



MONASH University

Me, myself and my song: Evaluating the impact of self-concept-focused therapeutic songwriting in subacute neurorehabilitation

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List of Abbreviations

ABI	Acquired Brain Injury
ADL	Activities of Daily Living
ARC	Australian Research Council
AIHW	Australian Institute of Health and Welfare
ANOVA	Analysis of Variance
ASIA	American Spinal Injury Association
CDMSII	Cognitive-Developmental Model of Social Identity Integration
CFSS	Core Flow State Scale
ERQ	Emotion Regulation Questionnaire
ERQ REAPP	Emotion Regulation Questionnaire Reappraisal subscale
ERQ SUPP	Emotion Regulation Questionnaire Suppression subscale
FIM	Functional Independence Measure
FIM-M	FIM Motor Subscale
FIM-Cog	FIM Cognitive Subscale
FS	Flourishing Scale
GAD-7	Generalised Anxiety Disorder Scale – 7 item
GBS	Guillain-Barre Syndrome
GCS	Glasgow Coma Scale
HISD	Head Injury Semantic Differential Scale
HREC	Human Research Ethics Committee
ICH	Intracranial haemorrhage
MCA	Middle Cerebral Artery
MCID	Minimal Clinically Important Difference
MSQ	Meaningfulness of Songwriting Questionnaire
MVA	Motor Vehicle Accident
NA	Negative Affect
PANAS	Positive and Negative Affect Schedule
PA	Positive Affect
PHQ-9	Patient Health Questionnaire
PSDQ	Physical Self-Description Questionnaire
PTA	Post-Traumatic Amnesia
RSCQ	Robson Self Concept Questionnaire

RSES	Rosenberg Self-Esteem Scale
SCI	Spinal Cord Injury
SD	Standard Deviation
SFSS	Short Flow State Scale
SPSS	Statistical Package for the Social Sciences
SWLS	Satisfaction with Life Scale
T	Time, i.e. Time 1
TBI	Traumatic Brain Injury
TSCS-2	Tennessee Self-Concept Scale – 2 nd edition
WFMT	World Federation of Music Therapy

Abstract

Neurological injury results in functional, physical and emotional changes that necessitate significant adjustment as individuals make meaning of the injury and associated deficits. These injuries also pose an immediate threat to sense of self, and an individual may perceive themselves as broken, shattered or a different person after injury. Interventions specifically targeted at rehabilitating self-concept in neurological injury populations are scarce. Models of identity or self-concept rehabilitation typically revolve around adjusting to discrepancies between perceived past self and aspired-to self, so that a new, re-integrated sense of self can be reached. Introduction of specific self-concept-focused interventions in the early stages post-injury, when individuals are engaging in subacute inpatient rehabilitation, may therefore be helpful but currently has limited evidence. Music therapy offers an adaptable means of examining individual views of self-concept and capturing accompanying emotional states in the subacute rehabilitation context. To this aim, the current thesis presents the results of a series of studies examining early changes in self-concept, subjective wellbeing, distress and emotion regulation among individuals with spinal cord and brain injuries. Across the studies, self-concept was measured via the Head Injury Semantic Differential Scale (HISD) and the Tennessee Self-Concept Scale – 2nd edition (TSCS-2). Wellbeing was assessed via the Flourishing Scale (FS), the Satisfaction with Life Scale (SWLS) and the Positive Affect (PA) subscale of the Positive and Negative Affect Schedule (PANAS). Distress was assessed via the Patient Health Questionnaire (PHQ-9), the Generalised Anxiety Disorder Scale (GAD-7), and the Negative Affect (NA) subscale of the PANAS, and emotion regulation was assessed via the Re-appraisal and Suppression subscales of the Emotion Regulation Questionnaire (ERQ). Functional changes across rehabilitation were also measured using the Functional Independence Measure. Study one applied a case series analysis of trends in outcome variables for five individuals with spinal cord injuries who undertook the songwriting

intervention. There was a tendency for those with less severe injuries to demonstrate greater positive shifts in outcome variables as well as greater functional gains. Study two examined the individual case histories of five songwriting participants with acquired brain injury and suggested that those who showed positive outcomes also showed greater functional gains. Study three involved a comparison of intervention group and comparison group participants over time. Significant interaction effects were detected for the Identity, Behaviour and Physical subscales of the TSCS-2, with comparison group participants facing more significant declines from mid- to post-intervention on these indices than did intervention participants. In further exploratory analyses, a significant positive correlation was found between total TSCS-2 score and functional change during rehabilitation, but not between functional change and HISD or time since injury. Collectively, these findings provide early evidence of the efficacy of music therapy as a means of promoting improved self-concept during subacute rehabilitation. The relationship between functional change during inpatient rehabilitation and self-concept, and the lack of demonstrated improvements in mood/ quality of life outcomes in the current study requires further exploration in future research. Larger-scale randomised studies are warranted to continue to build evidence of early changes in self-concept after neurological injury, and the role of music therapy in creating positive change for this population.

Publications and conference presentations during candidature

This thesis comprises the following manuscripts published, accepted, or submitted to academic journals:

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Roddy, C., Rickard, N., Tamplin, K., Lee, Y-E. C., & Baker, F.A. (2018). Hear my song: A control comparison study of self-concept-focused therapeutic songwriting in subacute rehabilitation. (In preparation).

The following conference presentations related to this project were completed during candidature:

Roddy, C. (2017, October). Hear my song: An evaluation of identity-focused therapeutic songwriting to promote identity rehabilitation and wellbeing after neurological injury. *Oral Presentation at the European Mental Health Conference (EMHC), Berlin, Germany.*

Roddy, C. (2017, December). Rehabilitating the self through song: Evaluating an inpatient therapeutic songwriting program for participants with acquired neurological injury. *Oral Presentation at the Australian Music Psychology Society (AMPS) Conference incorporating the 5th International Conference on Music and Emotion (ICME), Brisbane, Australia.*

Thesis including published works declaration

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

This thesis includes 1 original paper published in peer reviewed journals and 2 submitted publications. The core theme of the thesis is self-concept and subjective mood changes after neurological injury. The ideas, development and writing up of all the papers in the thesis were the principal responsibility of myself, the student, working within the School of Psychological Sciences under the supervision of Adjunct Associate Professor Nikki Rickard.

The inclusion of co-authors reflects the fact that the work came from active collaboration between researchers and acknowledges input into team-based research.

In the case of Chapters 4, 5 and 6, my contribution to the work involved the following:

Thesis Chapter	Publication Title	Status (published, in press, accepted or returned for revision, submitted)	Nature and % of student contribution	Co-author name(s) Nature and % of Co-author's contribution*	Co-author(s), Monash student Y/N*
4	Personal identity narratives of therapeutic songwriting participants following Spinal Cord Injury: A case series analysis.	Published	70%. Primary development of design, data collection, analysis and interpretation, manuscript synthesis and preparation.	30% Nikki Rickard, Jeanette Tamplin & Felicity Anne Baker.	N
5	Exploring self-concept, wellbeing and distress in therapeutic songwriting participants following acquired brain injury: A case series analysis.	Published	70%. Primary development of design, data collection, analysis and interpretation, manuscript synthesis and preparation.	30% Nikki Rickard, Jeanette Tamplin, Young-Eun C Lee & Felicity Anne Baker.	N
6	Hear my song: A control	In preparation	70%. Primary development	30% Nikki Rickard, Jeanette	N

	comparison study of self-concept-focused therapeutic songwriting in subacute rehabilitation.		of design, data collection, analysis and interpretation, manuscript synthesis and preparation.	Tamplin, Young-Eun C Lee & Felicity Anne Baker.	
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I have renumbered sections of published papers in order to generate a consistent presentation within the thesis.

Student signature:



Date: 10 March 2018

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the student's and co-authors' contributions to this work. In instances where I am not the responsible author I have consulted with the responsible author to agree on the respective contributions of the authors.

Main Supervisor signature:



Date: 10 March 2018

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PREFACE

'I felt like someone, but not like any one I knew. I was a stranger to myself. I was lost'

(Feldhaus-Weber, 2003, pp.51)

Neurological injuries can create significant disturbances in self-concept, mood and wellbeing. One of the central challenges faced by individuals with neurological injury can be reconciling key discrepancies between past, present and possible future selves, thus the title of the current thesis refers to both 'me' and 'myself'. Understanding the nature of early changes in self-concept, mood and wellbeing and the extent to which these can be rehabilitated or improved remains a core goal for early neurorehabilitation.

The current thesis presents the results of a series of studies drawn from a broader project evaluating the efficacy of therapeutic songwriting for people with neurodisability in subacute rehabilitation. The thesis focuses primarily on a pilot evaluation of the implementation of the therapeutic songwriting program at the Royal Talbot Rehabilitation Centre in Kew, Victoria, and the series of studies contributing to the current doctoral project and thesis are detailed below in section 3.3. This pilot evaluation forms part of a larger-scale project funded under an Australian Research Council (ARC) Discovery Project (Grant number DP150100201), and the findings arising from the studies presented in this thesis have been used to inform the development of the larger study, which is ongoing at the time of this thesis submission. The broader second phase of the ARC project uses a randomised controlled trial design to evaluate the outcomes of a self-concept focused therapeutic songwriting program administered during inpatient subacute rehabilitation, as well as post-discharge into the community.

The current project presents a series of three studies with associated publications or submitted manuscripts that each present the findings of a different component of the broader project objectives. The first study examines trends in early identity, subjective wellbeing and distress indices in individuals with SCI, which remains relatively less studied in comparison to ABI. Identity was used as the framework presented in this publication since the term identity has been used more prominently in the SCI literature (e.g. Gendreau & de la Sablonnière, 2014; Parker & Yau, 2012; Tasiemski & Brewer, 2011; Webb & Emery, 2009; Yoshida, 1993). In examining more collective neurological studies, and applying the theoretical frameworks from the ABI literature (e.g. Ownsworth, 2014), it is evident that the terms self-identity or self-concept could equally apply in interpreting the study outcomes (and these terms have been applied to subsequent studies, for consistency with the wider body of literature).

The first study applied a case series approach to determine trends in eight individuals with SCI undertaking the music therapy intervention described above, to promote overall trends arising in individuals with SCI who completed the intervention. The outcomes of the case series analysis are reported in the published article entitled “Personal identity narratives of therapeutic songwriting participants following Spinal Cord Injury: A case series analysis”, published in the *Journal of Spinal Cord Medicine*. This publication is incorporated as Chapter 4 in the current thesis.

The second study within the current project presented a case series of five individuals with ABI who undertook the songwriting intervention. Due to the comparatively smaller numbers of ABI participants, and the heterogeneity of injuries sustained, comparisons across individuals not appropriate. For this reason, an individual case study approach was adopted to present the case histories of the five individuals with ABI who completed the songwriting program. The outcomes of the case series analysis are reported in the manuscript “Exploring

self-concept, wellbeing and distress in therapeutic songwriting participants following acquired brain injury: A case series analysis”, currently accepted in *Neuropsychological Rehabilitation*. This submission is incorporated as Chapter 5 in the current thesis.

The third study within the current project incorporates a full comparison of all outcome variables between intervention participants ($n = 14$) and comparison group participants ($n = 15$). The inclusion of a control comparison group in this study enables a more objective application of statistical comparisons between groups to determine the efficacy of the songwriting intervention in promoting positive shifts in self-concept, wellbeing and distress. The outcomes of the control comparisons are reported in the manuscript “Hear my song: A control comparison study of the effectiveness of self-concept-focused therapeutic songwriting in subacute rehabilitation”, currently in preparation. This manuscript is incorporated as Chapter 6 in the current thesis.

This thesis makes a novel contribution to the neuropsychological rehabilitation literature by bringing to light early patterns of change in self-concept, wellbeing and mood during subacute rehabilitation. Further, the thesis presents preliminary evidence for the efficacy of self-concept-focused therapeutic songwriting, while also highlighting some of the complexities and practical challenges of implementing intensive self-concept-focused therapies during subacute rehabilitation. On a broader note, the current thesis contributes to broader understandings of the lived experience of individuals with neurological injury during early neurorehabilitation.

CHAPTER 1:
INTRODUCTION

1.1 Neurological Injury and Sequelae

Neurological injury is characterised by non-congenital damage to the brain or spinal cord resulting from events such as strokes, motor vehicle accidents (MVAs), falls, sports injuries, tumours, and oxygen deprivation. The National Policy on Services for People with Acquired Brain Injury defines Acquired Brain Injury (ABI) as “an injury to the brain which results in deterioration in cognitive, physical, emotional or independent functioning.... [which] can occur as a result of trauma, hypoxia, infection, tumour, substance abuse, degenerative neurological diseases or stroke ” (Fortune & Wen, 1999). ABI involves brain damage sustained at any stage after birth, through events such as a stroke, an accident or trauma, or a brain infection or tumour. Traumatic Brain Injury (TBI) is a subset of ABI in which a traumatic or sudden injury is sustained, usually resulting from falls or motor vehicle accidents. Spinal Cord Injury (SCI) can be differentiated from ABI in that it involves damage to the spinal cord which results in restrictions to function such as mobility or bodily feeling. The majority of SCI is sustained from traumatic incidents (sporting injuries or motor vehicle accidents), but spinal damage can also occur as a result of diseases such as polio and spina bifida. In some cases of SCI, a TBI can be concurrently sustained, resulting in a broader array of cognitive and physical deficits, as might occur in some forms of stroke.

Neurological injuries are the leading cause of death and disability worldwide (Corrigan, Selassie, & Orman, 2010). More than 2,000 Australians sustain a brain or spinal cord injury each year (McCluskey, Johnson, & Tate, 2007). Of these individuals, 120 will require 12 hours or more of ongoing daily care for the remainder of their lives (Walsh, Fortune, Gallagher, & Muldoon, 2012). Collectively, TBIs have been cited as the leading cause of death and disability in the United States of America (as related to public health costs), with over 1.5 million people a year sustaining such an injury. Of this number, more than 80,000 each year will face permanent disabilities in physical, psychosocial and/or

behavioural functioning that will negatively impact quality of life (Steadman-Pare, Colantonio, Ratcliff, Chase, & Vernich, 2001). In 2005, an estimated 3.15 million people were living with the long-term consequences of traumatic brain injury. The frequency with which critical head injuries, including acquired brain and spinal cord injuries, are sustained in society has necessitated a long and continuing research history in this area. Current epidemiological studies estimating the frequency and impact of brain injury in Australia are scarce, and brain injury-specific statistics are not stipulated in the most recent Australian Institute of Health and Welfare *Australia's Health 2016* report (AIHW, 2016). Less recent statistics have cited the prevalence of acquired brain injury (ABI) in Australia at 432,700 people (1 in 45) (AIHW, 2007), with up to 42% of these people also experiencing a psychiatric comorbidity. A report examining trends in hospitalisations in Victoria due to severe traumatic brain injury (TBI) noted a steady decline over time from 5.0 to 3.2 per 100,000 population per year (Beck, Bray, Cameron, Cooper, & Gabbe, 2016). The authors attributed this decline to improved measures of road safety that had reduced the incidence of motor vehicle accidents (MVA), and called for renewed education and prevention strategies for fall-related TBI.

The individual variability in both premorbid function and site and severity of injury makes defining precise sequelae of brain and spinal cord injury challenging. In general, the sequelae of neurological injury are experienced across a range of cognitive, physical, social, emotional and functional domains (Gracey & Ownsworth, 2012). Prognosis varies according to factors such as the site and severity of injury, premorbid function, age, gender, education, personality and social support. The outcomes of ABI are highly dependent on the nature, location and extent of the damage sustained, however in general, moderate ABI is associated with impaired cognitive and memory function, and a likelihood of difficulties in executive function, e.g. planning, behaviour monitoring, inhibition, etc. (Sandhaug, Andelic, Berntsen,

Seiler, & Mygland, 2012). ABI has been characterised as a ‘hidden disability’ due to it being difficult to detect in some cases, however it can pose significant functional obstacles to post-injury participation in activities such as employment, school, social interactions and activities of daily life (Forber-Pratt, Lyew, Mueller & Samples, 2017).

Cognitively, individuals are likely to face some impairment in comparison to pre-morbid cognitive functioning (Hoofien, Gilboa, Vakil, & Donovan, 2001), although this is highly dependent upon the individual case as to how severe the impairment may be. Cognitive impairments can occur more frequently in ABI cases, where cortical or subcortical damage occurs, than SCI cases, where physical impairments can predominate, although concurrent brain and spinal cord injuries can also occur. Behaviourally, some ABI and SCI patients have been shown to be more impulsive and less inhibited, and to have difficulties in planning and initiating behaviour (Douglas, 2013); this cluster of behavioural tendencies has particularly been associated with impairments in executive functioning following frontal lobe damage. Significant others have also reported personality changes in their loved ones following acute injury, citing that although some aspects may be similar to their pre-injury personalities, sometimes they can seem like a ‘different person’ post-injury (Godwin & Kreutzer, 2013).

Emotionally, ABI and SCI have both been linked to changes in emotional state, resulting in anhedonia (flattened affect) and loss of pleasure in usual activities, or emotional lability (unexpectedly sudden changes of mood, often at varying extremes of emotion) (Tyerman & King, 2004). Further, emotional changes can extend to depressive mood, increased anxiety, and a generally increased risk for developing psychopathology (Tyerman & King, 2004). In addition to the cognitive and behavioural sequelae detailed above, patients can also face a range of psychological symptoms including confusion, agitation, and mental fatigue (Lexell et al., 2013). Critical incidents resulting in long-term requirement for physical

and/or mental care can place a considerable strain on relationships. This impact is felt not only in the interactions with immediate family and friends, but also in workplaces. Many close relationships have been shown to deteriorate as a result of injury, particularly where ongoing care and frequent hospitalisation is required (Wood, Liossi, & Wood, 2005). The impact of such critical incidents is evident not only in the immediate care environment, but also in wider social relationships and employment settings. It is not uncommon for social relationships, including romantic relationships, to erode or break down following ABI and SCI. Magee (2002) describes a shift in power whereby an individual becomes more dependent on close others post-injury, which changes the dynamic and power balance of the relationship. For the injured individual, this can lead to feelings of frustration, anger and resentment, and for the caregiver, the necessity of assuming the burden of care can be overwhelming (Magee, 2002).

The Australian Institute of Health and Welfare report (AIHW, 2007) highlighted that one out of every three people who had sustained an ABI and received cognitive or emotional support reported that they required further help (i.e., services provided were not sufficient). The adaptation process brought about by the behavioural, cognitive, social and emotional sequelae outlined above is complex and multi-faceted. How well an individual is able to adjust to changing circumstances post-injury is however likely to have significant implications for their subjective wellbeing and quality of life (Doering, Conrad, Rief, & Exner, 2011).

1.2 Adjustment to Neurological Injury

ABI and SCI necessitate a large degree of psychological and emotional adjustment on the part of not only the individual who sustained the injury, but also their family, friends and work colleagues (if employed) (Carroll & Coetzer, 2011). Where a TBI or SCI has occurred, for instance, the onset could be as brief and sudden as a few seconds of lost concentration

when driving, and could lead to moderate or severe consequences requiring life-long in-patient care (Magee, 2002). Understandably, for individuals and their loved ones, this is a large scale adjustment, and has ramifications in terms of communication skills, close relationships, work roles and continuing employment, and also activities of daily living.

