means that the results are biased by default. The total number of responses across all participants was 628, with a mean of 56.45 (SD= 16.70).

There are some limitations regarding the EMA survey, which were identified during debrief interviews. Many participants identified during these interviews that they would not have selected 'neutral' as an emotional response if other emotions had been available. This pattern suggests that the absence of certain emotion options may have led participants to select a less accurate response, potentially skewing the data and reflecting a bias in how emotions were reported. By addressing these methodological considerations, researchers can enhance the ecological validity of EMA studies while preserving the theoretical strengths of the MEQ measure (Klonsky et al., 2019).

Theoretical Implications

The current study revealed several meaningful theoretical implications for understanding the commonalities and differences in functions and antecedents of NSSI and ODI behaviours. By using a novel EMA approach, this research offers an understanding of these behaviours within a young population in a New Zealand context, highlighting the roles of emotion regulation in these behaviours, as well as identifying valuable ways to extend existing theoretical frameworks.

One key finding of the current study was the role of emotion regulation in both NSSI and ODI behaviours. Specifically, the regulation of negative affect, with NSSI frequently associated with reducing anxiety and worry, and ODI linked to reducing frustration. These findings align with emotion dysregulation models put forth by Klonsky (2007) and Nock (2009), that suggest that NSSI and ODI-type behaviours function as coping strategies for managing overwhelming, uncomfortable emotions.

The challenge that participants had in selecting a single 'most felt' emotion, and consequent selection of 'neutral' more often than relevant points to the possibility that emotional experiences leading up to these behaviours are more complex and dynamic than can be captured in adapted models of the MEQ measure that use a discrete set of emotions

rather than a dimensional approach. This suggests that emotional experiences, particularly in relation to ODI and NSSI, may not be easily categorised into discrete emotions. Instead, they may involve a range of emotional states that vary in intensity and are difficult to capture. This underscores the need for more nuanced, flexible approaches to measuring emotions, such as the original MEQ (Klonsky et al., 2019) that accounts for many different emotional dimensions.

The findings related to gender identity also have theoretical implications, particularly the finding that non-binary participants reported higher rates of NSSI than male or female participants contributes to growing evidence in literature than individuals who self-identify outside of the gender binary may experience specific challenges related to their identity that can contribute to an elevated risk for engaging in NSSI behaviours. As a result, incorporating intersectionality into future research on NSSI and ODI could be beneficial- in particular, focusing on intersections of identity such as gender, sexuality and related social experiences. Further research into gender norms and related social dimensions influence ODI behaviour in people who are outside the gender binary. This could provide meaningful information on how ODI functions as an emotion regulation tool for different genders (Pickard, 2015).

The current study reinforces the need for theoretical frameworks that account for both self-directed and outward-directed harmful behaviours as responses to emotional distress. Existing models often focus on NSSI and ODI separately, but the findings suggest that these behaviours may share underlying mechanisms, such as emotion regulation difficulties, impulsivity, and social reinforcement (Larsen et al., 2012).

This study challenged traditional conceptions of ODI behaviour. While ODI-type behaviour is often framed in the literature as being primarily motivated by a need for dominance, power or retaliation (Pickard, 2015), findings from this study indicate that

models of aggression should understand ODI-type behaviour as a potential signalling of distress.

Interview material and the analysis of previous literature highlighted how social norms, particularly those related to masculinity, may shape the acceptability and expression of ODI. This aligns with social learning theories, which suggest that behaviours are reinforced or discouraged based on cultural expectations (Bandura, 1977). The findings indicate that theories of NSSI and ODI should more explicitly incorporate sociocultural factors, such as gender norms and peer reinforcement, to better account for the functions of these behaviours.