Even in the presence of measurably effective physical and cognitive rehabilitation efforts post-injury, many people with ABI and SCI continue to have significant and personally challenging issues when it comes to psychosocial adjustment. These sorts of issues can range from emotional disturbances and mood disorders through to breakdowns in social communication, self-esteem and perceived self-efficacy post-injury (Magee, 2002). For instance, the rate for attempted suicide among SCI patients has been cited as up to five times higher than in the healthy population (Dijkers, 2005). Similarly, up to 8.1% of TBI survivors have been found to attempt suicide, as compared to 1.9% in those with other psychiatric disorders not involving a head injury (Tyerman & King, 2004). Depression, loneliness and anxiety are common psychological and emotional sequelae following TBI (Morton & Wehman, 1995). In many survivors, emotional disturbance and psychopathology may only emerge years after injury (Ownsworth et al., 2007), and this is often when limited supports are available to many people.

Whilst it has been suggested that the absence of healthy psychosocial adjustment may be one of the biggest challenges facing brain and spinal cord injury survivors (Morton & Wehman, 1995), research has varied in terms of the ‘ingredients’ that constitute such adjustment. Ongoing high levels of symptom reporting post-injury, particularly in areas of wellbeing and coping style, were associated with less effective psychosocial adjustment in a sample of TBI participants in one study (Ownsworth et al., 2007). Social supports and social re-integration are also believed to contribute to the extent of psychosocial adjustment (Christensen, Pinner, Møller Pedersen, Teasdale, & Trexler, 1992; Douglas, 2013). Lower

family satisfaction levels were found to be significantly associated with lower reported health-related quality of life in a TBI sample (Williamson et al., 2013). Limited social supports and discontinuation of participation in formerly held social roles have also been found to adversely affect wellbeing ratings (Magee, 2002).

Crisp (1992) evaluated the factors associated with long-term adjustment to spinal cord injury (average 11 years post-injury) in a sample of 60 Victorian individuals who had sustained a traumatic SCI. Drawing upon Trieschmann's (1988, as cited in Crisp, 1992) model of psychological adjustment following SCI, which defines the adjustment process as interactions between personal variables, biological variables and environmental variables, Crisp investigated a range of factors known to be associated with longer-term adjustment to SCI; perceived control, health status, social support, satisfaction with social contact, and recent life events. Of these, perceived control and satisfying social contact emerged as significant predictors of adjustment, irrespective of the participant's age, time since injury, or injury severity. Engagement in employment was also associated with higher reported levels of life satisfaction in the sample, as a regular income enabled more active participation in social activities.

1.3 Wellbeing, Distress, and Emotion after Neurological Injury

The impact of neurological injury on personal wellbeing, mood and emotion is multifaceted. Adjustment to the injury event, associated impairments and their impact on daily life creates a notable reduction in subjective wellbeing, including reduced quality of life and satisfaction with life (Corrigan, Bogner, Mysiw, Clinchot, & Fugate, 2001; Gerhart, Koziol-McLain, Lowenstein, & Whiteneck, 1994; Hammell, 2004; Migliorini, New, & Tonge, 2011). This trend has been consistently identified across neurological injury types, and at different time points post-injury in the literature. Declines in psychosocial functioning can become particularly prominent during the transition phase from inpatient care to home-based

care or community re-integration (Turner et al., 2007). The process of adjustment to injury can be further complicated by the presence of mood disturbance or diagnosed psychopathology. Dual diagnoses of ABI and mental illness have been associated with an increased vulnerability, more complex adjustment, and ongoing perceived barriers to recovery (Cocks, Bulsara, O'Callaghan, Netto, & Boaden, 2014). Recent research in an SCI population identified that there is a continued risk for the development of mood disturbance at any stage post-injury, and this requires ongoing monitoring and support (Migliorini, Sinclair, Brown, Tonge, & New, 2015). Suicidality has been noted to increase following SCI as individuals are faced with significant ongoing physical disability (McCullumsmith et al., 2015). Pre-injury psychiatric diagnosis or psychiatric symptomatology and the presence of mood disturbance in the immediate post-injury period have been suggested as risk factors for the development of psychopathology 12-months post-injury (Gould, Ponsford, Johnston, & Schönberger, 2011a, 2011b; Schönberger, Ponsford, Gould, & Johnston, 2011).

Emotional state also plays a key role in shaping how individuals adjust to injury. Emotion regulation refers to the management of one's own emotions (Gross & John, 2003). Gross and John (2003) have proposed two primary mechanisms by which emotions are regulated. Re-appraisal is an active, early strategy to help re-interpret a potentially emotionally significant situation in a more adaptive way, to reduce its emotional impact. Suppression occurs later in the experience of emotion and involves actively inhibiting the outward expression of emotion. Both strategies have been differentially associated with positive and negative outcomes (Gross & John, 2003), in that re-appraisal tends to be adaptive whereas suppression tends to be maladaptive. The use of suppression has been associated with increased rumination in depressive disorders (Wenzlaff & Luxton, 2003), whereas re-appraisal has been found to have a buffering effect on the relationship between stress and negative mood (Johnson et al., 2016). As emotions are closely linked with

physiological state, the use of suppression has been found in a metastatic cancer population to be associated with higher sympathetic activation, which may increase the body's stress load. From a psychological perspective, the relationship between emotion and coping also means that emotion regulation is an important construct to study as part of the post-injury adjustment process (Folkman, 2010).

Emotion regulation difficulties following ABI are associated with changes in inhibitory control and behavioural self-regulation, where irritability and poor temper control can be prominent (Cattran, Oddy & Wood, 2011). With changes in inhibitory control mechanisms after brain injury, individuals can face increased challenges implementing adaptive emotion regulation strategies including reappraisal (Salas, Gross & Turnbull, 2014). Additionally, decreased flexibility of thinking can make initiation of reappraisal strategies more difficult (Salas et al., 2014). Anger and confusion are also common post-TBI emotions (McDonald, Hunt, Henry, Dimoska & Bornhofen, 2010). An understanding of emotion regulation strategies after brain injury is also important due to the impact of emotion regulation on social connectedness (Winter, Moriarty & Short, 2018), which is in turn closely associated with health and wellbeing. While emotion regulation difficulties in SCI are comparatively under-researched, a prior study has found that maladaptive emotion regulation strategies, including distortion of awareness and avoidance, accounted for 8% of the variance in depressive symptoms in those with SCI (Znoj & Lude, 2002).

1.4 Conceptualising Identity and Self-Concept after Neurological Injury

The role of self is an important topic in brain and spinal cord injury research, as researchers have sought to understand the nature and consequences of acute brain injury on our sense of self. Identity and self-concept can be considered overlapping but distinct constructs (Ownsworth, 2014). While definitional uncertainty exists in the literature more broadly for terms such as identity, self-identity, self-perception and self-concept, there are

some key distinctions. Some authors have distinguished identity from self-concept by asserting that identity comprises both personally defined and socially defined aspects (Baumeister, 1997; Ownsworth, 2014). That is, while identity can be contributed to by society more broadly, self-concept tends to be more wholly contained in the individual's mind. As Ownsworth and colleagues have highlighted (Beadle, Ownsworth, Fleming, & Shum, 2016; Ownsworth, 2014; Ownsworth & Haslam, 2016), research on identity (or self-identity) has tended to focus on either identity characteristics that serve to distinguish an individual (i.e., are unique) or those that present commonalities across social groups. The sense of self that underpins self-identity is developed via a complex interplay of biopsychosocial factors and is altered by key life events and culture. Beadle and colleagues (2016) note that identity and sense of self are often extrapolated from measures of self-concept and self-esteem. Self-esteem relates to how someone evaluates themselves and their own self-worth, and it is strongly associated with both identity and self-concept (Ownsworth, 2014).

For the purposes of the current thesis, the term self-concept will be used when discussing the two core measures utilised (HISD and TSCS-2) and the results forthcoming from these. However, alternative terms such as identity will be utilised where indicated by prior research, or where conceptual distinctions need to be made. It should be noted that further research aimed at disentangling the conceptual underpinnings of identity and self-concept after brain injury, as an extension of the work of Ownsworth and colleagues is warranted, so that future empirical findings may be more easily and powerfully compared.

It stands to reason that a significant disruption to both identity and self-concept arises from neurological injury, irrespective of how this impact is characterised. The post-injury individual must aim to come to terms somehow with not only their present self, as defined by typically lessened functional ability compared to pre-morbid functioning, but also the

realisation that such impairment may well be pervasive and lifelong, thereby impacting on the future self as well. Studies of emotional functioning and identity have highlighted a consistency whereby individuals enter a grieving process to face the loss of their past identities. Magee (2002) suggests that the feeling of loss of identity or change in self can be attributed to a complex interplay of emotions such as loss, frustration, anger and bewilderment experienced by an individual post-injury.

Identity and self-concept have emerged as significant facets of adjustment to neurological injury (Carroll & Coetzer, 2011; Charmaz, 1995; Ellis-Hill & Horn, 2000b; Gracey et al., 2008; Gracey & Ownsworth, 2012; Landau & Hissett, 2008; Muenchberger, Kendall, & Neal, 2008; Wolfenden & Grace, 2012; Ylvisaker & Feeney, 2000). These constructs are especially pertinent following neurological injury, when the ways in which an individual perceives themselves, and others perceive the individual, shift in light of the consequential impairments of the injury. The occurrence of the injury is perceived and internalised as an immediate threat to self. Whilst self-concept can generally be conceived of as a relatively stable percept throughout the lifespan, it suffers a displacement in the event of a brain or spinal cord injury. It is this displacement, and the ensuing need for adjustment, which is at the heart of self-concept issues post-injury.

Past studies have characterised this displacement in varied but comparable ways, and the associated terminology in the literature (incorporating both identity and self-concept) has a large amount of overlap. Post-injury changes have been variously referred to as “personality changes” which stemmed from an individualistic view of the observable post-injury changes (Yeates, Gracey, & McGrath, 2008), “self-narratives” (Nochi, 1998, 2000), changes in “self-concept”, and changes in “identity”. Whilst each of these terms has acquired subtly different definitions in light of their respective theoretical backgrounds, as discussed above, the common underpinning among all these terms is the requirement for the individual to adjust to

a fundamental shift in self, a phenomenon which has been labelled a ‘life-changing psycho-emotional response that continues beyond any physical recovery period’ (Muenchberger et al., 2008a).

Identity has also been conceptualised as personal narrative in past research (Nochi, 2000). That is, someone’s sense of identity stems from their internalised personal histories and experiences (that is, their ‘life stories’ over time). When an acute event such as ABI or SCI occurs, therefore, it is depicted as an interruption to this narrative, necessitating a reintegration process to find a sense of continuity among the personal narratives. Identity construction has been heralded as central to rehabilitation due to the fact that where incongruences have been cited between the goals or strategies suggested by the rehabilitation facilitator and the personal identity of the participant, this can render the rehabilitation program ineffective, and can trigger negative emotional reactions from the participant in which they distance themselves from the goals provided and are at increased risk for depression, anger and resistance to progress (Ylvisaker et al., 2008).

Beadle et al. (2016) noted that negative changes in self-identity were common across multiple studies of individuals with TBI, including where participants tended to view themselves more negatively than healthy controls (self-discrepancy). Carroll and Coetzer (2011) investigated perceived identity change in a sample of 29 individuals who had sustained a TBI, with a view to examining the links between identity change, grief, depression, self-esteem and self-awareness. At a broad level, it was found that participants viewed their post-injury selves more negatively as compared to pre-injury selves. Where participants identified greater changes in self resulting from the injury, the likelihood of experiencing depressive symptoms and grief was increased. Less significant changes in self were associated with preserved self-esteem and greater levels of self-awareness. In a comparable study evaluating how stroke patients evaluated themselves, Ellis-Hill and Horn

(2000) found that individuals described themselves more negatively following their stroke, citing reductions in their levels of interest, lessened capability and reduced independence. Control, satisfaction and active participation were also reported to be significantly reduced. Personal attributes such as friendliness, calm, caring, hopeful and talkative were not reported to change significantly as a result of stroke in this sample.

Charmaz (1995) also conceptualised the adaptation process to impairment as a process of coming to terms with altering life and self in light of sustained physical losses, in order to 'reunify' body and self. In order to adapt successfully, Charmaz suggested, three major stages needed to be passed through. Firstly, an individual needed to acknowledge and define the nature of their impairment. Secondly, an assessment of bodily functionality was required in order to identify 'trade-offs', which Charmaz believed to be central to a chronically ill person evaluating their losses and gains and amending their identity goals. Finally, an attitude of surrender to the illness was required rather than the individual choosing to fight the illness. Rather than being a single occurrence or process, Charmaz (1995) depicted the adaptation process as occurring dynamically in response to any new identified loss on the part of the individual.

Central themes emerging from prior research investigating identity perception following brain and spinal cord injuries include:

- Identity as loss of self or shattered self (Charmaz, 1983; Smith & Sparkes, 2005a; Ylvisaker et al., 2008)
- Identity as continuing self (Douglas, 2013; Wolfenden & Grace, 2012)
- Identity as recovery of prior self (Nalder, Fleming, Cornwell, Shields, & Foster, 2013; Nochi, 1998; Smith & Sparkes, 2005)
- Identity as re-integration of past, current and possible future self (Gelech & Desjardine, 2011; Nochi, 2000)

Continuity of identity as a construct appears to serve as both a protective factor and a potential barrier to effective rehabilitation. It can be protective in that it serves as basis for stability and a grounded approach to re-integration of identity. The essential message of successful re-integration of identity stems from 'it's the same me' (Wolfenden & Grace, 2012). A sense of continuity following a traumatic injury can also serve to enhance feelings of progress, achievement and positive growth, and has been found in past research to be associated with a higher uptake of re-integration into work and social roles following stroke (Wolfenden & Grace, 2012). A greater barrier to identity re-integration can occur when the individual becomes 'stuck' in a shattered sense of self, or views recovery as a return to pre-injury self, work and life roles. This is problematic because, for many survivors of ABI and SCI, a full resumption of pre-injury duties will unfortunately never be feasible in light of the impairments sustained.

Carroll and Coetzer (2011) found that perceived identity change was positively associated with depression and grief and negatively associated with self-esteem and awareness in a sample of 29 adults who sustained a TBI and were in community rehabilitation programs. Similarly, Ellis-Hill and Horn (2000) found that stroke patients described themselves as less interested, capable and independent following their injury, and less in control, calm, caring, hopeful and talkative in comparison to the control group over time. The individual stroke patients in this study were found to have a more negative self-image post-stroke, which was attributed in part to their perceptions of settling for a restricted life characterised by the prospect of ongoing disability (Ellis-Hill & Horn, 2000). Ellis-Hill and Horn stressed the importance of treating clinicians ascertaining the meaning of the stroke for each individual as part of tailored treatment planning.

A range of qualitative approaches have been employed in prior self-concept and identity research, with the intention of characterising the experience of living with brain or

spinal cord injury and the personal journey of recovery. The qualitative inquiry approach and the life narrative approach are briefly reviewed below.

1.4.1 Qualitative Inquiry Approaches

Qualitative approaches have typically employed semi-structured interviews with a view to uncovering themes of identity or self-concept change after injury. Modified constructivist grounded theory was employed by Bailey, Gammage, van Ingen and Ditor (2015) to understand the body image perceptions of experiences of individuals who had undergone a spinal cord injury. Consistent with prior research, it was identified that those with SCI felt that their injury directly impacted how they see their bodies. It was also noted that factors such as resilience, functional gains and independence, respect, and pain minimisation were also especially relevant to those with SCI. Sheldon, Renwick and Yoshida (2011), using a similar modified constructivist grounded approach, interviewed 64 men with SCI and identified themes of personal and physical changes related to the injury, including the perception of no longer feeling whole. Participants were also mindful of being perceived differently in public, and were concerned that they would be seen by others as someone with an injury.

Douglas (2013) applied a similar approach to individuals with severe to very severe TBI. The study findings emphasised the importance of how participants identified themselves ('who I am') and their self-perceptions ('how I feel about myself') (Douglas, 2013). Connectedness to self and broader society also emerged as a core theme for participants. Fleming, Sampson, Cornwell, Turner and Griffin (2012) highlighted the importance of understanding individual perspectives of rehabilitation for individuals with an ABI undergoing inpatient rehabilitation, noting that meaningful activities and appropriate support to help adjust to injury was important to participants.

1.4.2 Life Narrative Approaches

Life narrative approaches to understanding brain and spinal cord injury aim to capture unique experiences via written, spoken or visual media. Underlying this approach is the theory that an individual's sense of self is captured via internally-driven self-narratives that evolve to reflect key life experiences. It is these self-narratives that are theorised to play an important role in adjustment to injury (Nochi, 2000). Not all studies that have adopted narrative approaches have focused on broader life narrative approaches. For example, Nochi (1998; 2000) examined self-narratives relevant to individuals with TBI to conceptualise sense of self and adjustment to injury. Lennon et al. (2014) examined how individuals reconstructed sense of self following neurological injury by comparing those with ABI and SCI. The findings of the interpretative thematic analysis identified commonalities in both positive and negative self-perceptions (termed self-narratives), and the use of strategies to foster positive self-perceptions. The authors noted that both groups identified sense of self as largely continuous despite the many changes they had experienced through the injury.

One approach to understanding identity change after ABI that draws upon narrative theory is the Life Thread Model (Ellis-Hill, Payne & Ward, 2008). Conceptually, the Life Thread Model represents the metaphor that life threads represent the stories (strands) about ourselves that are dynamic and change as we experience life. Threads also represent relationships with others and interconnected stories and experiences. An injury such as a stroke is conceptualised as an unravelling of some life threads, which aligns with the notion of biographical disruption in the literature (Ellis-Hill et al., 2008).

1.4.3 Spinal Cord Injury

A review of the spinal cord injury literature highlights the fact that this group has been less studied than TBI and ABI populations when it comes to identity issues. Despite authors highlighting the presence of identity problems and maladaptive coping strategies in

this sample as early as the 1980s and 1990s (Carpenter & Clark, 1994; Crisp, 1992; Gerhart et al., 1994; Stambrook et al., 1991; Yoshida, 1993), people with SCI remain an understudied population in the published identity research. People with SCI have, however, been found to face some unique challenges in terms of their identity, most notably arising from the frequent deficits to, or loss of, physical mobility that is a common consequence of SCI (Hammell, 2004; Nolan, 2013; Samuel, Moses, Smith, & Thorne, 2007; Smith & Sparkes, 2005). From an identity perspective, therefore, people with SCI have been found to struggle with coming to terms with physical aspects of their identity, and the consequential effects of their physical impairments on activities of daily living, work, home and social roles. The ‘disability mindset’ and medical model approach focusing on deficits rather than abilities appears to be particularly prominent among people with SCI, especially men (Crisp, 1992; Nolan, 2013; Smith & Sparkes, 2005). Given that many SCIs occur in the absence of any cerebral damage, people with SCI are often spared the deficits in self-awareness and insight that can result from an ABI, which tends to be protective to a degree when it comes to compromised identity. Research by Fleming, Connell, Tooth and Strong (2002) found that, in comparison to the SCI group, individuals with TBI demonstrated significantly more impaired self-awareness on one of the two measures administered. Both people with SCI and TBI demonstrated significant improvements in self-awareness during the two-month period following discharge from hospital. Broader psychosocial outcomes and quality of life remains an issue in spinal cord injury populations. People with SCI have been found to report fewer feelings of well-being, on average, than non-disabled people, score lower on measures of physical, mental and social health, and rate their overall health status as much poorer than the average person (Dijkers, 2005).

1.4.4 Gender and Self-Concept/ Identity Perceptions

Acquired brain and spinal cord injuries disproportionately affect men more than women (AIHW, 2007), irrespective of age group. Of the 28,700 people who reported ABI as their primary condition in the AIHW survey (AIHW, 2003), almost three quarters were male. The lack of gender balance in the occurrence of acquired brain and spinal cord injuries has also triggered research interest in how men process issues of identity loss. In light of this difference, Charmaz (1995) studied how chronically ill men handled identity dilemmas, which were defined as instance in which men had lost valued attributes, physical function(s), social roles, and individual pursuits as a result of their illness. Men faced a range of unique conflicts associated with their masculine role identities, including a ‘maintaining dominance vs becoming subordinate’ dilemma in which men attempted to reconcile with a comparative lack of control in certain life domains such as work. Charmaz also differentiated between the identity which the men portrayed publically, and that which was private. Some men, in an attempt to minimise the perceived impact of the illness to those around them, chose to identify with a public identity in which their incapacities were downplayed, and one which was associated as much as possible with their former identity. This could also in turn lead to an over-emphasis on the changed identity and resulting incapacities in private contexts such as family interactions, and this placed a greater care burden on spouses and caregivers.

Men suffering chronic illness, according to Charmaz (1994), face a challenge to some of the fundamental notions about masculinity – active, problem-solving capabilities, personal power and autonomy and bravery. Some men studied engaged in risky behaviour to try to preserve their former identities and fulfil what they perceived as their male roles (including, in some men, putting themselves in physical danger by attempting tasks which they were no longer capable of completing), whilst others were able to proceed through a grieving process for loss of former identity and were ultimately able to reach a more balanced identity which

incorporated their future aspirations. It was notable that many men whose illness involved physical incapacity appeared at greater risk for the development of depression and withdrawal from positive interactions, as lack of physical capacity was seen as linked to the action-oriented aspects of masculinity. If these findings are taken in the context of people with SCI (who are predominantly male), it can be assumed that where a lasting physical incapacity is present, men may perhaps face some unique challenges in reconciling themselves to their post-injury functionality and forging a positive identity.

1.5 Operationalising Identity and Self-Concept

There are several techniques and methods that have been applied to the measurement of both identity and self-concept (Ownsworth, 2014; Ownsworth & Haslam, 2016). The Head Injury Semantic Differential (HISD) Scale conceptualises self-concept as related to perceptions of past, current and future self, and the discrepancies that can arise between each of these views of self-concept. Thus, the HISD (Tyerman & Humphrey, 1984) is comprised of a set of contrasting adjective pairs where respondents rate past, current or future self on a range of salient characteristics (e.g. friendly to unfriendly) on a 7-point Likert scale continuum. This item wording was designed to align with self-discrepancy theory, whereby individuals tend to make self-comparisons with internal ‘guides’ or standards, which can lead to emotional dissonance or discomfort.

The Tennessee Self-Concept Questionnaire 2nd edition (TSCS-2) (Fitts & Warren, 1996) is a commonly used and validated measure of self-concept that conceptualises self-concept both globally and also through six domains of self-concept: personal, moral, physical, family, social and academic. Respondents on the TSCS-2 indicate their degree of agreement on a series of statements describing self-perceptions in each of the aforementioned domains. The TSCS-2 also contains a supplementary identity scale. It is not clear from the published manual materials of the TSCS-2 as to whether the scale developers consider

identity to (theoretically at least) be a subset of self-concept, or indeed how the relationship between the two constructs (self-concept and identity) operates. While Fitts and Warren describe the identity-subscale as items constituting one's 'basic identity' (e.g. "who I am"), it is not clear how the individual items translate to an overall identity construct. In fact, the endorsement of "I am"-type items has been previously described as example of assessing self-concept rather than identity (Ownsworth, 2014).

1.6 The Role of Identity and Self-Concept in Rehabilitation

Identity can also be viewed as a kind of 'gateway' to effective rehabilitation. Pollack (1994) declared that the primary goal of psychological intervention for TBI survivors is "to enable the injured person to re-establish, or in the case of more minor brain injury, to reconfirm the sense of self" (pp. 674). Similarly, Muenchberger et al. (2008) stated that in the absence of a coherent and positive sense of identity, individuals were unlikely to develop the necessary personal or social skills for well-being and successful re-integration into life goals. Sherry (2006) describes issues of identity and self as endemic to surviving brain injury. Despite acknowledgement of the importance of identity following brain and spinal cord injury, relatively few therapeutic programs appear to have specifically adopted a focus on identity re-integration, and there remains a larger gap with respect to assessing early identity changes during inpatient rehabilitation.

The effective reconstruction of an organised, compelling, and realistic identity has been heralded as an important cornerstone of rehabilitation (Biderman, Daniels-Zie, Reyes, & Marks, 2006). In evaluating the literature which has investigated issues of identity and self-concept in this context, it appears that self-concept is a suitable and relevant lens through which to view the development of rehabilitation programs. Self-concept is unique and entirely personal in nature, thus rendering it immediately relevant to specific, personally identified goals. Rather than focusing on solely aspects of cognitive, physical or

psychological recovery, self-concept provides a central starting point from which all facets of rehabilitation can be incorporated. A person-centred approach is therefore unavoidable in this kind of conceptualisation.

The constitution of an effective ‘best practice’ rehabilitation program is difficult to prescribe. The nature of brain and spinal cord injuries means the resulting characteristic behaviours, competencies and impairments are highly individual, and dependent on the source, site and severity of the injury sustained. Assessment of an individual’s post-incident functioning and comparison to pre-morbid levels is challenging and often difficult to measure with accuracy (Peoples & Fortune, 2011). Further, requirements for effective rehabilitation are also very specific and variable across individuals (DiMauro, 2016; Levack et al., 2014), and therefore no single straightforward approach is appropriate across groups. For this reason, many prior studies have focused on small sample sizes to enable a more qualitative, in-depth analysis of the rehabilitation process, including identity or self-concept rehabilitation (e.g. Fleming, Sampson, Cornwell, Turner & Griffin, 2012; Lennon et al., 2014). The kind of identity- or self-concept-driven, patient-centred approach described above is not always a feasible option in many care settings which necessitate a separation in the provision of different aspects of rehabilitation (occupational therapy, speech therapy, physical therapy, etc.). Therefore, it may be that consideration of how best to incorporate more individualised rehabilitation programmes in inpatient rehabilitation is necessary.

Timing of intervention is also a critical factor. Typically, issues of psychosocial adjustment may not come to the fore until after discharge to the home environment or community rehabilitation setting (Turner et al., 2009; 2011), and the scope for intensive rehabilitation in these environments is necessarily more limited. Some community-based rehabilitation programs have adopted an identity-based focus which appears to be efficacious (Ben-Yishay, 2008; Ben-Yishay et al., 1985), although typically these programs involve

high-cost, resource-intensive, multi-disciplinary rehabilitation models and are often implemented over the longer-term (i.e. across several years post-injury). However, access to these types of programs remains scarce and may be out of reach for some individuals. Given the emerging findings from these more ‘holistic’ types of rehabilitation programs (e.g. Ben-Yishay, 2008), exploration of an in-patient identity-focused therapy appears warranted. Intensive therapy with a specific identity focus within an in-patient environment could have not only primary effects on identity by encouraging identity re-integration, but also secondary effects on patient mood, wellbeing, coping, and emotion regulation, all of which are known components of the psychosocial adjustment process. A further rationale for the adoption of such a program in an in-patient setting is to gauge its clinical utility. As discussed above, continuing unresolved discrepancies in identity have been found to pose a significant barrier to engagement in rehabilitation (Gracey & Ownsworth, 2011). Where a patient is utilising maladaptive strategies or goals such as aspiring to return to their pre-injury self, or identifying solely with a disabled self-view, this can delay their ability to move forward productively and positively (Nochi, 2000). In the acute care environment, this kind of delay may have implications for the patient’s level of engagement with early rehabilitation and therapy, which in turn may impede recovery. Patients remaining in this state of identity displacement may not maximise their opportunity for early rehabilitation, and early engagement with neurorehabilitation has been associated with more positive functional outcomes (León-Carrión, Machuca-Murga, Solís-Marcos, León-Domínguez & Domínguez-Morales, 2013).

Gracey et al. (2009) offer a conceptualisation of identity rehabilitation which appears to bridge some of the gaps between theory and clinical practice. Termed the ‘Y-shaped’ process model of rehabilitation (refer Figure 1 below), it captures the authors’ experience of the discrepancy often found between past, present and future selves, and the impact of such

discrepancies on the process of health psychosocial adjustment. The process of identity re-integration underpinning the Y-shaped model is described by Gracey et al. (2009) as including the following stages:

- (1) aspects of continuity with pre-injury self are discovered and developed;
- (2) new, adaptive and personally salient meanings arising as a result of the injury and related experiences are identified, and;
- (3) these meanings are consolidated through activity in meaningful contexts.

The authors recommend that these stages be implanted during intensive rehabilitation and then followed up as necessary with longer-term community-based supports as necessary.

When patients are stuck in what Gracey et al. (2009) term as preoccupation with “How I used to be” vs “How I am now”, appropriate scaffolding of identity can help formulate a more constructive formulation of the self and advance the psychosocial adjustment process.

Indicators of subjective well-being (positive affect, quality of life) and coping strategies are flagged as relevant outcome indicators.

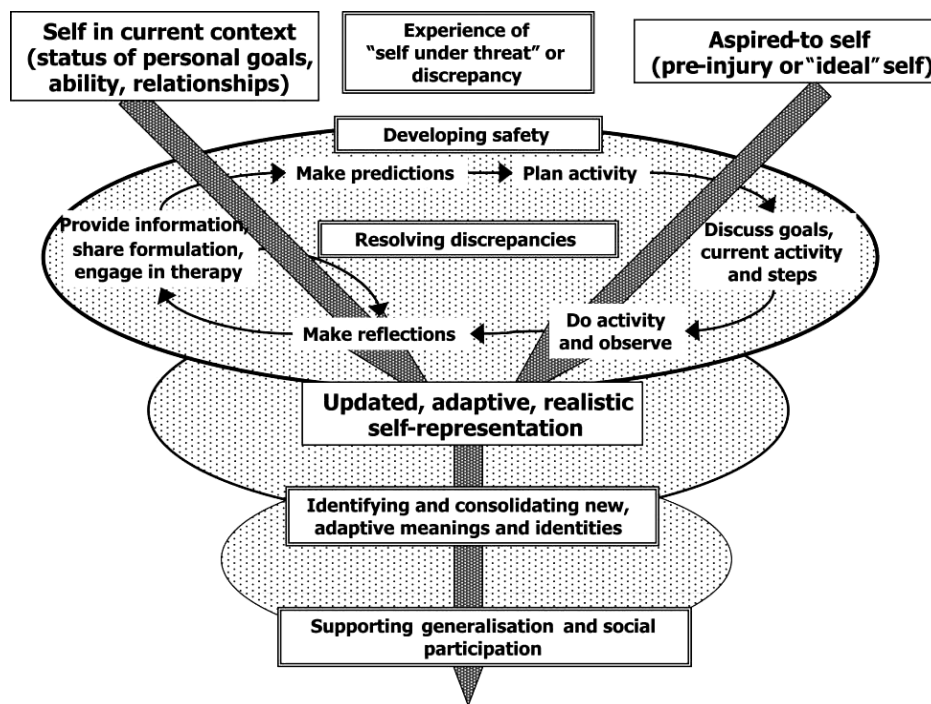


Figure 1. Y-shaped process model of rehabilitation (Gracey, Evans & Malley, 2009, p. 871)

In summary, the role of identity or self-concept as a ‘gateway’ to effective and individualised rehabilitation following ABI and SCI should be emphasised in the development of future rehabilitation programs. Synthesis of research from disparate empirical and theoretical backgrounds suggests that a well-adjusted, adaptive sense of identity can be viewed as the foundation for health psychosocial adjustment following these kinds of incidents. Rehabilitation programs should be crafted with a view to each individual’s unique personality, education, social context and injury specifics, to promote engagement and the development of a re-integrated sense of post-injury self.

1.7 Self-Concept and Identity Rehabilitation Interventions

A recent review of the impact of rehabilitation on self-concept after brain injury, conducted by Ownsworth and Haslam (2016), identified 17 studies incorporating family-based interventions, psychotherapy, cognitive remediation, and activity-based supports aimed at rehabilitating self-concept. Ten studies in total demonstrated evidence of improved self-

concept, suggesting mixed findings overall. For example, Vickery et al. (2006) found significant increases from pre- to post-intervention for group psychoeducation focused on improving self-view and promoting the integration of positive and negative aspects of self (e.g. impairments), whereas no significant group interactions over time were found by Kelly et al. (2013) in an evaluation of a family-based therapy intervention designed to promote improvements in self-concept. Of the studies within these that demonstrated a significant positive effect on self-concept, three applied cognitive or memory rehabilitation interventions, three applied activity-based interventions (e.g. exercise), and two involved the delivery of psychoeducation to patients or families. The authors highlighted a lack of consistency in the self-concept measures utilised. Across the 17 studies, the following measures were applied; Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965), the Coopersmith Self-Esteem Inventories, the Tennessee Self-Concept Scale (TSCS), the Physical Self-Description Questionnaire (PSDQ), the Head Injury Semantic Differential Scale (HISD) and the Robson Self Concept Questionnaire (RSCQ). The authors also called for further research to build future evidence for identity rehabilitation. The findings of this systematic review reinforce the requirements for future evidence of the effectiveness of identity rehabilitation interventions.

CHAPTER 2:
MUSIC THERAPY IN NEUROREHABILITATION

2.1 Music as Therapy: The History of Music Therapy

While music use today is ubiquitous with the introduction of increasingly digital media, the internet, and online music streaming services (Krause, North, & Hewitt, 2015), music also has a long history of application across many areas of medicine (Edwards, 2015; Pratt, 2004), as well as for social and re-creational purposes (Nayak, Wheeler, Shiflett, & Agostinelli, 2000). There is an increasing understanding that music, as well as playing an important evolutionary role in many cultures and religions, can facilitate social bonding and serve as a means of interpersonal communication (Freeman, 2000; Tarr, Launay, & Dunbar, 2014). Music is also closely tied to emotion (Juslin & Laukka, 2004; Koelsch, 2014; Rickard, 2012). Neuroscience research has established that music engagement is cortically diversified; that is, listening to or making music activates a wide range of brain areas, and neural correlates of music engagement are increasingly able to be mapped (Angulo-Perkins et al., 2014; Freeman, 2000; Menon & Levitin, 2005). Listening to music also enables powerful experiences of emotion through memory and reminiscence, since music has also been found to activate the amygdala and associated memory and emotion networks (Baird & Samson, 2014; Jacobsen et al., 2015; Janata, 2009). The entertainment value of music has long been recognised and is reflected in historical accounts of musicians and muses performing for mass entertainment. There has also been increasing recognition for the potential therapeutic applications of music through the discipline of music therapy (Baker & Tamplin, 2006; Baker, Wigram, Stott, & McFerran, 2008).

2.2 Music Therapy Applications and Empirical Evidence

The World Federation for Music Therapy (WFMT) defines music therapy as “the professional use of music and its elements as an intervention in medical, educational, and everyday environments with individuals, groups, families, or communities who seek to optimize their quality of life and improve their physical, social, communicative, emotional,

intellectual, and spiritual health and wellbeing” (WFMT, 2014). Some of the challenges in defining music therapy arise due to the fact that experiences with music can be viewed as transformative in the absence of a formal music therapy program or music therapist (Edwards, 2015). This also aligns with the popular idea of ‘music as therapy’ alluded to earlier. However, the discipline of music therapy itself has evolved due a need to standardise and accredit professionals who work with music therapeutically, so that the term music therapist can be reserved for appropriately trained and registered individuals (Edwards, 2015). A music therapist can therefore be defined as someone who is trained in a variety of techniques to enable them to best use music to meet a range of client needs. Music therapists work across a variety of settings including community-based therapy, hospitals, medical or outpatient clinics, aged care centres and other healthcare facilities. Music therapy as a discipline continues to evolve as there is increasing research attention to evaluating the outcomes of more structured music therapy programs.

The wider literature on music listening and music engagement has primarily focused on how the general public engages with music or uses music to regulate emotion. This is distinct from more intentionally therapeutic applications of music, which utilise specific music therapy techniques by a qualified music therapist with the intention of addressing a client’s presenting problems. The last few decades have seen an increase in more tightly controlled empirical studies and randomised controlled trials to gather evidence for the efficacy of music therapy across a wide range of contexts. A 2017 Cochrane review of the use of music interventions for people with ABI (Magee, Clark, Tamplin, & Bradt, 2017) noted that although some consistent and promising results were demonstrated for music interventions in the areas of rehabilitation such as gait, upper limb function, speech/communication and quality of life, it was noted that the overall quality of research evidence was poor due to inconsistencies across methodologies and the adoption of less optimal study

designs (Magee et al., 2017). For this reason, the authors called for increased research attention and randomised clinical trials to continue to build more stringent future practice recommendations.

Music therapy has been used in a range of contexts, from community-based interventions through to hospital inpatient services. Prior studies have highlighted efficacious use of music in palliative care populations to lessen subjective suffering for individuals and carers (Gallagher, Huston, Nelson, Walsh, & Steele, 2001; Gutgsell et al., 2013; Magill, 2000), in cancer populations to improve mood and subjective wellbeing (Gutgsell et al., 2013; Li, Zhou, Yan, Wang, & Zhang, 2012; Magill, 2000), in chronic pain populations for alleviation of perceived pain (Gutgsell et al., 2013), in dementia populations to embrace personal reminiscence and improve autobiographical memories (Jacobsen et al., 2015; McDermott, Crellin, Ridder, & Orrell, 2013), in special education contexts to deliver therapy to children and adults with disability (Baker & Tamplin, 2006) and in psychiatric populations for improvement of mood symptomatology (Silverman, 2010, 2013). This breadth of research highlights the benefits of engaging with music therapeutically. In neurological populations, music therapy has tended to be applied to individuals with stroke, TBI, or other acquired brain injury to help facilitate rehabilitation, individual adjustment and assist with mood regulation (Bradt, Magee, Dileo, Wheeler, & McGilloway, 2010; Gilbertson, 2016; Hitchen, Magee, & Soeterik, 2010; Magee & Baker, 2009). These outcomes are explained in more detail below (see ‘Music Therapy and Rehabilitation’).

2.3 Music Therapy, Subjective Mood, and Quality of Life

One prominent application of music therapy has been in the area of mood. Across psychiatric, sub-clinical or general population samples, music therapy has been applied to treat low mood or depressive symptoms (Kim et al., 2011; Maratos, Gold, Wang, & Crawford, 2008), anxiety (Hitchen et al., 2010; Li et al., 2012), and stress (Pothoulaki, 2012).

There is a large body of evidence to support the role of music therapy in improving patient subjective mood ratings (Kim et al., 2011; Magee & Davidson, 2002; Maratos et al., 2008; Nayak et al., 2000), although the mechanisms underlying these outcomes are not always clearly delineated in previous studies. A Cochrane review examining the use of music therapy for depression among a small number of clinical trials noted evidence of improved mood among patients, and a general acceptance of music therapy as a treatment for depression (Maratos et al., 2008). In addition to directly targeting mood symptomatology such as depression and anxiety, music therapy has also been evidenced to have positive outcomes on wider factors such as quality of life (Paul & Ramsey, 2000; Tamplin et al., 2013), satisfaction with life (Kim et al., 2011), and ratings of subjective flourishing (Baker, Rickard, Tamplin, & Roddy, 2015).