Clinical Implications

There are several clinical implications of the current research. First, the current study provides valuable opportunities for further research to investigate the benefits of a cross-diagnostic approach to treating NSSI and ODI in New Zealand. A cross-diagnostic approach to treating these behaviours could be informed by findings that both NSSI and ODI function for some people as a form of emotion regulation. Given that previous literature has identified shared risk factors for both NSSI and ODI such as adverse childhood experiences, impulsivity, deficits in emotion regulation skills, and maladaptive schemas, treatment approaches like cognitive-behavioural therapy (CBT) may be effective for addressing both behaviours. CBT can help reframe dysfunctional thoughts about self-worth or interpersonal relationships and teach emotion regulation skills (Langford et al., 2022). Additionally, trauma-informed care could be beneficial at reducing both behaviours, given their shared association to negative past experiences (Shafti et al., 2021).

While NSSI treatments often focus on emotion dysregulation through therapies like CBT or DBT (Shafti et al., 2021), ODI treatments typically address outward behaviours with approaches like disciplinary actions or anger management (Lee & Guiseppe, 2018; Calvo et al., 2022; Slade, 2019). By recognising that both behaviours may have common underlying

issues that need to be addressed, a cross-diagnostic approach ensures that young people engaging in ODI are not overlooked and receive the appropriate treatment, (Green & Jakupcak, 2015), which may be similar to the treatment some young people engaging in NSSI are receiving. Furthermore, as mentioned in the literature review, widely adopted tools for assessing NSSI, such as Gratz and Roemer's (2004) DSHI, typically do not consider ODI in the context of emotion regulation functions. However, with findings from the current study showing that emotion regulation is a primary function for some ODI behaviour, the inclusion of ODI behaviour in measures such as the DSHI may be beneficial in clinical settings.

Given the current study's findings that 'neutral' emotion states were often reported as antecedents to NSSI and ODI behaviours, clinical assessments of these should be comprehensive and complex, in consideration that the emotional experiences that precede these behaviours may not always have clear labels.

The current study's findings of a higher prevalence of NSSI among non-binary individuals highlights the importance of incorporating gender-inclusive approaches when designing treatment interventions for those outside the gender binary (Calvete et al., 2023).

Future Directions

The findings of the current study reveal several possible directions for future research. This study highlighted a gap in the literature regarding the functions and motivations underlying ODI behaviour in young people, revealing that these may be linked to emotion regulation more than previously thought. Despite the small amount of ODI events reported in this study, the findings do provide preliminary insights that reveal an important area to be explored further. The current study also provides valuable findings on aspects of the relationship between NSSI and ODI, particularly in relation to emotion regulation functions. As such, the current study offers a foundation for further studies to expand upon, in order to

more comprehensively understand this relationship in order to create more targeted interventions for young people in New Zealand who are engaging in these behaviours.

Additionally, future research should focus on improving representation from Māori and Pasifika communities, the latter of which had no participants in this study. Further studies should seek to better understand how different sociocultural contexts and experiences can influence NSSI and ODI behaviours to help create better outcomes for these populations.

Future studies should focus on expanding the sample size of the study. Future studies could consider partnerships with schools, or cultural and community organisations to broaden the diversity of the participant pool, as well as increase the accessibility for different populations to take part.

Conclusions

While NSSI and its functions, risk factors and treatment implications have been extensively researched worldwide, ODI remains a complex and understudied topic, including in New Zealand. The current study emphasises that, while NSSI and ODI manifest differently, emotion regulation is a primary function for both behaviours. The current study has also revealed that both behaviours share similar risk factors, such as an inability to cope with intense emotions through emotion regulation strategies. The findings from the current study examining the similarities between both behaviours could yield important insights for therapeutic interventions, preventing young people who engage in ODI from being overlooked. Consistent with existing literature, the current study found that non-binary individuals were at the highest risk for engaging in NSSI. This result may illustrate a broader societal pattern of non-acceptance regarding gender non-conformity, which increases the risk for NSSI. While beyond the scope of the current study, this result warrants further exploration (Calvete et al., 2023).