2.4 Music Therapy Techniques

Music therapists are trained to offer a range of techniques to suit individual or group needs. Differentiation has been made between active modes of therapy, which typically involve direct client input into the music listening or music making process, and receptive modes of therapy, which tend to be more clinician-directed with more passive participation on the part of the client (Baker & Wigram, 2005; Baker & Tamplin, 2006; Baker et al., 2008; Edwards, 2015). Grocke and Wigram (2006) note that receptive methods, where individuals are recipients of (rather than partakers in) the music making process, can differ in their acceptance across settings and cultures. Similarly, individual or group singing or music listening is one form of music therapy that involves the primary emphasis on the music therapist making music and those engaging in therapy watching and listening (e.g., Tamplin et al., 2013). Music listening for the purposes of reminiscence is a common application in geriatric settings, especially for individuals with dementia (Ashida, 2000; McDermott et al., 2013; Takahashi & Matsushita, 2006), where therapy has been found to be efficacious in

promoting individual reminiscence, improving positive emotions and subjective mood (Ashida, 2000; Takahashi & Matsushita, 2006). General music listening for pain relief or relaxation can also be facilitated between therapist and client, utilising a combination of therapist or client-selected music (Baker & Wigram, 2005). Clients can also create instrumental music alongside the music therapist, or as a solo instrumentalist. Finally, one key technique that has enjoyed more recent research attention is therapeutic songwriting.

2.5 Therapeutic Songwriting

Songs are a powerful medium through which to communicate personal histories, life experiences and emotional states. A song is a salient product that captures an individual's story through both lyrics and musical choices including genre, beat/ rhythm, melody, harmony and song structure (Baker, 2015a, 2015b; Baker, Kennelly, & Tamplin, 2005; Baker, Wigram, Stott, & McFerran, 2008). Therapeutic songwriting as a music therapy technique involves the music therapist working collaboratively with the client to compose personally meaningful songs and song lyrics (Baker, 2015a; Baker et al., 2008a; Baker et al., 2008b). While the precise protocol applied to complete the songwriting process will differ between therapists, and potentially between individual clients for a therapist, there are some commonly established stages that apply to therapeutic songwriting (Baker et al., 2008b). There is generally an initial stage during which the therapist gets to know the client, build rapport and understand the client's personal history. This is important in order for the therapist to understand client need, but also understand what the therapeutic goals may be, and how the client may initially feel about engaging in music therapy (particularly if this is a new experience for them). Following this, the therapist may start to draw out some key themes from the client's personal history, reflecting back some of the key memories recalled or phrases used, to start shaping song lyrics. During this process the therapist also liaises with the client as to their preferred choice of genre, style or musical elements that will eventually

form the song. Together, this process of mutually shaping the music and lyrics helps the therapist and client create a song that is guided by the therapist, but reflects the client's individually meaningful experience. Some clients may also choose to write song lyrics independently or may come to the music therapy process with song ideas or existing lyrics. Some clients may also choose to help co-create the final song recording. At the conclusion of a songwriting experience, clients are able to use the finished song as a means of communication with loved ones and friends. Prior studies have emphasised the important personal meaning of an individual's song as a reflection of themselves and their experiences (Baker & MacDonald, 2014).

2.6 Music Therapy and Rehabilitation

Music therapy has been successfully used as a component of many rehabilitation programs, both as a standalone therapy and as an adjunct to existing allied health interventions such as physiotherapy, occupational therapy or speech therapy. The rehabilitative processes through which music operates are complex and are the subject of ongoing research. Music has been applied to neurological populations to assist in rehabilitating a variety of functions including speech (Pfeiffer & Sabe, 2015; Tamplin et al., 2013; Thaut, McIntosh, & Hoemberg, 2015), cognition, and motor function (Magee & Baker, 2009). Specific applications aimed at bringing together neuroscience research and music therapy techniques include the development of specialised fields of music therapy, such as neurologic music therapy (Thaut et al., 2009, 2015), including rhythmic entrainment therapy or rhythmic auditory stimulation (Thaut et al., 2015), and melodic intonation therapy (Norton, Zipse, Marchina, & Schlaug, 2009). In combination with the above therapies that tend to focus on maximising functional or physical rehabilitation gains, other music therapy techniques such as therapeutic songwriting have enabled a more specific focus on

psychosocial adjustment and self-perceptions, support for mood disturbance or emotional state (Baker & Wigram, 2005).

Therapeutic songwriting has more recently been applied to neurological populations with the intention of supporting individual rehabilitation of identity and self-concept (Baker et al., 2005; Baker et al., 2017; Baker, Rickard, Tamplin, & Roddy, 2016; Tamplin, Baker, Macdonald, Roddy, & Rickard, 2015). The flexibility and adaptability of songwriting as a method of therapy mean that an individual focus on self-concept, identity and adjustment can be adopted to suit each individual client history and preferences.

2.7 Current Project Context: The Need for Continuing Evidence in Neurological Populations

There is currently limited empirical evidence for the efficacy of individual therapeutic songwriting as a prospective identity or self-concept rehabilitation intervention. Research evaluating therapeutic songwriting programs administered post-discharge from rehabilitation services, during community re-integration or at home, has found that songwriting is a beneficial means of empowering an individual to reflect on the injury, the process of recovery, and their current identity or self-concept (Baker & MacDonald, 2013; Baker et al., 2005). This suggests that when potential self-concept disturbances emerge in the longer-term, therapeutic songwriting can help to address these. However, it is also established that disturbances in identity and self-concept do not only arise in the longer-term, but can also be a prominent issue during early transitions from inpatient rehabilitation to home-based or community-based care (Conneeley, 2012; Turner et al., 2007; Turner, Fleming, Cornwell, Haines, & Ownsworth, 2009a). Current evidence on early self-concept rehabilitation interventions is lacking. It is unclear whether any early therapeutic attention to self-concept during inpatient rehabilitation may have a preventative effect on later self-concept

disturbance by helping individuals re-integrate self-concept and improve subjective wellbeing or alleviate distress.

2.8 Project Scope and Rationale

Research on early changes post-injury to self-concept, mood states and emotion regulation is limited, and no reported studies to date have attempted to rehabilitate self-concept and associated mood and emotional disturbances in a subacute rehabilitation environment. It is unclear at present whether early self-concept ratings are open to meaningful change while individuals are engaged in subacute rehabilitation, rather than post-discharge or community re-integration, which have typically been the focus of past research. For those involved in inpatient rehabilitation, and particularly for music therapy clinicians, it is also important to establish the potential efficacy of music therapy in promoting positive shifts in self-concept in neurological populations. Since music therapy is often offered within the suite of available programs for inpatients undergoing rehabilitation, it is important to begin to establish empirical evidence for its effectiveness. If self-concept focused music therapy can promote positive changes in self-concept or mood/ emotional state, then this may indicate a possible preventative effect in minimising or potentially preventing worsening self-concept issues post discharge.

2.9 Aims and Hypotheses

This project broadly aims to address the aforementioned research gaps by exploring early changes in self-concept, subjective wellbeing, distress and emotion regulation during subacute neurorehabilitation. Through conducting a series of case analyses examining outcomes during intervention for ABI and SCI songwriting participants, specific trends in each population will be highlighted and the individual experience of songwriting in subacute rehabilitation can be examined. The current project also seeks to examine both the effects and practical challenges of implementing a self-concept focused therapeutic songwriting

intervention in subacute rehabilitation, in order to build evidence for potential early rehabilitation of self-concept. Finally, the current project also seeks to establish initial evidence for relationships between functional changes during inpatient rehabilitation and self-concept changes during the songwriting intervention period.

The primary aims to be addressed across the three project studies as follows:

1. To investigate early changes in self-concept, wellbeing, distress and emotion regulation in SCI and ABI inpatients undertaking the songwriting intervention.
2. To understand the factors (demographic factors and injury factors, such as functional change during rehabilitation, time since injury and injury severity) that may influence response to the songwriting intervention for SCI and ABI patients,
3. To compare the impact of the songwriting intervention on different domains of self-concept.
4. To explore the efficacy of the songwriting intervention in promoting positive changes by comparing outcomes against comparison group inpatients.
5. To comment on the challenges associated with implementing a therapeutic songwriting intervention in subacute rehabilitation.

CHAPTER 3:
GENERAL METHODOLOGY

3.1 Recruitment Context, Constraints and Challenges

The current project was conducted in a subacute rehabilitation centre in Victoria, Australia. In the Australian context, the term subacute rehabilitation is used to refer to the provision of inpatient rehabilitation services for patients who no longer require acute or emergency care, are medically stable enough to receive rehabilitation services, and require monitored inpatient rehabilitation to promote further growth in functional and physical skills before planning for home or community discharge. Subacute rehabilitation inpatients typically receive a program of rehabilitation comprising sessions of occupational therapy, physical therapy/ physiotherapy, speech therapy, nursing and medical care, and psychological therapy or review as required. Patient timetables typically comprise several hours of rehabilitation each day. Research conducted within a subacute rehabilitation environment presents a number of challenges, as any rehabilitation goals, activities and/or related therapies must take precedence over participation in voluntary research.

3.1.1 Therapist and Researcher Availability

Music therapist availability was a key early consideration in the current project that impacted the timing of recruitment for songwriting participants. Since the current project served as an exploratory study to help inform a larger externally-funded project, priority was placed on the music therapists involved in the project scheduling the songwriting sessions as the first recruitment step. Completion of the songwriting sessions also formed part of the ongoing part-time workload for the music therapists alongside other music therapy work at the centre, so therapist availability to recruit multiple new research participants was necessarily limited. In light of these constraints, the recruitment of intervention participants was undertaken from 2013 – 2015 and the recruitment of comparison group participants was undertaken at a later period from 2015 – 2016. At the time of initial intervention participant recruitment, the current doctoral candidate was undertaking full-time doctoral studies and the

time available for recruitment each week was spent travelling to the subacute rehabilitation centre and conducting pre-, mid- and post-intervention assessments with patients. These were typically conducted in close time proximity to their songwriting sessions, for ease of scheduling, since it often proved challenging to find participants at other times during their schedule, even if a prior time had been blocked out in advance. The later comparison group recruitment was conducted by the doctoral candidate with assistance from the music therapists and allied health staff to identify prospective participants. It is acknowledged that this poses a limitation with regard to the comparability of the intervention and comparison group participants and introduces a degree of variability, but concurrent recruitment was not feasible for the current project.

3.1.2 Inclusion and Exclusion Criteria

The inclusion and exclusion criteria for the current project are summarised in Table 1 below.

Table 1

Inclusion and Exclusion Criteria

Inclusion Criteria	<ol style="list-style-type: none"> 1. Current patient at the rehabilitation centre in the ABI, Spinal or Neurology units 2. A diagnosis of spinal cord injury or acquired brain injury. In this study, acquired brain injury refers to brain injury caused by events after birth and encompasses traumatic brain injury, stroke, brain tumors, substance abuse etc. 3. Between 18 and 65 years of age 4. Less than 12 months post injury 5. Able to communicate (in English) 6. Willing and able to attend songwriting sessions (2 times weekly for
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	6 weeks) or to be a control participant
	7. Confirmation from neuropsychologist/speech pathologist of cognitive ability to complete assessment measures and emotional stability to examine self-concept
Exclusion Criteria	1. Severe cognitive impairment or memory problems 2. Severe language problems or hearing impairment 3. Patients currently in Post Traumatic Amnesia

Screening for participants against inclusion and exclusion criteria was conducted on a case-by-case basis with corresponding review of medical records. Some participants recruited exceeded the initially specified upper limit in the inclusion criteria (65 years of age), but were deemed via the standard screening and case review process to be cognitively able to participate in the intervention.

3.1.3 Group Allocation

Group allocation in the current project was determined by wider feasibility constraints, such that intervention participants were recruited first and then comparison group participants, as outlined above. Random allocation was not possible due to time constraints and the limited volume of concurrent admissions to subacute rehabilitation where patients were both free and interested in project participation. For equity, music therapy services would also have had to be made available to all participants in a randomised trial, and this level of music therapy service provision was not feasible within the music therapist working hours at the time of this project. It should be noted that with the receipt of further funding under an Australian Research Council (ARC) Discovery Project, a wider trial with a greater number of participants and music therapists is currently underway that has enabled randomisation of participants to conditions (inpatient control, inpatient songwriting, post-

discharge control, post-discharge songwriting), with some option to offer music therapy services to those who are randomly allocated to the control condition.

3.1.4 Patient Screening

Assessing participant suitability was a challenge as there was no scope to formally screen cognition or language within the available project staff resources. Time constraints meant that the screening process for participants did not enable inclusion of formal active screening of cognition or mental state/ self-awareness. While patient medical records were checked under ethical clearance, the primary means of assessing suitability of patients was health professional consultation at a weekly case review. All allied health and rehabilitation staff were aware of the ongoing intervention and thus were able to suggest participants who may be interested, or flag participants who may not be suitable (e.g., due to language or comprehension concerns, significant adjustment or emotional difficulties). Reference could be made to more formal cognitive testing or emotional state reports on the patient medical records, where required, but these assessments were not routine for all patients. It is acknowledged that more formal screening would have allowed for a deeper understanding of current functioning and self-awareness for prospective participants. Further, baseline screening for self-awareness would have allowed for a richer appreciation of the cognitive state of participants, and in turn the likely validity of the core measures completed. It is recommended that future research implement such baseline screening of self-awareness.

One intervention participant and one comparison group participant had variants of Guillain-Barre Syndrome (GBS), and although these participants completed the intervention, they were removed from analyses of the current project due to the chronic nature of their condition, which does not meet the strict definition of an acquired brain injury. A participant with Multiple Sclerosis (MS) was retained in the data set. MS is categorised as an acquired brain injury as it primarily impacts the central nervous system (CNS), whereas GBS has

primary impacts on the peripheral nervous system. The CNS is usually largely intact in cases of GBS, and prognosis in GBS is generally more favourable than MS. However, it is acknowledged that this distinction may be somewhat arbitrary, as both conditions vary in severity and are considered progressive. Further consideration of the role of MS and GBS patients within broader ABI research groups, and the strictness required when defining what constitutes an acquired brain injury, should be considered in future research. It should be noted that the HISD is largely untested on Multiple Sclerosis participants, since the HISD has mostly been applied to brain injured (ABI and TBI) populations. Further research is required to more fully determine the suitability of the HISD for use in MS populations.

3.1.5 Lack of Control Matching

In light of the aforementioned challenges recruiting both intervention and comparison group participants, closer matching with respect to demographic variables was not possible. Although this may have enabled a stronger methodological approach, and some compensation for the variability in recruitment timeframes for both groups, the number of participants taking part in the project overall, as a proportion of all subacute admissions (in both spinal and neurological wards) was not sufficient to enable selection of more closely retrospectively matched participants. Due to the lack of experimental control in the subacute rehabilitation environment, the term ‘comparison group’ has been utilised in the current thesis rather than control group.

3.1.6 Lack of Blinding

Blinding to condition (by music therapist and/or doctoral candidate) was not adopted in the current treatment protocol (see Appendix B). While it is acknowledged that this may have provided more methodological rigour, it was not feasible due to: a) consecutive rather than concurrent recruitment of intervention and comparison group participants; and b) the nature of timetable scheduling in the subacute setting required transparency in terms of the

purpose of any scheduled sessions and the location of participants (thus, participants would be booked in for ‘music therapy’, even in the case of later separate comparison group recruitment).

3.1.7 Participant Recruitment and Retention

The number of inpatients in both spinal and neurological subacute wards at the rehabilitation centre at any one time limited the availability of prospective participants. The rates of attrition and reasons for attrition (discussed further below) meant that recruiting sufficient numbers of participants remained a challenge for the duration of the project. Recruitment and attrition patterns are detailed in Figure 1 below.

Recruitment for the comparison group took some time to build comparable numbers. Ethical provisions for the current project meant that no incentives of any kind were able to be provided for participation, so recruitment efforts for comparison group participants focused on those participants who were willing to complete the questionnaires and had time in their schedules to do so. If participants wished, they were also able to consider participation in some music therapy sessions (not related to the current intervention) after cessation of the current project.

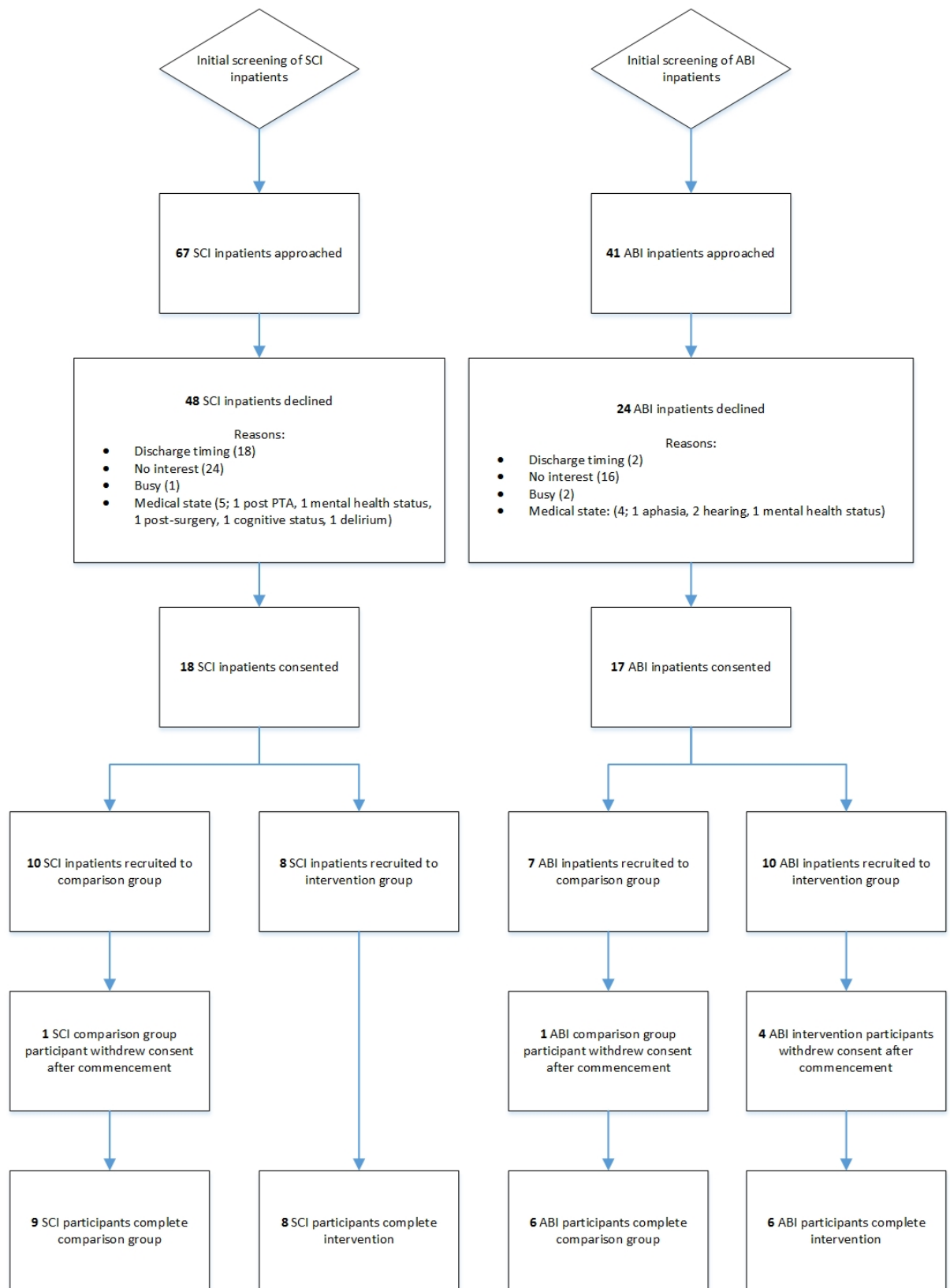


Figure 1. Attrition flowchart for ABI and SCI intervention and comparison group participants

3.1.8 Patient Availability

The busyness of the day-to-day work schedules and inpatient schedules in the subacute rehabilitation environment posed a number of challenges. Finding participants who were available twice weekly for six weeks remained difficult. Discharge timing for many prospective participants was unpredictable due to unexpected gains or losses in function, requirements for medical interventions such as surgeries, transfer to other facilities or earlier than anticipated home discharge. This unpredictability also meant that the timing of songwriting sessions or questionnaire completion for current participants needed to be flexible, such that some participants completed songs over multiple weeks, some completed multiple sessions a week, and some completed sessions after home discharge. It is acknowledged that this is less than ideal from a research design continuity perspective, however, had these measures not been implemented, greater numbers of participants would have withdrawn from the study or been lost to follow up.

Further, patient condition was also unpredictable. Some prospective participants flagged as suitable experienced setbacks in physical or psychological state. Some participants were also advised against participation from medical staff due to concerns as to schedule commitments or over-fatigue.

3.2 Treatment Protocol

The overall approach applicable to the current project is a comparison group evaluation, contrasting the outcomes of songwriting participants with comparison group participants over time. The songwriting intervention followed a structure and protocol (see Appendix B) for all songwriting participants with the aim of maximising consistency where possible in light of the aforementioned challenges in the subacute environment. The intervention was delivered across a six-week period in inpatient subacute rehabilitation, with participants undertaking two one-hour songwriting sessions each week. Some variability to

this schedule was adopted as necessary, as discussed above. The program was designed to deliver a broad structure that supported the process of self-concept reintegration by moving from a focus on past self (first two weeks), to present self (middle two weeks) and future self (last two weeks). Intervention participants completed a song that reflected each of these stages: past, present and future self. The intervention structure is summarised in Figure 2 below.

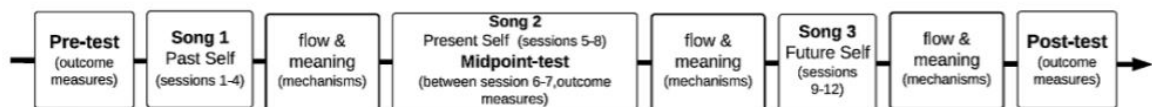


Figure 2. Structure of songwriting intervention (re-created with permission from Baker et al., 2015).

The therapeutic songwriting process followed the general principles of therapeutic songwriting outlined in Baker (2015), Baker and Tamplin (2006) and Baker, Wigram, Stott, and McFerran (2008), but with a specific focus on self-concept. The ultimate goal of therapeutic songwriting is to build a therapeutic alliance between therapist and client to support the use of music therapy, specifically songwriting techniques, in helping to explore and capture salient personal issues in the form of song (Baker, 2015). The therapeutic approach and protocol adopted are outlined in more depth in Tamplin et al. (2016) (see below). The initial treatment phase in Session 1 included the introduction to songwriting and brainstorming with the client in relation to the domains of self-concept. Sessions two and three involved a cyclical process of exploring the topic focus (e.g. past self), and drafting music and lyrics to shape the song. Finally, the song was refined and recorded in the fourth session. This process was repeated for each of the three songs completed across the intervention period. A visual summary of this process is included in Figure 3 below, re-created with permission from Tamplin et al. (2015).

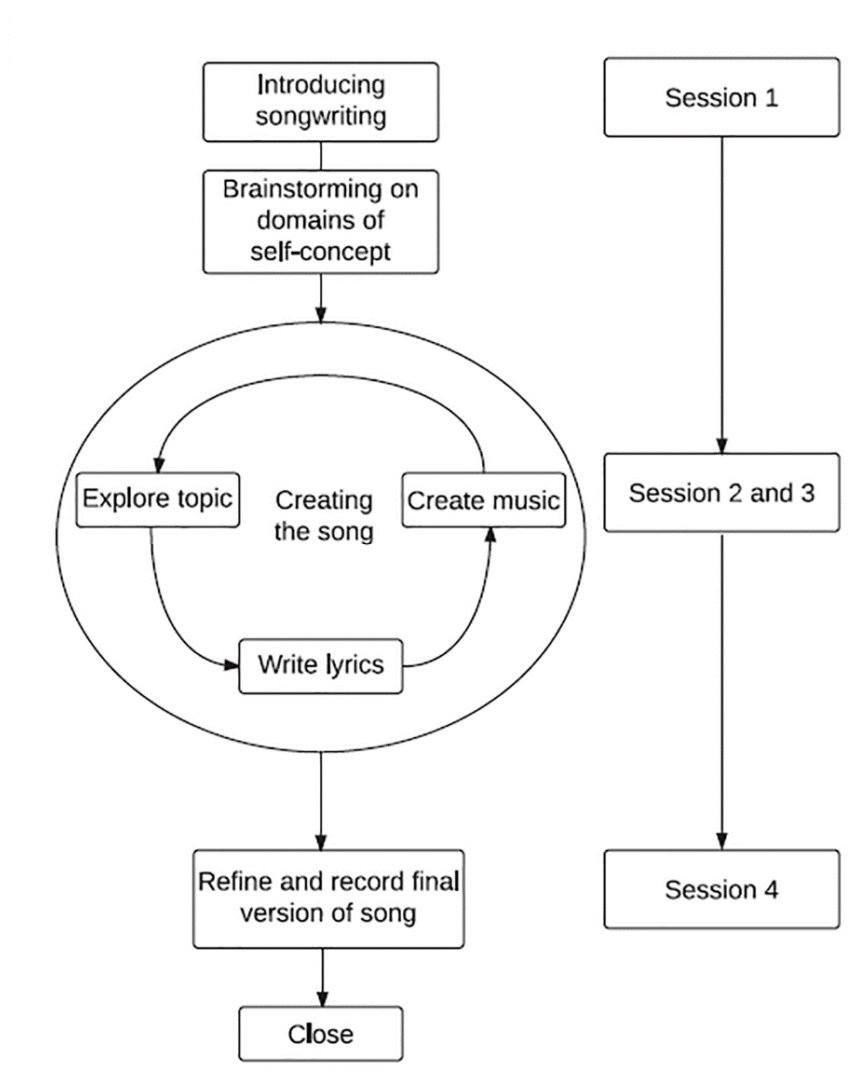


Figure 3. The process of songwriting adopted within the therapeutic songwriting program.

3.2.1 Outcome Variables

The current project examined a range of outcome variables within the broader categories of self-concept, subjective wellbeing, subjective distress, and emotion regulation. These variables were operationalised as outlined in Table 2 below. Both comparison group and intervention participants completed three sets of the outcome measure questionnaires at baseline (pre-intervention), half way through the intervention in week 2-3 (mid-intervention), and at the conclusion of the intervention (usually week 6; termed post-intervention). For the

purposes of the current study, these assessment timepoints are termed pre-, mid- and post-assessments.

Table 2

Summary of Key Outcome Variables and Measures Utilised

Category	Construct	Measure Utilised
Self-concept	Self-concept (global)	Head Injury Semantic Differential Scale (HISD) (Tyerman & Humphrey, 1984b)
	Self-concept (global and six domains: academic, personal, physical, moral, family, social)	Tennessee Self-Concept Scale 2 nd edition (TSCS-2) (Fitts & Warren, 1996)
Subjective wellbeing	Flourishing	Flourishing Scale (Diener et al., 2010)
	Satisfaction with Life	Satisfaction with Life Scale (Corrigan, Kolakowsky-Hayner, Wright, Bellon, & Carufel, 2013)
	Positive Affect	Positive Affect subscale (PA) of the Positive and Negative Affect Schedule (PANAS) (Watson, Clark, & Tellegen, 1988)
Subjective distress	Depression	Patient Health Questionnaire (PHQ-9) (Kroenke, Spitzer, & Williams, 2001)
	Anxiety	Generalised Anxiety Disorder Questionnaire (GAD-7) (Spitzer, Kroenke, Williams, & Löwe, 2006)
	Negative Affect	Negative Affect subscale (NA) of the Positive and Negative Affect Schedule (PANAS) (Watson et al., 1988)
Emotion regulation	Reappraisal and Suppression	Reappraisal and Suppression subscales of the Emotion Regulation Questionnaire (ERQ) (Gross & John, 2003)

Information on the psychometric properties of each of the above measures is included within the series of publications or submitted manuscripts associated with the three studies in this broader project area (see Section 3.3 below). Each of the outcome variables was incorporated in a questionnaire battery administered via iPad to participants at three points over the project period; pre-intervention (baseline), mid-intervention, and post-intervention.

Comparison group participants completed all above measures at comparable time points across a six-week period, to enable comparisons with intervention participants.

3.2.2 Functional Outcome Data for Inpatients

Additional data were also collected for all available intervention and comparison group participants to analyse functional status at admission to subacute rehabilitation and functional gains made during subacute rehabilitation. Functional status was assessed via the therapist administered Functional Independence Measure (FIM) (Hamilton, Granger, Sherwin, Zielezny, & Tashman, 1987), which comprises Motor and Cognitive subscales, and was administered at admission and discharge from inpatient subacute rehabilitation. These data were examined within the main comparison manuscript contained in Chapter 6 (Study 3, as detailed in Section 3.3 below).

3.2.3 General Study Protocol Information

A breakdown of the study protocol information against the *Checklist for Reporting Music-Based Interventions* (Robb, Burns & Carpenter, 2011; Robb et al., 2018) is included below in Table 3 for transparency of reporting. Further specific details of the intervention protocol are captured in Tamplin et al. (2015) (see also Appendix B).

Table 3

Breakdown of Intervention Protocol: Checklist for Reporting Music-Based Interventions

A: Intervention Theory

The theoretical underpinnings of the intervention drew upon theories of narrative therapy, neural activation using music, stimulation of emotions, flow and meaning through music, and the resilience of musical identity.

B: Intervention Content

Participants first engaged in guided reflection with the music therapist as to their past sense

of self (self-concept), considering how they saw themselves before the current injury. The content of these therapeutic dialogues was then shaped into song lyrics in collaboration with the music therapist, and initial decisions regarding song genre, harmonies and instrumentation were made collaboratively. Melody lines, chord progressions and song structure (eg. verse and chorus) were developed and refined before being practiced and recorded. Participants had the option of recording themselves singing with the music therapist if they wished to. This process was then repeated to create a song focused on current self, and one focused on an imagined future self.

B.1: Person Selecting the Music

Selection of the music genre and stylistic elements was conducted by individual participants with guidance and support from the music therapist.

B.2: Music

The music for participant songs was developed in collaboration with each participant and was highly individualised for each song and each participant. Decisions about musical genre, style, key and structure were made collaboratively with the participant to match and support the overall feeling of the original song.

B.3. Music Delivery Method (Live or Recorded)

Songs were developed live in sessions with the therapist and participant and recorded by the music therapist once complete.

B.4: Intervention Materials

Music therapists used a guitar or piano as the primary instrument to facilitate the songwriting process. Additional song elements were added during the song creation process, such as rhythmic beats, harmonies, and additional instrumentation were recorded using GarageBand on an iPad.

B.5: Intervention Strategies

Songwriting was the primary method used for the intervention, with the aim of reflecting on and processing changes in self-concept. Participants wrote a series of three songs, with support from a music therapist, to reflect their perception of past, present and future self.

C: Intervention Delivery Schedule

Participants undertook a total of twelve songwriting sessions of approximately one hour each. Sessions were typically held twice weekly for a period of six weeks, although this was variable according to factors such as participant availability and discharge timing.

D: Interventionist

The intervention was conducted by three qualified and registered music therapists working within the inpatient subacute rehabilitation environment.

E: Treatment Fidelity

Interventionists were trained to use a standardised songwriting protocol developed specifically for the purpose of processing changes in self-concept following neurological injury (Tamplin et al 2015).

F: Setting

The majority of songwriting sessions were delivered in a private music therapy room within the rehabilitation centre. Some sessions were conducted bedside as required.

G: Unit of Delivery

All songwriting sessions were conducted as an individual therapy session involving only the music therapist and participant. The majority of these sessions were face-to-face, although one participant was discharged prior to completing his final song and completed his remaining sessions via teleconference.

3.3 Co-Authored Publications Associated with Current Project

There is a total of three co-authored publications associated with the current project that each explain a different perspective on the intervention conducted, with a focus on the music therapy protocol, the potential mechanisms that might drive the effectiveness of the songwriting process, and the types of themes reflected in songwriting participants. A pre-amble and copies of these publications are included in Appendices A, B, and C, but a brief summary is also included below for completeness. All studies included in the current thesis draw from the same overall sample recruited during the period 2013 – 2016.

Publication One

Baker, F. A., Rickard, N., Tamplin, J., & Roddy, C. (2015). Flow and meaningfulness as mechanisms of change in self-concept and wellbeing following a songwriting intervention for people in the early phase of neurorehabilitation. *Frontiers in Human Neuroscience*, 9, 299–399. <https://doi.org/https://doi.org/10.3389/fnhum.2015.00299>

Contribution: This publication aims to address a gap in the literature by considering the potential mechanisms underlying the effectiveness of the songwriting process. Five ABI and five SCI individuals were drawn from the intervention group who had completed the intervention at the time of publication (2015) and were used as the basis of the analyses conducted. The paper findings noted that participation in the songwriting intervention was associated with enhanced self-concept and wellbeing outcomes, particularly for those participants who found strong personal meaning in the songwriting process. Emotion regulation also appeared to play a role, whereby increased awareness of emotions was theorised to have increased anxiety and depression for some participants.

Publication Two

Tamplin, J., Baker, F. A., Macdonald, R. A. R., Roddy, C., & Rickard, N. S. (2015). A theoretical framework and therapeutic songwriting protocol to promote integration of self-concept in people with acquired neurological injuries. *Nordic Journal of Music Therapy*, 1–23. <https://doi.org/10.1080/08098131.2015.1011208>

Contribution: This paper is focused on outlining the songwriting protocol adopted in the current project, with a view to explaining the therapeutic goals, structure and content of the intervention. The paper also detailed a case study to place the intervention in context and reflect on a personal experience of undertaking the songwriting program.

Publication Three

Baker, F. A., Tamplin, J., MacDonald, R. A. R., Ponsford, J., Roddy, C., Lee, C., & Rickard, N. (2017). Exploring the self through songwriting: An analysis of songs composed by people with acquired neurodisability in an inpatient rehabilitation program. *Journal of Music Therapy*, 54(1), 35–54. <https://doi.org/10.1093/jmt/thw018>

Contribution: This paper presents a deductive and quantitative analysis of themes emerging in songs composed by 12 intervention participants in the current project. It was found that songs focusing on past self tended to reflect family and personality, whereas present self songs focused more on physical and personal self, as well as reflections on moral and spiritual self. There was also a significant interaction between self-concept domain and song number, which the authors noted may have been due to a more prominent focus on physical self-concept and reduced focus on family self-concept for the present song in comparison to past or future songs. The paper reinforces the use of songwriting as a therapeutic means of addressing individual self-concept challenges during early inpatient rehabilitation.

CHAPTER 4:

IDENTITY IN SCI INTERVENTION PARTICIPANTS

This chapter constitutes a manuscript on case series trends in songwriting participants with SCI published in the *Journal of Spinal Cord Medicine* on 24 August 2017.

Roddy, C., Rickard, N., Tamplin, J., & Baker, F. A. (2017). Personal identity narratives of therapeutic songwriting participants following Spinal Cord Injury: a case series analysis. *The Journal of Spinal Cord Medicine*, 1–9. <https://doi.org/10.1080/10790268.2017.1364559>

Preamble

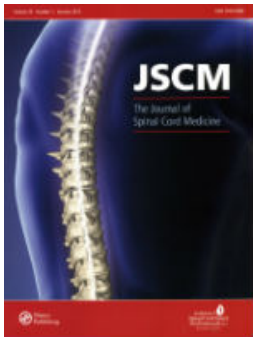
The impact of spinal cord injury on self-concept remains understudied. Alongside the existing body of research that has sought to understand the post-injury experience of those with acquired or traumatic brain injury, it is important to better understand the experience of those with spinal cord injury, particularly in relation to changes in self-concept. Prior research that has examined experiences of SCI has emphasised reductions in quality of life resulting from significant and persistent changes in activity participation and physical disability (Fortmann et al., 2013; Hammell, 2004; Lannem, Sørensen, Frøslie, & Hjeltne, 2009; Leeuwen et al., 2012; Migliorini et al., 2011; Ripat & Woodgate, 2012; Tasiemski & Brewer, 2011). Mood disturbance is also prominent post-SCI (Davis & Novoa, 2013; Kreuter, Sullivan, Dahllöf, & Siösteen, 1998; Migliorini et al., 2015; Salter, Smith, & Ethans, 2012). Examination of identity and self-concept-related changes after SCI has noted disturbances in physical self-concept, which in turn is related to (and exacerbated by) reductions in activity participation and increased physical disability (Lannem et al., 2009; Leibowitz & Stanton, 2007; Murray et al., 2007; Perrier, Sweet, Strachan, & Latimer-Cheung, 2012; Rahimi et al., 2013).

There has however, been limited research to date that specifically focuses on early changes in self-concept among those with SCI while in inpatient rehabilitation. Established identity or self-concept rehabilitation approaches, such as holistic neurorehabilitation, metaphoric identity mapping, and group-based rehabilitation (Anson & Ponsford, 2006; Coetzer, 2008; Kelly, Ponsford, & Couchman, 2013; Wall, Turner, & Clarke, 2012; Ylvisaker & Feeney, 2000; Ylvisaker et al., 2008), have tended to be applied to brain injury populations with less specific consideration of spinal cord injury populations. Therefore, there is scarce evidence of early changes in self-concept, mood and quality of life for those with SCI. The current paper presents a case analysis of eight inpatients undertaking a

therapeutic songwriting program to examine changes in self-concept, subjective wellbeing and distress.

A note on definitional uncertainty

Please note that the term ‘identity’ was chosen for this article at the time of publication, since there was much definitional uncertainty in the spinal cord injury literature, with the terms identity, self-concept and self-identity often used interchangeably. In retrospect, it is noted that this term may not be the most accurate term to apply in light of the TSCS-2 and HISD assessing self-concept more so than identity per se. For this reason, the framework for this thesis was revisited to align more broadly with the overall neurological literature and also allow for direct interpretation of self-concept changes on the TSCS-2 and HISD, which are core measures of self-concept.



Personal identity narratives of therapeutic songwriting participants following Spinal Cord Injury: a case series analysis

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Research Article

Personal identity narratives of therapeutic songwriting participants following Spinal Cord Injury: a case series analysis

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Context/Objective: Spinal Cord Injury (SCI) patients face unique identity challenges associated with physical limitations, higher comorbid depression, increased suicidality and reduced subjective well-being. Post-injury identity is often unaddressed in subacute rehabilitation environments where critical physical and functional rehabilitation goals are prioritized. Therapeutic songwriting has demonstrated prior efficacy in promoting healthy adjustment and as a means of expression for post-injury narratives. The current study sought to examine the identity narratives of therapeutic songwriting participants.