As anticipated, both NSSI and ODI were found to serve similar emotion regulation functions. NSSI was primarily associated with reducing anxiety, whereas ODI behaviours were more frequently linked to alleviating frustration. These results suggest that the nature of both behaviours and the emotions that precede them may contribute to ODI being perceived as delinquent, particularly when ODI behaviours occur in response to anger (Slade, 2019). However, this finding underscores the importance of Curtis and Terry's (2022) suggestion that anger, like anxiety and worry, is an emotion that requires regulation. Given that both NSSI and ODI function for emotion purposes, it is crucial to emphasise the need for emotion-regulation interventions aimed at managing anger alongside more commonly addressed emotions like anxiety.

The current study found that ODI behaviours were associated with higher levels of tension before the event and greater calmness afterward, in comparison to NSSI. This contrasts with Claes et al. (2006), who found that NSSI was used to relieve tension by both genders. However, this result is not surprising, as previous research has shown that the risk of engaging in ODI behaviours increases when individuals perceive their emotions as unbearable and unmanageable (Donahue & Khan, 2023).

The most reported ODI behaviour in this study was punching or kicking an object, while skin-picking emerged as the most frequently reported form of NSSI. While punching walls is consistently classified as an ODI behaviour in the literature (Green & Jakupcak, 2015; Sadeh et al., 2010), skin-picking has been debated in the literature as a form of NSSI rather than a symptom of obsessive-compulsive or related disorders (APA, 2022). However, a growing body of research has highlighted the emotion-regulation properties of skin-picking, similar to cutting or burning.

The inclusion of skin-picking in the current study aims to contribute to this body of research, broadening current conceptualisations of NSSI behaviours. Additionally, qualitative

data indicated that some participants viewed disordered eating and excessive exercise as forms of NSSI, further reflecting ongoing debates about the sufficiency of intent in defining NSSI. Previous literature suggests that these behaviours qualify as NSSI if the intent to cause non-lethal harm to the body in the short term is present (Fox et al., 2019).

Emotional antecedents varied across ODI and NSSI behaviours. Shame was the strongest predictor of NSSI, while anger was the most common emotional antecedent of ODI. These findings are unsurprising, as both shame and anger are negative emotions, with previous literature suggesting that NSSI (Wolff, 2019), and ODI (Donahue et al., 2014) often function to regulate negative emotions. Shame has often been identified as an emotion preceding NSSI (Taylor et al., 2018), and anger has consistently been found to precede ODI-type behaviours (Pickard, 2015). Despite differences in emotion, both emotions were perceived as unmanageable by participants, prompting either ODI or NSSI as coping mechanisms.

In the current study, emotions like shame and loneliness were linked to NSSI when an urge to engage in either ODI or NSSI was felt. Conversely, anger was most closely associated with ODI in similar circumstances. This suggests that while shame and anger were correlated with antecedents of NSSI and ODI, respectively, these emotions were intense enough to lead to behavioural actions in some instances. This highlights the importance of considering these emotions as crucial risk factors in treatment, as addressing them with emotion regulation strategies may help prevent the escalation of harmful coping behaviours. NSSI was also found to occur when participants felt emotionally neutral or bored, rather than during positive emotions like excitement. Fear, sadness, and inspiration had minimal impact on triggering either behaviour, suggesting that both NSSI and ODI are primarily associated with attempts to cope with negative emotional states, as anticipated.

A significant number of participants selected "neutral" as a pre-NSSI emotion. However, qualitative responses indicated that often, this reflected feelings of tiredness, boredom,

anxiety or being overwhelmed. This aligns with research suggesting that boredom or intense overwhelm can trigger both NSSI and ODI (Chine et al., 2017; Kuehn et al., 2022). This highlights the need for future studies to offer a broader range of emotional response options, as the adapted version of the MEQ used in the current study may have limited the validity of emotional responses, thus impacting the overall results. While the MEQ offers a robust measure of emotions, its adaptation for brevity may not fully capture the complexities of emotional antecedents to NSSI and ODI behaviours.

Although the sample size for ODI behaviours was small, the findings support existing theories that difficulties in regulating anger contribute to outward aggression. The absence of positive affect before engaging in ODI behaviours contrasts with prior research, suggesting that further investigation is necessary. Qualitative responses also suggest that participants engaging in ODI behaviours may have specific awareness of societal perceptions of these behaviours, with some participants hiding them until in more acceptable spaces. This highlights the issue of potential underreporting of ODI behaviours in Aotearoa and suggests the need for more inclusive research methodologies that account for social influences on these behaviours.

The current study emphasizes the importance of understanding both NSSI and ODI as emotion regulation strategies, with anger and shame being key emotional antecedents. The findings highlight the need for future research to explore the commonalities between both behaviours, offering valuable insights for treatment approaches.

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Appendix

Appendix A

Participant Recruitment Flyer

The SHInE Project: Emotional Well-Being Research

You are invited to take part in a study about emotional health and well-being, and the ways in which people deal with difficult emotions. We're especially interested in behaviours that may cause injury.

The study is in 3 parts: a survey, interviews, and 'EMA'. We are now especially interested in finding participants for EMA.

EMA involves responding to prompts that we will send you on your phone, asking you to complete a very brief questionnaire – this just takes a couple of minutes. You would be asked to do this several times a day, for two weeks, so that we can find out how you are feeling at different times, and how you are dealing with any difficult emotions. You will be compensated for your time.

Please note that the research includes questions of a very sensitive nature.

This research has been approved by the University's Human Research Ethics Committee [HREC(Health)2023#32].

For more information, please contact:

The SHInE project team: shine.project@waikato.ac.nz or

Dr Cate Curtis, the research leader: cate.curtis@waikato.ac.nz

or see the project website:

https://theshineproject2023.wordpress.com/

Appendix B

Initial Recruitment Email

Kia ora,

Thank you for registering interest in the Shine project! My name is Tobey, I am a part of the Shine research team ☺

I wanted to invite you to take part in my specific area of the research, which is a brief momentary survey. I have attached some information on what this involves. I would love it if you could take part as I think the information you could provide will be really helpful for the project. If you choose to be involved, you will be compensated for your time.

I have attached an information sheet which provides more information on the momentary survey, and what this project involves. It also contains some information about the participation criteria, so have a read to see if you feel the project will be right for you before we proceed.

If you would like to continue, we can go ahead and schedule a very brief meeting via Zoom. Let me know what your schedule looks like and we can work together to arrange a time that suits.

Thank you again for expressing interest in the survey! Please don't hesitate to ask me any questions at all, and I am happy to answer any questions on the zoom call as well.

Ngā mihi,

Tobey

Appendix C

Consent Form and Information Sheet

Emotional Health Research: The SHInE Project

EMA CONSENT FORM

The following information will appear on the first screen of the questionnaire, but we're proving you with this opportunity to read it and ask questions.

You have received a copy of the Information Sheet describing the research project. Any questions relating to the research, have been answered to your satisfaction. You understand that you can ask further questions about the research at any time during your participation and can withdraw your participation at any time ***up to four weeks*** **from today**.

You will likely receive the first prompt to complete the questionnaire within 24 hours of this call. You understand that you can stop taking part at any time, and that compensation depends on how many times you complete the questionnaire (which will take 2-3 minutes each time), as explained in the information sheet.

You will retain ownership of your information, but you give consent for the researchers to use that information for the purposes of the research outlined in the Information Sheet.

Please complete the following checklist. Tick [✓] or enter a 'X' the appropriate box for each point.	**YES**	**NO**
I have read the Participant Information Sheet, or have had it read to me in a language I understand, and I fully understand what it says.		
I have been given sufficient time to consider whether to participate in this study.		
I am satisfied with the answers I have been given regarding the study and I have a copy of this consent form and information sheet.		
I understand that my participation in this study is confidential and that no material, which could identify me personally, will be used in any reports on this study (unless I request otherwise).		
I wish to receive a summary of the findings.		