Design: Case-series analysis of the individual identity trajectories of eight individuals.

Setting: Subacute rehabilitation facility, Victoria, Australia.

Participants: Eight individuals with an SCI; 7 males and 1 female.

Intervention: Six-week therapeutic songwriting intervention facilitated by a music therapist to promote identity rehabilitation.

Outcome Measures: Identity, subjective well-being and distress, emotional state.

Results: Three participants demonstrated positive trajectories and a further three showed negative trajectories; remaining participants were ambiguous in their response. Injury severity differentiated those with positive trajectories from those with negative trajectories, with greater injury severity apparent for those showing negative trends. Self-concept also improved more in those with positive trajectories. Core demographic variables did not however meaningfully predict the direction of change in core identity or wellbeing indices.

Conclusion: Identity-focused songwriting holds promise as a means of promoting healthy identity reintegration. Further research on benefits for those with less severe spinal injuries is warranted.

Keywords: Spinal Cord Injuries, Self Concept, Rehabilitation, Music Therapy, Identity

Introduction

Approximately 10,000–20,000 Australians currently have a traumatic Spinal Cord Injury (SCI). The incidence of SCI is heavily skewed toward men, with estimates suggesting 70–80% of those with a SCI are men.^{1,2} Spinal injuries are predominantly experienced within the 16–30 year age group, but recent reporting has noted an increase in older age groups. The causes of SCI are varied, but the majority result from motor vehicle accidents or falls.

The effects of SCI depend to a large extent on the level and grade of injury. The level dictates whether the SCI results in tetraplegia (loss of sensation and/or movement of all four limbs) or paraplegia (loss of sensation and/or movement in lower limbs and trunk). The grade is categorized as complete, involving a loss of all movement and sensation in affected areas, or incomplete, involving some retention of movement and/or sensation below the level of SCI. In addition to paralysis and sensation loss, frequent sequelae of SCI include bowel and bladder incontinence, pain, spasticity, and sexual dysfunction.

Research suggests that people with SCI face a number of significant challenges with respect to the psychosocial

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and emotional impact of their injury, which may go undetected during subacute rehabilitation.^{3,4} People with SCI face increased risk for psychopathology, including depression and anxiety 5–10; with some authors citing a fivefold increase in suicide rates following SCI.¹¹ Changed family responsibilities and associated carer burden can also lead to relationship breakdowns and loss of friendships, which increases the risk of social isolation and can perpetuate depressive symptomatology.¹² Reduced subjective quality of life is frequently reported among SCI populations,^{3,13,14} and this can perpetuate mood disturbances. Maladaptive coping styles and emotion dysregulation have also been noted to be major influences on wellbeing after SCI.^{15,16}

Identity is a construct which underpins many aspects of post-SCI adjustment.^{7,17} Identity is both personally and socially constructed and captures a person's unique, individual perceptions as to their nature, life roles, goals, ambitions and achievements. While identity has been long emphasized as a critical component of psychosocial adjustment, the role of identity for those with SCI remains understudied.¹⁸ The traumatic nature of SCI means that the injury is internalized as a significant and immediate threat to self.^{19,20} In this sense, traumatic SCI shares a commonality with the Acquired Brain Injury (ABI) and Traumatic Brain Injury (TBI) literature. Exploration of identity across both SCI and ABI/TBI studies has identified themes of a shattered or broken self^{21–23} whereby adjustment difficulties are predicated on the disconnect between perceived current and prior (pre-injury) selves. Maladaptive views of identity post-injury, which can include the desire to return to their former identity and level of functioning, have been associated with maladaptive coping styles and subsequent risk for the development of psychopathology.²⁴ By contrast, healthy perceptions of self appear more aligned with the literature on post-traumatic growth in which people find new meaning and a re-alignment of values and core priorities post-injury.^{25,26} Reintegration or renegotiation of identity remains a key goal of effective psychosocial adjustment following SCI.²⁷

Therapeutic songwriting is one approach that has been used to promote adjustment to some of the typical losses following TBI, including loss of independence and functioning, loss of life roles and loss of future hopes and dreams.²⁸ Songwriting within a therapeutic context involves assisting individuals to tell their stories through the creation of lyrics and music.²⁹ Therapeutic songwriting enables the person with an acquired injury to use the creative process in a way that allows for reviewing, processing, reframing, and re-authoring his or her life. Songwriting is a culturally

acceptable and accessible medium for expression. When used in a therapeutic context, songwriting can reflect a person's unique experience and personality, and in so doing also capture a representation of their emotions and feelings at that particular point in time.²⁹ Further, the song itself can be a means of communicating with loved ones, reliving positive memories, and affirming progress and recovery. Songwriting provides an alternative vehicle for communication and exploration of pertinent personal concerns and emotional distress and has been found to be an effective way of enhancing growth and self-awareness.³⁰ Further description of the potential underlying mechanisms of therapeutic songwriting are accessible in Baker *et al.*³¹

A specific identity-focused therapeutic songwriting intervention has not been previously reported in an inpatient SCI rehabilitation setting. Further, the post-SCI experience and identity perceptions of SCI patients in sub-acute rehabilitation remain underrepresented in the literature. This project aims to characterize the identity narratives of people with SCI in a sub-acute rehabilitation facility that underwent a tailored identity-focused therapeutic songwriting program.

Method

Setting and Participants

Participants were individuals with SCI undergoing inpatient rehabilitation at a large rehabilitation hospital in metropolitan Melbourne, Victoria, Australia.

Materials

Identity Measures

Identity was evaluated via the Head Injury Semantic Differential Scale (HISDS)³² and the Tennessee Self-Concept Scale – 2 (TSCS-2).³³ The HISDS comprises 20 contrasting adjective-pairs (e.g. dependent, independent) rated on a 7-point Likert scale from one descriptor to the opposite descriptor. The HISDS has been shown to have internal reliability (Cronbach's alpha 0.88), as well as concurrent validity with the Leeds Scale for emotional distress (Tyerman,³² as cited in Ellis-Hill & Horn³⁴). The TSCS-2 comprises 82 items across six self-concept subscales: physical, moral, personal, family, social, and academic, which are rated on a 5-point Likert scale ranging from 'always false' to 'always true.' Fitts and Warren³³ cite adequate psychometric properties with a median internal consistency score of 0.80 for adults and strong test-retest reliability (0.82).³⁵ Both scales were utilised to determine which measure was most sensitive to identity changes within this population, to inform a future larger scale study.

Subjective Wellbeing/ Distress

Subjective wellbeing and associated constructs were measured through the Satisfaction with Life Scale,³⁶ a 5-item measure rated on a 7-point Likert scale (Cronbach's alpha of 0.78; Vassar,³⁷ as cited in Corrigan *et al.*³⁸), and the Flourishing Scale (FS),³⁹ an 8-item measure assessing thriving or self-perceived success in life on a 7-point Likert scale. The FS was recently supported as a reliable and valid tool for use in a New Zealand population,⁴⁰ with results comparable to Diener's original validation.³⁹ Subjective distress was measured through the Generalised Anxiety Disorder 7-item (GAD-7) questionnaire⁴¹ and the 9-item Patient Health Questionnaire (PHQ-9).⁴² The GAD-7 has been validated as a brief screen of anxious symptomatology ($\alpha = 0.89$ ⁴³) and uses a 4-point scale to assess the severity of generalized anxiety symptoms. The PHQ-9, a measure of depressive symptomatology, has been found to have adequate sensitivity and specificity in detecting symptoms of depression in TBI populations.⁴⁴ The Positive and Negative Affect Schedule⁴⁵ was also incorporated as a 20-item measure of affective state using 5-point Likert scales. The PANAS has been found by Crawford and Henry⁴⁶ to have adequate convergent validity with the Depression Anxiety and Stress Scales ($t(986) = 7.523$, $P < 0.001$) and the Hospital Anxiety and Depression Scale ($t(737) = 7.667$, $P < 0.001$).

Procedure

Participants underwent a 6-week tailored music therapy intervention (therapeutic songwriting) during which they worked together with a registered music therapist over 12 sessions to create three songs exploring past, present, and future selves. An individual song was created about each of these perceived selves. Each song was created via a collaborative process between participant and music therapist, following the protocol outlined in Figure 1 below. Sessions one to four focused on the participant's past, and were dedicated to using the participant's perception of their life history to shape a song that captured the participant's view of their pre-injury identity. Sessions five to eight focused on the present, with participants creating a song that reflected on changes resultant from their injury. Sessions nine to twelve focused on the future, and participants created a song that captured their views about their future self. Throughout the songwriting process, participants were encouraged to reflect on their identity perceptions to shape the song lyric content collaboratively with the music therapist, and make choices in terms of the musical elements that shaped each song (genre, melody, key, harmonies,

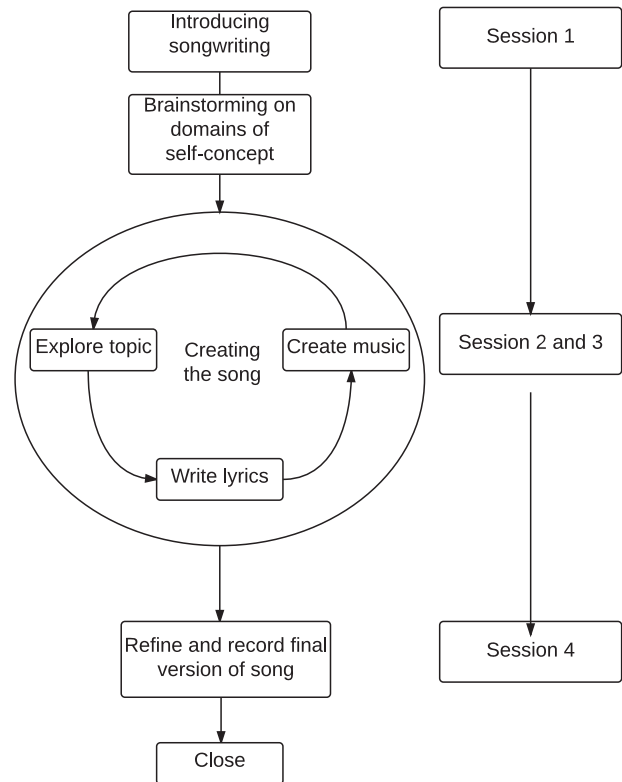


Figure 1. Songwriting for self-concept protocol (Reproduced with permission from Tamplin *et al.*⁴⁸)

instrumentation, etc.). Participants reported varied histories with regard to prior engagement with music. Two participants indicated a prior history of learning a musical instrument. Music listening behaviours also varied across the sample. Two participants reported listening to music for several hours each day. Remaining participants reported listening to music for varied amounts of time ranging from 'about an hour a day' to 'less than once a year'.

In order to assess any corresponding changes in identity self-ratings, subjective mood and wellbeing indices, participants utilised an iPad application to complete a questionnaire battery outlined above at three timepoints - prior to the intervention, at the mid-point of the intervention (3 weeks) and at the conclusion of the intervention (6 weeks). Two participants (Participants 3 and 4) were unable to complete mid-intervention measures due to impending discharge timing. Further details about the intervention protocol and songwriting measures are accessible elsewhere (refer^{31,47,48}).

Results

Demographic and clinical characteristics

There were eight participants in this study. The mean age was 30.4 years, (SD = 12.2 years, range = 17–50

years) and only one was female. They were an average of 2.8 months (SD 1.4 months, range = 45–157 days) post-injury. The level and grade of injury were as follows: incomplete paraplegia (Participants 3, 5, 6, and 8), complete paraplegia (Participants 2 and 4) and complete tetraplegia (Participants 1 and 7). Of the eight participants, two (Participants 2 and 5) were prescribed mood-altering medication at the time of the intervention.

Initial classifications

Raw scores and change scores from pre- to post-intervention in all outcome measures were compared for all participants. From this examination, participants were categorized as either those with positive trajectories; those who exhibited the greatest degree of the positive shift relative to other participants on at least three indices, or those with negative trajectories; those who exhibited the greatest degree of negative shift relative to other participants on at least three indices. The change in outcome measures from baseline to post-intervention was highly varied, both across participants and within participants across outcome measures. Nonetheless, Participants 3, 6 and 8 showed the greatest degree of positive change in at least half the outcome measures, and for the purposes of this paper, were classified as those with positive trajectories. Participants 1, 4 and 7 showed the greatest degree of negative changes on at least three of the eight outcome measures, and for the purposes of this paper, were classified as those with negative trajectories. Participants 2 and 5 demonstrated more mixed profiles but with limited change in most indices from pre- to post-intervention and thus were not examined further in this paper.

Identify Profiles Associated with Positive and Negative Trajectories

Table 3 presents an overview of the core identity scores for all participants on the TSCS-2 and the HISDS respectively. Table 2 shows that those with positive trajectories generally demonstrated an improvement in self-concept over time, with both self-concept indices showing an increase pre to post-intervention for Participants 6 and 8. Participants 3 also showed improvement in the HISDS measure, but conversely showed a decline in TSCS-2 scores. In contrast, all participants with negative trajectories showed a decrease in self-concept scores over time as measured by the TSCS-2. Participants 1 and 7 showed an initial decline in self-concept scores as measured by the HISDS, but demonstrated an improvement by post-intervention. These data indicate that the two measures used to assess self-concept in this study are measuring different constructs and that neither conceptualization clearly predicted whether participants responded to the songwriting intervention over time. Nevertheless, there was a general trend for self-concept scores to improve over time in those with positive trajectories. Tables 4 and 5 present an overview of the accompanying subjective wellbeing and subjective distress measures for both participant groups.

Demographic Predictors of classification

Core demographic variables were examined to determine patterns of change in those showing both positive and negative trajectories (see Table 2). Gender could not be assessed in light of the lack of female representation in the sample ($n=1$). Age did not appear to differ systematically between the two trajectory types. Both

Table 1. Participant Demographic Characteristics

Participant	Gender	Age	Education	Marital Status	Injury categorisation
Participant 1	M	17	No higher than Year 10	Single	C4 ASIA A complete paraplegia
Participant 2	M	19	Completed high school/ VCE	Single	T5 ASIA A complete paraplegia
Participant 3	F	20	Completed high school/ VCE	Single	T11/12 incomplete paraplegia
Participant 4	M	27	Completed Apprenticeship / T.A.F.E. / College Diploma	Single	T3 ASIA A complete paraplegia
Participant 5	M	29	Completed Apprenticeship/ T.A.F.E./ College Diploma	Single	T12 ASIA D incomplete paraplegia
Participant 6	M	37	Post-graduate university degree	Married/ de facto	T4 incomplete paraplegia (tumour)
Participant 7	M	44	Completed high school/ VCE	Married/ de facto	C4 ASIA A complete paraplegia
Participant 8	M	50	Post-graduate university degree	Married/ de facto	T8 ASIA B incomplete paraplegia

Note. All participants reported having been born in Australia.

Table 2. Summary of Key Changes in Direction and Strength of Change in Outcome Measures

Participant	SLWS CHANGE	FS CHANGE	PA CHANGE	GAD CHANGE	PHQ CHANGE	NA CHANGE	HISDS CHANGE	TSCS CHANGE
3	Improved +10	Improved +3	Improved +5	Steady -1	Steady -2	Steady +2	Improved +15	Improved +19
8	Improved +4	Improved +3	Steady +1	Steady 0	Declined +5	Improved -4	Improved +8	Steady +2
6	Improved +5	Improved +4	Declined -6	Steady -2	Improved -6	Declined +8	Improved +25	Improved +19
2	Declined -4	Steady 0	Steady -1	Steady -2	Improved -3	+2	Improved +4	Steady -2
5	Declined -5	Steady +1	Steady +1	Steady -1	Steady -2	Improved -5	Improved +6	Steady -1
1	Steady -1	Improved +5	Improved +5	Declined +7	Declined +5	Steady +2	Improved +34	Declined -6
7	Declined -9	Declined -5	Declined -11	Declined +3	Steady +2	Steady -1	Improved +5	Declined -5
4	Declined -6	Declined -20	Declined -10	Declined +10	Declined +5	Declined +7	Declined -52	Improved +4

Note. SLWS: Satisfaction with Life Scale; FS: Flourishing Scale, PA: Positive Affect Subscale of the PANAS, GAD: Generalised Anxiety Disorder 7-item scale, PHQ: Patient Health Questionnaire, NA: Negative Affect Subscale of the PANAS, HISDS: Head Injury Semantic Differential Scale, TSCS2: Tennessee Self-Concept Scale 2nd edition. Light shading reflects improved scores, while darker shading reflects declined scores.

groups were of mixed ages ranging from 17–50. Two-thirds of those with positive trajectories had undertaken a postgraduate university degree and were either married or in a defacto relationship, although it is unclear based on these participant numbers whether education or relationship status is reliably able to differentiate positive from negative trajectories.

All three participants showing positive trajectories had a comparatively less severe injury (incomplete paraplegia) than those with negative trajectories (complete paraplegia or tetraplegia). Those with negative trajectories were also on average longer post-injury as compared to those with positive trajectories.

Table 3. Identity (Tennessee Self-Concept Scale and Head Injury Semantic Differential Scale) Scores at Pre-, Mid- and Post-intervention for Participants with Positive and Negative Trajectories

Participant	TSCS-2			HISDS		
	Pre	Mid	Post	Pre	Mid	Post
<i>Positive Trajectories</i>						
Participant 3	33	-	52	106	-	121
Participant 8	61	60	63	118	113	126
Participant 6	40	49	59	91	94	116
<i>Negative Trajectories</i>						
Participant 1	48	35	42	80	69	114
Participant 7	25	26	20	112	111	117
Participant 4	20	-	24	113	-	61

Note. The TSCS-2 Total score is reflective of an individual's overall self-concept and associated level of self-esteem. High scores ($\geq 60T$) are suggestive of a largely positive self-view, whereas low scores ($\leq 30T$) suggest more long-standing personal difficulties and conflicted self-view. HISDS Total possible scores range from 20 to 140, with higher scores indicative of a more positive self-concept.