Participant : ____________________ Researcher : ____________________

Signature : ____________________ Signature : ____________________

Date : ____________________ Date : ____________________

Contact Details : ____________________ Contact Details : ____________________

Emotional Health Research: The SHInE Project EMA

Sometimes life gets difficult, and people cope with this in different ways. Some people have friends, family or other people who can help them, some seek professional help such as counselling or therapy, some use drugs or alcohol to cope, some self-harm and there are lots of other ways of coping. This research is about the difficult emotions that young people (16-25 years of age) face, and how they cope with them. We're especially interested in behaviours that may cause injury. The project is led by Dr Cate Curtis, of the School of Psychology at Waikato University. Cate has worked at the university for 15 years, and was a youth worker before going to uni, as well as various other things before that. She's NZ-born of Dutch descent.

This information sheet is to tell you more about one aspect of the research, 'EMA'. You can find out about the other aspects of the research, a survey and interviews, here: https://theshineproject2023.wordpress.com/

Research Project Leader:
Dr Cate Curtis

Who could take part?

People aged between 16 and 25 who would be interested in talking about the difficult emotions they face, and how they deal with them – especially any harmful behaviours. Cate's previous research has been on self-harm, anti-social behaviour and suicide among young people, and these are the sorts of problems we're particularly interested in finding out more about.
We hope that through better understanding problems and the ways young people cope with them, it will be easier to offer helpful services and support.

What do research participants do?

Once you make contact to find out about taking part, we would arrange a brief discussion, on the phone or zoom, to make sure that this project is right for you. For example, because the research is about harmful behaviours and managing strong emotions, we want to find out a bit more about you, and make sure that you are aware that the research does include some difficult topics.

Sometimes thinking about problems can be upsetting, so please think carefully about whether taking part is right for you. We don't want this research to cause another problem for you!

This part of the project (there's also a survey and interviews) uses a research method called 'EMA'. This would involve sending a prompt to your phone several times a day (between 10.00am and 10.00pm), asking you to complete a very brief questionnaire. Completing the questionnaire (which is the same every time), only takes a couple of minutes. We would like you to complete the questionnaire several times a day for two weeks. You will have half an hour after each prompt to begin the questionnaire, and you will have five minutes each time to complete it (though it won't take that long).

If you choose, you can stop participating at any time. You can also contact the research administrator at the SHInE project up to four weeks after you started if you change your mind and don't want your information to be used.

You would receive Warehouse vouchers to say 'thank you'; the value depends on how many times you complete the questionnaire. So, you would be asked to complete the questionnaire about 5 times a day for 14 days. That would be a maximum of 70 times, taking a total of two to two and a half hours over the 14 days; if you complete the survey every time, we would give you $70 (that's about $30-$35 an hour). If you did it 50 times you'd get $50, and if you did it 30 times you'd get $30.

Who are the researchers?

There are several people on the research team in addition to Dr Curtis.

Tobey Morrison will be the key researcher for this part of the research. Tobey was born and raised in the Waikato. She has a degree in Psychology and Human Development at the University of Waikato and is currently completing her Master of Social Sciences in Psychology. Ultimately, Tobey hopes to use her degree to register as a Clinical Psychologist. She is passionate about improving mental health outcomes across Aotearoa, and celebrating the

Researcher:
Tobey Morrison

unique strengths and perspectives within all of us to drive positive change. Outside of her studies, Tobey loves spending time writing, being outdoors, hiking, or at the beach with her dog.

Dr Nicky Kanade is our research administrator. Nicky has a doctoral degree in sociology from the Univeristy of Auckland, exploring online discussions of mental health. Nicky has worked on setting up this project and will be involved in the initial information collection.

We are also currently recruiting a masters student and a doctoral student.