Table 4. Subjective Wellbeing Scores on the Flourishing Scale, Satisfaction with Life Scale and Positive Affect Subscale of the PANAS at Pre-, Mid- and Post-intervention for Participants with Positive and Negative Trajectories

Participant	Flourishing Scale			Satisfaction with Life Scale			Positive Affect (PANAS)		
	Pre	Mid	Post	Pre	Mid	Post	Pre	Mid	Post
<i>Positive Trajectories</i>									
Participant 3	46	-	49	10	-	20	40	-	45
Participant 8	48	-	51	20	-	24	36	-	37
Participant 6	46	-	50	21	23	26	36	28	30
<i>Negative Trajectories</i>									
Participant 1	43	31	48	10	5	9	25	21	30
Participant 7	53	46	48	31	26	22	42	34	31
Participant 4	51	-	31	22	-	16	42	34	31

Table 5. Subjective Distress Scores on the Patient Health Questionnaire (PHQ-9), Generalised Anxiety Disorder Scale (GAD-7) and Negative Affect subscale of the PANAS at Pre-, Mid- and Post-intervention for Participants with Positive and Negative Trajectories

Participant	PHQ-9			GAD-7			Negative Affect (PANAS)		
	Pre	Mid	Post	Pre	Mid	Post	Pre	Mid	Post
<i>Positive Trajectories</i>									
Participant 3	6	-	4	1	-	0	20	-	22
Participant 8	2	9	7	1	7	1	16	19	12
Participant 6	9	9	3	6	10	4	22	31	30
<i>Negative Trajectories</i>									
Participant 1	6	16	11	1	8	8	17	29	19
Participant 7	1	4	3	0	4	3	18	23	17
Participant 4	9	-	14	2	-	12	21	-	28

While a content or qualitative analysis of song lyrics was beyond the scope of the current study, a brief inter-rater reliability exercise was undertaken to review the affective content of song lyrics within the past-, current-, and future-focused songs of those with positive and negative trajectories. This process, based on gross coding of positive, neutral or negative themes within the song lyrics, did not identify any reliable differentiation of those with positive and negative trajectories based on affective song content alone. However, visual inspection revealed that those with negative trajectories tended to express themes of grief, loss or regret. This is illustrated through some of the following lyrics:

“I wish I wasn’t here/ So you couldn’t see me in this mess/ I’m sorry for putting you through/ All the worry and stress” (Participant 1)

“I don’t let people see it, but my heart’s breaking/ Grieving for the dreams I’ve lost” (Participant 4)

“I look completely different, lost so much weight/ I feel disconnected from my body in this state” (Participant 7)

Interestingly, all three participants with negative trajectories also appeared to express some optimism about the future in the third, future-focused song:

“No one ever knows how things will be/ Stuff might happen, wait and see/ Take it how it comes, just my fate/ Happiness comes to those who wait” (Participant 1)

“I’ve got a new path to move on/ I have chosen what I want, and I won’t look back again/ Morning sunshine brings me charm” (Participant 4)

“It’s time to fight for a future that I like/ Everything is changing, but it’s gonna be alright” (Participant 7)

Those with positive trajectories also touched on themes of loss or grief in their songs, but additionally included lyrics that touched on gratitude for family and friends, perseverance, re-evaluation of future priorities, and optimism:

“Now I see, the me that I was meant to be” (Participant 3)

“... I’m grateful for each day that I might never have had” (Participant 3)

“After being somewhere so dark/ I’m moving forward to a future that is full of light” (Participant 3)

“Time is the healer and I know I will survive/ I have lost some things, but gained good things too” (Participant 6)

“I don’t know who I am now, and how I’ll provide/ I’ve lost my motivation, but not my will to survive” (Participant 8)

“I know in time we’ll survive this ordeal” (Participant 8)

The above example lyrics note some of the themes emerging for those with positive and negative trajectories. A more rigorous examination of content across the three songs produced for all participants, alongside the additional measures collected which gauged the experience of ‘flow’ and meaning during the songwriting process, would be of value in future research to provide a stronger empirical basis for any genuine differences between participants with positive and negative trajectories.

Discussion

The current paper presents an analysis of the identity, subjective well-being, and distress measures completed by eight people with SCI undertaking a targeted 6-week therapeutic songwriting program during their inpatient rehabilitation program. Some participants, classified here as those with positive trajectories, demonstrated positive shifts in many of the relevant indices, whereas other participants tended toward negative shifts. No clear patterns in core demographic variables such as age, gender, education or relationship status served to differentiate these classifications as these attributes were mostly evenly distributed between groups (with the exception of the aforementioned gender bias in the sample overall, which hindered closer examination of gender roles).

With regard to the classification of those with positive and negative trajectories, it is of interest that the two participants who were under treatment with mood-altering medications displayed neutral trajectories. It is not within the scope of the current study to determine whether the presence of mood-altering medications may have ‘blunted’ any response to treatment, but the role of such medication in shaping treatment response is an area of note for future control comparison studies.

One key factor that did appear to differentiate the two evident trajectories was injury severity. All participants with positive trajectories were those with less severe injuries. The underlying contributors to this apparently reduced benefit for participants with more severe injuries are unclear. The severity of an injury and associated

life role participation restrictions, the significant threat to identity resulting from this injury, and the expectation of longer duration of rehabilitation and reduced mobility may all have played a role in the experience of these participants in the sub-acute rehabilitation environment. These factors would align with prior research which has identified perceived health and mobility⁴, and the extent to which rehabilitation trajectories/progress matched expectations⁹ as predictors of post-injury adjustment. Severity of injury has also been found to be positively associated with suicidal ideation and attempts post-SCI.⁴⁹

It should be noted that one participant with a negative trajectory had a significant pre-morbid history of psychopathology, primarily depression. This participant had extreme difficulty adjusting to the rehabilitation environment, and threatened to self-discharge on multiple occasions. Although prior literature has established that depression is a common comorbidity after a SCI (e.g.⁵⁰), the role of pre-injury psychopathology as a potential predictor of post-injury adjustment remains less clear. However, it is reasonable to assume that those with pre-existing tendencies toward rumination or anxiety may face a greater challenge in adjusting to their changed circumstances after injury, particularly where this implies a significant threat to physical functioning.

The relationship between injury severity and treatment response warrants further investigation, and holds promise for the applicability of an identity-focused songwriting intervention for those with less severe injuries. Further research into factors such as age, gender, and education in larger samples is also recommended. Although coping style and stress response were outside of the scope of the current study, these have been proposed as predictors of SCI adjustment in prior research^{51,52} and would also be worthy of future exploration. Significant life events and changes in relationships post-injury were not directly evaluated in the current paper, although the impact of relationship breakdowns on injury adjustment is another area that warrants further investigation.

The current study has a number of limitations. Firstly, the research design precludes any causal inferences being drawn about the effects of the intervention. In the absence of a control condition, it is not possible to attribute any changes in core identity or well-being indices to the music therapy intervention. The small sample size also limits the generalisability of current findings. While recent studies have suggested emerging evidence for identity-focused therapeutic songwriting programs in facilitating post-injury adjustment (e.g.^{32,49}), it is

important that future such studies investigate the key causal factors that influence treatment response and in turn, shape post-injury adjustment.

Conclusion

The current paper presents an initial analysis of some of the possible contributors to post-injury adjustment for patients with SCI, and the potential efficacy of an identity-focused therapeutic songwriting program in addressing these. It should be noted that a more extensive comparison with control data is warranted to enable comparisons between those undergoing treatment as usual and those undergoing the songwriting program in the rehabilitation setting. The current study acted as a feasibility study to inform treatment response trends and the sensitivity of the identity and subjective well-being measures for ABI and SCI populations. It is hoped that the preliminary findings from this study can inform the development of future projects.

Identity remains an important driver of the post-injury identity rehabilitation focus, and one which merits attention in a subacute rehabilitation setting. More specifically, therapeutic songwriting holds promise as a means of promoting healthy adjustment and associated positive shifts in mood, well-being and quality of life. Injury severity should be further explored in future studies as a predictor of identity-specific treatment response. The individual narratives and identity trajectories of patients with SCI continue to be an important contributor to the development of effective post-injury therapies to promote healthy, reintegrated self-concept.

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CHAPTER 5:

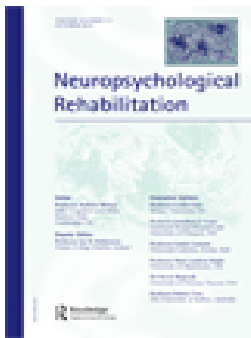
SELF-CONCEPT IN ABI INTERVENTION PARTICIPANTS

This chapter constitutes a manuscript on case series trends in songwriting participants with ABI, published in *Neuropsychological Rehabilitation* on 21 March 2018.

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Preamble

ABI requires complex individual adjustment to impairment and changes in capability to undertake former roles and activities (Carroll & Coetzer, 2011; Muenchberger, Kendall, & Neal, 2008; Yates, 2010). Of the evidence that does exist regarding identity and self-concept changes after ABI, the majority of research has been conducted with people who are longer term post-injury, where significant negative shifts in identity and self-concept have been identified (Engberg & Teasdale, 2004; Ownsworth et al., 2007b; Tate, Broe, Cameron, Hodgkinson, & Soo, 2005). Research examining the shorter-term changes evident post-ABI, in contexts such as subacute rehabilitation, remains limited. Ownsworth, Fleming and colleagues (Conneeley, 2012; Fleming, Sampson, Cornwell, Turner, & Griffin, 2012; Turner, Fleming, Cornwell, Haines, & Ownsworth, 2009b) have noted negative changes in self-concept during key transition points post-ABI, including home discharge after inpatient rehabilitation and community re-integration. Further research is needed to understand the earlier patterns of change evident in self-concept, mood and quality of life in the subacute rehabilitation environment. Further to this, the application of self-concept-focused rehabilitation interventions in this early context requires further study to build evidence of efficacy. Music therapy provides a promising means through which to target self-concept in the early stages post-ABI. To start to address some of these gaps in the literature, and build evidence for early patterns in self-concept, mood and quality of life, the current paper presents a series of five individual case histories for individuals with ABI undertaking the therapeutic songwriting intervention in subacute rehabilitation.



Exploring self-concept, wellbeing and distress in therapeutic songwriting participants following acquired brain injury: A case series analysis

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Exploring self-concept, wellbeing and distress in therapeutic songwriting participants following acquired brain injury: A case series analysis

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ABSTRACT

Acquired brain injury (ABI) presents a significant threat to sense of self and necessitates a complex process of psychosocial adjustment. Self-concept changes remain understudied in the early stages of inpatient rehabilitation. The aim of the current study was to examine changes in self-concept, distress, wellbeing and functional skills for five inpatients undertaking a music therapy intervention within a subacute rehabilitation centre in Victoria, Australia. Participants completed a six-week, 12-session therapeutic songwriting programme to produce past-, current- and future-self-focused songs. A range of self-concept, subjective wellbeing and distress measures were completed pre-, mid- and post-intervention. A descriptive case series approach was applied to determine trends in pre-post scores for five individual cases. Participants showing the greatest gains across self-concept and subjective wellbeing indices also showed the greatest functional gains on the Functional Independence Measure (FIM) from admission to discharge. The current study highlights the importance of examining early changes in self-concept, wellbeing and distress in subacute rehabilitation, and suggests that individualised songwriting programmes warrant further research attention in neurological populations.

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KEYWORDS Brain injury; Self-concept; Identity; Rehabilitation; Music therapy

Acquired brain injury (ABI) requires a complex, lifelong process of adjustment to the injury and associated impairments, as well as the changed life circumstances that follow injury (Brands, Wade, Stapert, & van Heugten, 2012). Ownsworth and Gracey (2011) define adjustment as the process by which an individual comes to terms with, and adapts to, changes in functioning resulting from injury or illness. Adults with brain injury typically need to adjust to functional impairments, reductions in activity participation and the lifestyle impact of their injury (Ownsworth & Gracey, 2011). Coping also plays a role in adjustment in that individuals learn to cope with or manage

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ongoing stressful life situations (Folkman, 2010). Brands et al. (2012) describe a two-step adjustment process whereby individuals strive for functional restoration but also need to cope emotionally with the injury-related losses and grief.

Long-term post-injury adjustment challenges are well documented in the ABI literature, where it has been suggested that socioemotional adjustment to injury may emerge later in the recovery process compared to physical or functional gains (Morton & Wehman, 1995). ABI population studies have identified significant rates of psychopathology, including depression, anxiety and stress over the long-term post-injury (Deb, Lyons, Koutzoukis, Ali, & McCarthy, 1999; Fann et al., 2005; Gould, Ponsford, Johnston & Schoenberger, 2011). Rates of psychopathology are also likely to increase consistently following brain injury (Turner, Fleming, Cornwell, Haines, & Ownsworth, 2009). Additionally, changes in social support and relationship breakdowns following brain injury can further exacerbate these difficulties (Hinkebein & Stucky, 2007; Jones et al., 2011). Early processes of adjustment during inpatient rehabilitation remain understudied. In a subacute rehabilitation context, therefore, where individuals receive care and rehabilitation after the immediate critical care need has elapsed, it is becoming increasingly recognised that psychological adjustment be addressed alongside physical and functional rehabilitation goals.

Psychosocial adjustment to ABI necessitates a process of “making meaning” of and interpreting the injury event and its after-effects (Gracey & Ownsworth, 2012; Ylvisaker & Feeney, 2000). Ownsworth and Fleming (2011, p. 79) describe the “shattering” of one’s global assumptions about oneself, whereby the greater the perceived threat of the event or injury, the greater the likelihood of the individual experiencing psychological distress. This distress can prompt a self-reflection process where individuals learn to re-evaluate their goals, values and self-perceptions (Ownsworth & Fleming, 2011). This process is a central tenet in the literature around post-traumatic growth (e.g., Freeman, Adams, & Ashworth, 2014; Hawley & Joseph, 2008; Powell, Gilson, & Collin, 2012; Rogan, Fortune, & Prentice, 2013).

Identity has increasingly come to light as a key component of post-ABI adjustment (Carroll & Coetzer, 2011; Charmaz, 1995; Ellis-Hill & Horn, 2000; Gracey, Evans, & Malley, 2009; Gracey & Ownsworth, 2012; Landau & Hissett, 2008; Muenchberger, Kendall, & Neal, 2008; Wolfenden & Grace, 2012; Ylvisaker & Feeney, 2000). Identity is characterised as a multi-faceted construct comprising one’s view about oneself in terms of personal attributes, achievements, capabilities, characteristics, activity participation and personally relevant life roles (familial, social, work-related) and is shaped by both personal and social factors (Gelech & Desjardins, 2011). Neurological injury presents an immediate threat to self, and this can be internalised as a loss of self (Levack et al., 2014; Nochi, 1998) or a sense of shattered self (Gelech & Desjardins, 2011; Nochi, 2010). Identity re-integration can be viewed as a kind of “gateway” to effective rehabilitation (Sherry, 2006). Pollack (1994, p. 674) declared that the primary goal of psychological intervention for traumatic brain injury (TBI) survivors is, “to enable the injured person to re-establish, or in the case of more minor brain injury, to reconfirm the sense of self”. Similarly, Muenchberger et al. (2008) stated that without a coherent and positive sense of identity, individuals were unlikely to develop the necessary personal or social skills for wellbeing and successful re-integration into life goals.

Conceptualisations of identity and self-concept following ABI are complex and multi-faceted. There is limited consistency with regard to definitions of identity and self-concept, and there are contrasting views as to the degree of overlap between the

two constructs. Ownsworth (2014) draws upon Rosenberg's and Harter's work (Harter, 2012; Rosenberg, 1965) to define self-concept as the thoughts and feelings one has about oneself, including specific personal attributes, values and comparisons with others. As an overlapping construct, identity can be considered as our identification with unique identifying characteristics, incorporating both personal identity and social identity (Dumont, 2013). In the current paper, the term self-concept will be utilised to align with the two core measures used. Previous research will be reflected according to the terminology used by the study authors.

Quantitative measurement of self-concept shifts post-injury tends to rely on two core measures; the Head Injury Semantic Differential Scale (HISD) (Tyerman & Humphrey, 1984) and the Tennessee Self-Concept Scale – 2nd edition (TSCS-2) (Fitts & Warren, 1996). The HISD uses self-rated responses on a continuum of contrasting adjective pairs (i.e., friendly – unfriendly) to measure a person's perceived self-concept after head injury. By contrast, the TSCS-2 conceptualises self-concept within multiple subdomains, namely physical, personal, moral, social, family, and academic self-concept. The TSCS-2 also encompasses a profile-based approach, which includes a person's overall self-view, perceived conflict or defensiveness, and satisfaction with behaviour, as well as a measure of response validity. A large proportion of identity-focused studies have also applied qualitative methods, including narrative approaches (Gelech & Desjardins, 2011; Nochi, 1998, 2000), qualitative interviews (Ely, Norwich, Ely, & Glasgow, 2006; Medved & Brockmeier, 2008), and grounded theory or phenomenological approaches (Douglas, 2013; Martin, Levack, & Sinnott, 2015; Riley & Hagger, 2015).

Among a range of models for rehabilitation of self-concept or identity after neurological injury, two prominent models have proposed mechanisms by which the self can be rehabilitated (Gendreau & de la Sablonnière, 2014; Gracey et al., 2009). The Cognitive-Developmental Model of Social Identity Integration (CDMSII) (Amiot, de la Sablonnière, Terry, & Smith, 2007) was utilised in a qualitative study of 10 participants with traumatic spinal cord injury (SCI, $n=6$) or TBI ($n=4$) by Gendreau and de la Sablonnière (2014) to examine shifts in post-injury identity. Participants tended to focus on discrepancies between pre- and post-injury selves in the immediate aftermath of the injury, but over time were able to progress to making new connections between their perceptions of themselves prior to the injury and their current state. The final stage of the model was defined as participants being able to "integrate" their sense of identity, where varying identity components were brought together to form a whole self. This process mirrors the identity rehabilitation "Y-shaped model" proposed by Gracey et al. (2009), where the goal of identity-targeted interventions post-injury is to move participants toward a more holistic, healthy and reintegrated sense of self.

Longitudinal research on ABI has identified the emergence of identity-related disturbance in the longer-term post-injury (e.g., Hinkebein & Stucky, 2007; Man, Tam, & Li, 2003; Powell et al., 2012). Ownsworth, Turner and colleagues have also identified specific adjustment and mood-related disturbance in the early stages of transitioning from hospital to home or community-based services (Ownsworth et al., 2011; Turner et al., 2007; Turner et al., 2009; Turner, Fleming, Ownsworth, & Cornwell, 2011). However, self-concept changes in early rehabilitation remain understudied, particularly where patients may not manifest observable symptoms of psychological distress. Prior research has tended to focus on key transitions including discharge and community integration (Conneeley, 2012; Kendall & Terry, 2009; Ownsworth et al., 2011; Turner et al., 2007, 2011), or has evaluated an identity-driven rehabilitation process such as

holistic rehabilitation (Ben-Yishay & Daniels-Zide, 2000; Ben-Yishay et al., 1985; Coetzer, 2008; Sarajuuri & Koskinen, 2006) rather than evaluating self-concept changes with multi-disciplinary rehabilitation. In Australia, subacute rehabilitation involves engagement in intensive multi-disciplinary rehabilitation including physiotherapy, occupational therapy, speech therapy, nursing and acute medical care. In this context, few therapeutic programmes are designed to prioritise self-concept rehabilitation. A recent systematic review of self-concept-focused rehabilitation interventions post-TBI (Ownsworth & Haslam, 2016) found mixed efficacy among a range of psychotherapy, family-based support, cognitive-rehabilitation and activity-based programmes. The authors called for further consideration of self-concept-based rehabilitation interventions that can supplement existing rehabilitation programmes.

Creative arts therapies such as art therapy, dance therapy, and music therapy have a long history of use in healthcare contexts (Pratt, 2004), and there has been a growth in research evidence supporting application of these therapies in populations with brain injury and in rehabilitation more broadly. For example, individualised art therapy programmes have been utilised with TBI inpatients undergoing rehabilitation to facilitate the neurorehabilitation process (Kline, 2016). This has incorporated a specific focus on post-TBI changes in identity, as well as addressing issues such as depression and feelings of social isolation (Kline, 2016).