What happens next?
If you want to find out more or arrange to take part, email us at shine.project@waikato.ac.nz. It would be helpful if you suggest a few different times that would suit you for a chat. Then if everything's good, we'll get your mobile number to send the questionnaire prompts, and you can start. Once the two weeks are up, we'll work out how many times you completed the questionnaire and arrange for you to get your vouchers.

Once the research is complete, all the information will be combined and written up into reports and published – but your information will be anonymous.

Some other things you should know:
This research has been approved by the University of Waikato Health Research Ethics Committee; application number 2023#32. If you have concerns about the ethics of this research, you can contact the committee secretary: humanethics@waikato.ac.nz.

If you agree to take part you will be asked to complete a consent form, to make sure that you know everything about the research that you need to, and that you are happy to take part.

Emergency Help Services:
If you find taking part in this research upsetting, you might like to contact one of these support services:

Depression Helpline	0800 111 757 http://www.depression.org.nz/
Lifeline (all ages)	0800 543 354 http://www.lifeline.org.nz/corp_Need-Help_555_2001.aspx (also has links to other services)
The Lowdown (depression help for young kiwis)	free text 5626 http://www.thelowdown.co.nz/#/home/
Victim Support	0800 842 846 http://www.victimsupport.org.nz/get-help/your-help-lines/
Whats up	0800 942 878 http://www.whatsup.co.nz/teens
Youthline	0800 376 633 http://www.youthline.co.nz/ free text 234

Appendix D

Study Survey Components

Consent process [completed once only]

By continuing on to the next screen, as stated in the consent form you have received, you are agreeing that:

You have received a copy of the Information Sheet describing the research project. Any questions relating to the research have been answered to your satisfaction. You understand that you can ask further questions about the research at any time during your participation and can withdraw your participation at any time ***up to four weeks*** **from today**.

You understand that you can stop taking part at any time, and that compensation depends on how many times you complete the questionnaire, as explained in the information sheet.

You will retain ownership of your information, but you give consent for the researchers to use that information for the purposes of the research outlined in the Information Sheet.

Please complete the following checklist. Click the appropriate box for each point.	**YES**	**NO**
I have read the Participant Information Sheet, or have had it read to me in a language I understand, and I fully understand what it says.		
I have been given sufficient time to consider whether to participate in this study.		
I am satisfied with the answers I have been given regarding the study and I have a copy of this consent form and information sheet.		
I understand that my participation in this study is confidential and that no material, which could identify me personally, will be used in any reports on this study (unless I request otherwise).		
I wish to receive a summary of the findings.		

Demographic factors [collected once only]

We would like to begin your part in the research by finding out a little more about your background.

How old are you?

16 or 17

18 to 20

10 to 25

26 to 30

31 or older

What is your gender?

Female

Male

Non-binary

Trans

None of these

Prefer not to say

What is your ethnicity (please click all that apply)

Māori

European

Pasifika

Asian

Middle eastern / Latin American / African

Are you currently (please click all that apply):

Studying full-time

Studying part-time

In paid employment full-time

In paid employment part-time

Doing unpaid work (e.g. childcare)

Unemployed but wanting to work

Other (please specify)

What is your annual income (to the nearest category)?

Under $20,000

$20,000 - $29,000

$30,000 - $39,000

$40,000-$49,000

$50,000-$59,000

$60,000-$69,000

$70,000-$79,000

$80,000-$89,000

$90,000-$99,000

More than $99,000

Questions about emotions

Since the last prompt, have you mostly felt:

- Happy
- Excited
- Enthusiastic
- Proud
- Inspired
- Sad
- Angry
- Afraid
- Ashamed
- Anxious
- Lonely
- Neutral

[one option only to be chosen; presented in random order]

At this moment, do you feel:

- unwell–well,
- agitated–calm;
- content–discontent,
- relaxed–tense

[presented on a sliding scale]

Harmful behaviour

Since the last prompt, have you ***felt an urge*** to engage in any of the following behaviours to deliberately harm or injure yourself, but without suicide intent, but didn't actually do so [presented in random order]:

- Cutting
- Burning
- Severe scratching
- Swallowed a harmful substance

- Bit yourself
- Hit yourself (including with an object)
- Punched or kicked an object
- Started a fight
- Verbally abused or annoyed someone with the expectation that they might physically harm or hurt you
- Physically assaulted someone
- Another

Since the last prompt, have you ***actually engaged*** in any of the following behaviours to deliberately harm or injure yourself, but without suicide intent [presented in random order]:

- Cutting
- Burning
- Severe scratching
- Swallowed a harmful substance
- Bit yourself
- Hit yourself (including with an object)
- Punched or kicked an object
- Started a fight
- Verbally abused or annoyed someone with the expectation that they might physically harm or hurt you
- Physically assaulted someone
- Another

A reason why some people do these things is to manage emotions. When you've done this has it been because you wanted to:

- Reduce sadness/depression
- Reduce anxiety/worry
- Reduce frustration
- Reduce anger
- Reduce suicidal feelings
- Have fun/for enjoyment (rather than to reduce unpleasant emotions)
- Change some other emotion. If so, please briefly tell us a little more below [free text box]
- None of these.

Thanks for completing the questionnaire (again)! If you have any questions or concerns, you can contact shine.project@waikato.ac.nz.

If completing this has raised any issues for you, the following services could help:

Depression Helpline	0800 111 757 http://www.depression.org.nz/

Lifeline (all ages)	0800 543 354 http://www.lifeline.org.nz/corp_Need-Help_555_2001.aspx (also has links to other services)
The Lowdown (depression help for young kiwis)	free text 5626 http://www.thelowdown.co.nz/#/home/
Victim Support	0800 842 846 http://www.victimsupport.org.nz/get-help/your-help-lines/
Whats up	0800 942 878 http://www.whatsup.co.nz/teens
Youthline	0800 376 633 http://www.youthline.co.nz/ free text 234

Appendix E

Instructions for Downloading m-Path

m-Path Participant Instructions

Hi! Thanks for choosing to take part in the Shine Project's EMA study. Please carefully read the instructions below on how to participate in the EMA study.

As we talked about, to take part in this study, you will need to download an app to your phone. The app is called m-Path, and we use this to send you notifications to enter the information (data) that we're collecting for the research. You enter that information into the app, like an online survey. The app is also how we keep track of how many times you've taken part, to enable us to give you the correct number of gift-cards, to compensate you for your time.

The first time you use the app, there will be a few additional questions at the start: your age, gender, etc. There will also be an 'informed consent' section, to make sure that you know everything you need to know about the study and to confirm that you're happy to take part. Once you've completed these two sections, you won't need to do them again.

After that, you will get notifications through the app several times a day for two weeks, asking you to answer the questions. If you want to, you can also enter information into the app at other times, if you've engaged in any injurious behavior. To have this option, you need to click 'allow' on the notification you receive asking you whether you want to put a new home button in your home screen. Once you press 'allow', the button will be installed on your homepage and you can press it any time you want to self-report your injurious behavior.

So, here's what you need to know about the app...

1. ***How to download m-Path and join the Shine Project EMA study***

Please click on the below link and follow the instructions on how to download m-Path app on your phone and create an m-Path account:
https://m-path.io/manual/knowledge-base/create-an-account-participant/

Appendix F

Debrief Email

Kia ora,

You are almost at the end of the two-week period of receiving survey prompts. Thank you so much for agreeing to be a part of the survey. Once the survey period is over, I will organise getting your vouchers sent to you.

I was also wondering if you would be keen on doing a zoom debrief at a suitable time for you. This zoom is optional, and serves the purpose of getting feedback on your experience doing the survey, for example, did you feel that you were able to better report on your emotions and experiences when prompted in real time, rather than asked about this later?

If you were interested in being a part of the zoom debrief let me know and we can organise it, if not that is totally fine.

The last day of prompts is scheduled for (insert relevant date)

Ngā mihi,

Tobey