Music therapy interventions have shown promising applications in neurorehabilitation (Baker, Kennelly, & Tamplin, 2005a, 2005b; Baker & Tamplin, 2006; Tamplin, 2006) to address functional recovery goals (e.g., Pfeiffer & Sabe, 2015), but also to target individual self-concept perceptions and aid in the process of developing a re-integrated sense of self (Baker, Rickard, Tamplin, & Roddy, 2015). The music therapy technique of therapeutic songwriting offers a promising medium through which to deliver self-concept-focused therapy post-injury (Baker et al., 2017). Neuroscientific evidence suggest that the medial prefrontal cortex is a key region linking music, memory and emotion, which has been used to explain the power of music to elicit strong autobiographical memories (Jacobsen et al., 2015; Janata, 2009). Music engages wider and distributed neural networks, particularly involving the areas involved in emotion and reward (i.e., paralimbic and limbic systems) (e.g., Koelsch, 2014; Menon & Levitin, 2005; Salimpoor et al., 2013). Engagement in therapeutic songwriting involves building a therapeutic alliance between participant and music therapist to explore salient personal issues through the process of composing songs and accompanying lyrics (Tamplin, Baker, Macdonald, Roddy, & Rickard, 2015). Therapeutic songwriting has been defined as “the process of creating, notating and/or recording lyrics and music by the client or clients and therapist within a therapeutic relationship to address psychosocial, emotional, cognitive, and communication needs of the client” (Baker & Wigram, 2005, p. 16). The work of Baker and colleagues has increasingly supported the benefits of therapeutic songwriting for people with neurological injuries (Baker, 2015a; Baker et al., 2005a; Baker, Wigram, Stott & McFerran, 2008). A prior evaluation of five ABI and five SCI participants who completed the therapeutic songwriting intervention used in the current project, noted pre-post changes in self-concept ($d = 0.557$), depression ($d = -0.682$), alongside a moderate shift in negative affect ($d = -0.491$) (Baker, Rickard et al., 2015).

In the subacute rehabilitation environment, understanding of early shifts in self-concept, subjective wellbeing and distress, remains limited. Further, the potential to promote early changes in these indices through a targeted self-concept-focused

music therapy intervention requires further examination. The current paper presents a set of five case studies that explore changes in identity and wellbeing ratings for participants with ABI undertaking an identity-focused therapeutic songwriting programme during subacute rehabilitation. It also considers some emerging trends from the participant data and highlights gaps to inform future research studies.

Method

Participants

The project was approved by the local institutional Human Research Ethics Committee (REF H2013/05038). The sample presented in this paper comprised five individuals with an ABI undergoing inpatient rehabilitation in a subacute rehabilitation centre in metropolitan Melbourne, Victoria, Australia. Participants had a mean age of 40.8 years, (SD = 8.73 years, range = 29 to 51 years) and all were male. They were an average of 126 days post-injury (SD 115 days, range = 31–322 days). Injury aetiologies comprised stroke, traumatic brain injury, and hypoxic brain injury. Exclusion criteria included severe cognitive, memory, language or sensory problems, history of severe mood disturbance, and current post traumatic amnesia state. The demographic details for participants are summarised in Table 1.

Measures

Identity and self-concept measures

Two core measures of identity and self-concept were administered; the HISD (Tyerman & Humphrey, 1984) and the Tennessee Self-Concept Scale – 2 (TSCS-2) (Fitts & Warren, 1996). The HISD consists of 20 contrasting adjective pairs rated on a 7-point rating from one descriptor to its opposite. Respondents indicate how they see themselves on each dimension. Tyerman and colleagues (Tyerman & Humphrey, 1984) have noted the psychometric properties for the HISD are sound, as supported by a relatively high internal reliability (Cronbach’s alpha 0.88), and has concurrent validity with the Leeds Scale for emotional distress (Ellis-Hill & Horn, 2000). The TSCS-2 is an 82-item measure of self-concept in six core domains: physical, moral, personal, family, social, and academic. Responses are collected on a 5-point Likert scale ranging from “always false” to “always true.” The TSCS-2 has been cited as having a median internal consistency score of .80 for adults and strong test-retest reliability (.82) (Fitts & Warren, 1996). To

Table 1. Participant demographic characteristics.

Pseudonym	Gender	Age	Education	Marital Status	Injury description
"Robert"	M	51	Undergraduate University Degree/ Graduate Diploma	Married/ Defacto	Left MCA infarct
"Steve"	M	29	Undergraduate University Degree/ Graduate Diploma	Married/ Defacto	Hypoxic brain injury
"Michael"	M	47	Undergraduate University Degree/ Graduate Diploma	Divorced/ Separated	Traumatic brain injury (fall)
"Jacob"	M	41	Completed High School/V.C.E.	Married/ Defacto	Right intracranial haemorrhage
"Christopher"	M	36	No higher than Year 10 of high school	Single	Multiterritorial strokes

Note: All participants reported having been born in Australia.

inform a future, larger-scale study, both scales were utilised to establish comparative sensitivity to change. Prior empirical applications of the TSCS-2 have identified significant correlations between TSCS-2 items and the HISD, as well as the Beck Depression Inventory and the Quality of Life Inventory (Vickery, Gontkovsky, & Caroselli, 2005). Some sensitivity to change has been detected after intervention (e.g., Helffenstein & Wechsler, 1982, as cited in Ownsworth, 2014), however empirical outcomes using the TSCS-2 have lacked consistency (Ownsworth, 2014) and, therefore, continued application of both measures is warranted.

Measure of disability and functional change

Functional gains over the intervention period were measured through the Functional Independence Measure (FIM), a clinician-administered 18-item measure of disability and supports required for activities of daily living (ADL) (Hamilton, Granger, Sherwin, Zielezny, & Tashman, 1987). Functional domains assessed include communication, psychosocial adjustment, cognition, bowel and bladder management, mobility, and self-care (Sandhaug, Andelic, Langhammer, & Mygland, 2015). The FIM returns global function scores alongside two subscales; FIM Motor (FIM-M) and FIM Cognitive (FIM-Cog). All FIM items are scored on a 7-point sliding scale gauging levels of assistance required, ranging from 1 (total assistance) to 7 (complete independence). In subacute rehabilitation environments, it is typically administered at admission and discharge to provide a measure of functional gains from rehabilitation. Prior validation studies have suggested that the FIM possesses strong convergent validity with the Barthel ADL Index (Gosman-Hedström & Svensson, 2000; Kidd et al., 1995), and adequate internal consistency and reliability (Ottenbacher, Hsu, Granger, & Fiedler, 1996; Stine-man et al., 1996). The FIM has been validated in TBI populations as a reliable predictor of functional outcome (Corrigan, Smith-Knapp, & Granger, 1997). Within the stroke population, the cited thresholds for meaningful clinical change are 22 points (FIM Total), 17 points (FIM-M) and three points (FIM-Cog) (Beninato et al., 2006).

Subjective wellbeing/distress

The Satisfaction with Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985) a 5-item measure rated on a 7-point Likert scale, was used to measure satisfaction with life. The SWLS has a Cronbach's alpha of 0.78 (Vassar, 2007). The Flourishing Scale (FS) (Diener et al., 2010), an 8-item measure rated on a 7-point Likert scale, was used to assess thriving or self-perceived success in life. The FS has been validated (Diener et al., 2010) and also found to be reliable and valid in a New Zealand study (Hone, Jarden, & Schofield, 2014).

The Generalised Anxiety Disorder 7-item (GAD-7) questionnaire (Spitzer, Kroenke, Williams, & Löwe, 2006) and the 9-item Patient Health Questionnaire (PHQ-9) (Kroenke & Spitzer, 2002) were used to examine subjective distress. The GAD-7 measures anxious symptomatology via a 4-point scale (0 = not at all, 4 = nearly every day) to assess the severity of generalised anxiety symptoms and has been found to be a reliable tool ($\alpha = 0.89$ (Löwe et al., 2008)). The PHQ-9 measures depressive symptomatology on a 4-point scale (0 = not at all, 4 = nearly every day) and has been noted as having adequate sensitivity and specificity in detecting symptoms of depression in TBI populations (Fann et al., 2005). The Positive and Negative Affect Schedule (PANAS) (Watson, Clark, & Tellegen, 1988) was used as a 20-item tool of affective state measured on a 5-point Likert scale ranging from 1 ("very slightly or not at all") to 5 ("extremely").

Crawford and Henry (2004) found the PANAS to have significant convergent validity with the Depression Anxiety and Stress Scales (Lovibond & Lovibond, 1995) and the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983).

Meaningfulness of songwriting measure

To evaluate the songwriting experience, participants also completed the Meaningfulness of Songwriting Questionnaire (MSQ) (Baker, MacDonald, & Pollard, 2016; Baker, Silverman, & MacDonald, 2016). The MSQ is a 21-item scale designed to measure the subjective meaning derived from the songwriting process and the song product created (Baker, Silverman, et al., 2016). Respondents rate items on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Total scores vary between 21 and 105, with higher scores suggestive of more personal meaning and engagement with the songwriting process. The scale assesses 11 domains of meaningfulness, as outlined in (Baker et al., 2015, p. 5): “enjoyment, discovery/self-reflection, arousal of emotions, creativity, engagement, challenge, understanding context, associations, achievement, personal value, and identity.” Further specific details about the intervention protocol are accessible elsewhere (refer Tamplin et al., 2015).

Procedure

Prospective participants were identified on the basis of new admissions to the sub-acute rehabilitation facility between 2013 and 2016 and screened for suitability according to the aforementioned inclusion and exclusion criteria. Participants underwent a six-week tailored music therapy intervention (therapeutic songwriting) during which they worked collaboratively with a music therapist across 12 sessions to create three songs exploring past, present, and future self-concept narratives. Participants utilised a custom-designed iPad application to complete the pre-intervention identity and subjective well-being questionnaires. These questionnaires were again completed at the mid-point of the intervention (three weeks) and at the conclusion of the intervention (six weeks). Participants undertook the intervention while also receiving inpatient rehabilitation, which typically involved engagement with occupational therapy, speech therapy, physiotherapy and nursing or other allied health services. One participant, “Steve”, reported as undertaking psychological therapy at the time of the intervention.

Two participants (“Steve” and “Michael”) were unable to complete mid-intervention measures due to impending discharge timing. The music therapist guided the participants to explore each of the six subdomains of self-concept, encouraging them to identify both positive and negative differences, to ensure a balanced self-narrative was brought to conscious awareness. During the intervention, the therapist also assisted the participants to identify the most salient points and organise their thoughts coherently and then translate them into song lyrics, through the use of individual prompts to delve into individual reminiscences and emotional states. Musical styles were created to match the thematic content and overall message of each song.

Case studies

The below case studies incorporate the core demographic information, intervention response data and selected songwriting data alongside any clinically relevant

Table 2. Summary of changes in core indices for all participants.

Participant	Subjective Wellbeing	Subjective Distress	Identity					
	SWLS	FS	PA	GAD	PHQ	NA	HISD	TSCS
"Robert"	+3	0	+8	+1	0	−4	+12	+8
"Steve"	+43	+24	+34	−15	−21	−23	+86	+19
"Michael"	−3	0	+1	N/A	−2	−10	−16	+1
"Jacob"	−5	−2	−15	+11	−4	+4	−2	0
"Christopher"	+10	−6	+6	−3	−4	+7	−17	+1

Note: SLWS: Satisfaction with Life Scale; FS: Flourishing Scale, PA: Positive Affect Subscale of the PANAS, GAD: Generalised Anxiety Disorder 7-item scale, PHQ: Patient Health Questionnaire, NA: Negative Affect Subscale of the PANAS, HISD: Head Injury Semantic Differential Scale, TSCS-2: Tennessee Self-Concept Scale 2nd edition.

observations derived from routine checks of medical records during inpatient rehabilitation. More specific details as to injury events such as at-scene Glasgow Coma Scale ratings or CT/MRI imaging were not available for all participants. To provide an indication of engagement with songwriting, and demonstrate the themes emerging from individual songs, raw scores on the MSQ and extracts from the songwriting lyrics for each participant are included. A full qualitative analysis of song lyrics is outside of the scope of the current publication, but has been published elsewhere (Baker et al., 2017).

A summary table of changes on all core indices for participants is included in Table 2. FIM changes and Meaningfulness of Songwriting Questionnaire responses are also outlined in Tables 3 and 4 respectively.

"Robert"

"Robert" was a 51-year-old married man who experienced a left middle cerebral artery stroke. At baseline, he self-reported listening to music several times a week. He generally demonstrated minimal shifts in most measures of identity and subjective wellbeing and distress, with only small increases evident in positive affect and HISD ratings. "Robert" showed a gradual increase in engagement with the songwriting process from the completion of the first to the last song, as evidenced by increases in his MSQ scores. His first song reminisced about his upbringing, and the role of his family in bringing him fulfilment. The chorus lyrics of Song 1 included these words:

I am a family man, my wife and kids they have
filled my heart and my soul and now I know who I am.

Song 2 for "Robert" made reference to the events surrounding his stroke, and some of the post-stroke changes evident (e.g., "This stroke has really slowed me down" (Song 2, line 18). The chorus of Song 2 reflected what might be termed a resilient mindset:

Had a stroke this year, but I'm still here
Staying positive about the life I have to live

Similar themes were evident in the final song for "Robert", which referred to his optimism about returning to his family at home:

I'm feeling positive, my future's looking bright
I've got my family by my side

Table 3. Summary of changes in FIM rating at admission and discharge.

Participant	Motor (ADM)	Motor (DCH)	Motor Change	Cognitive (ADM)	Cognitive (DCH)	Cognitive Change	Total (ADM)	Total (DCH)	Total Change
"Robert"	42	80	+38	16	33	+17	58	113	+55
"Steve"	29	91	+62	19	33	+14	48	124	+76
"Michael"	52	90	+38	30	35	+5	82	125	+43
"Jacob"	13	44	+31	5	25	+20	18	69	+51
"Christopher"	17	33	+16	16	24	+8	33	57	+24

"Steve"

"Steve" was a 29-year-old man in a defacto relationship who had sustained a hypoxic brain injury in the context of a suicide attempt through heroin overdose. His medical records indicated a prior history of depression. While "Steve" was noted to have ongoing mood disturbance in the aftermath of his injury during subacute rehabilitation, he engaged consistently in the songwriting process and expressed a sense of personal fulfilment in completing his songs, despite acknowledging that the experience was challenging for him.

"Steve" showed clear positive trends in all eight indices measured, including an 86-point increase in his HISD from baseline to post-intervention. He also demonstrated notable reductions from pre- to post-intervention on measures of subjective distress. "Steve" also evidenced clear functional gains (with the greatest extent of gain on the FIM comparative to other participants). He was noted to receive psychological support by engaging with a psychologist at the rehabilitation centre.

At baseline, "Steve" self-reported listening to music for several hours each day. During the intervention, he showed a more notable increase in songwriting engagement between Song 2 and Song 3, which may reflect the shift to a more optimistic future focus at Song 3. He self-rated as reasonably engaged at Song 1, but it was notable that this was the lowest engagement rating from among the participants (and his average MSQ score was also the lowest overall). His first song recalled some of the challenges of his childhood and early adulthood (e.g., "Life is hard and doesn't get easier"). He also emphasised the importance of his relationship with his girlfriend:

Six years later, found his soul mate
Happiest he's been, convinced that it was fate

More negative personal reflections and internalisation were suggested in the Song 2 lyrics, as "Steve" came to terms with his attempted suicide:

Sitting here, in my room and thinking about what I have done
All the people I've hurt, everyone I've let down

The importance of the relationship with his girlfriend also echoed through the lyrics of this second song:

No need to remind myself what I'm doing this for
The reason's so obvious it's the person I adore
She makes all this, a lot less scary
She's the love of my life, my world

Finally, Song 3 for "Steve" reflected themes of future growth and a determination to succeed:

Table 4. Individual participant meaningfulness of songwriting questionnaire (MSQ) scores and averages.

Participant	Song 1	Song 2	Song 3	Average
"Robert"	80	88	99	89
"Steve"	69	72	93	78
"Michael"	79	81	83	81
"Jacob"	105	105	105	105
"Christopher"	86	83	N.A	84.50

Even though the future looks hard
I remain hopeful that things'll work out
Looking forward to getting back my old life

"Michael"

"Michael" was a 47-year-old separated man who sustained a traumatic brain injury resulting from a fall. His Glasgow Coma Score (GCS) at the scene was noted to be 8/15. From pre- to post-intervention, "Michael" demonstrated minimal changes in most core identity and subjective wellbeing/distress measures, with a small reduction in negative affect but also a decline in HISD ratings from pre- to post-intervention.

"Michael" self-reported listening to music for about an hour a day. He also reported having six months of saxophone lessons at age six. "Michael" showed comparable engagement across all three songs completed. His first song captured his self-reflections on his life to date, including his recent relationship breakdown:

Looking back at my life
It's turned out different than I imagined
The ups, the downs, and everything in between

He also emphasised the importance of family and friends in supporting him:

My strength is in my family
And the friends that I stick by, they'll stick by me

"Michael" reflected on some of the challenges of adjusting to his injury in Song 2:

Feels like I'm living in the middle of a storm
Everything's been thrown around, stability is gone
No wife, bad health, questioning everything
Life is hard right now, so challenging

He was also able to balance this with a consideration of the goals he needed to persevere to achieve:

Gotta get better, all round, make my family real proud
Overcome my challenges, chase away these storm clouds

Song 3 for "Michael" captured his reflections on what had occurred, and his looking to the future:

Who am I now? Where do I go from here?
Been through a lot and now, gotta get my future clear

“Jacob”

“Jacob” was a 41-year-old married man who experienced a right intracranial haemorrhage. He was noted to have a prior history of epilepsy, occipital lesion, and a kidney operation as a child. “Jacob” demonstrated stable identity ratings, with negligible shifts in TSCS-2 and HISD from pre- to post-intervention. Alongside this, he showed declines in satisfaction with life and positive affect, and an increase in self-reported anxiety across the intervention period. He received mood-stabilising medication at the time of the intervention.

“Jacob” self-reported listening to music for about an hour a day at baseline. It was notable that “Jacob” self-reported the maximum possible engagement on the MSQ with the songwriting process across all three songs, suggesting that the process of writing songs was highly personally meaningful for him. Themes of relationships, and the importance of his wife and children, were evident in Song 1 for “Jacob”, for example:

My kids and wife are my reason for life
 They are my inspiration
 I cherish every moment, that I’ve spent with them
 Since they came into my world

Song 2 captured thoughts of resilience, while also acknowledging present difficulties:

I will survive and live my life
 Overcome this challenge and thrive
 I’ll still the same, but things have changed
 I’ve been given a second chance at life
 It’s hard not to focus on all the things I’ve lost
 Independence, income, vision, mobility

Song 3 suggested “Jacob’s” motivation to return home:

Can’t wait to get home again
 So I can be who I really am
 Walking my dogs, hanging with the kids
 Spending time with my wife, my second chance at life

He also reflected on the likely future changes to his employment, although he captured these in a positive light:

My next job’ll be doing something different
 Working with my wife in our family business
 It’s something that I’ve always wanted to do
 Now I’ve got the freedom and the time, to do what I choose

“Christopher”

“Christopher” was a 36-year-old single man who sustained multi-territorial strokes. He was noted to a history of cerebral vasculitis with focal stenosis bilaterally. His mood profile was variable, with pre-post intervention increases in satisfaction with life and positive affect, a decrease in flourishing, and an increase in negative affect.

At baseline, “Christopher” self-reported listening to music for several hours each day. He was also an accomplished musician and multi-instrumentalist with prior songwriting

experience. Data for Song 3 was not accessible for “Christopher”, although he demonstrated a good level of engagement with the first two songs through his MSQ scores. “Christopher” referred to some of the challenges of changing social circumstances in a small country town where he grew up, and noted the role of music as a creative outlet:

Spent my days on the treadmill, trying to survive
But making music is what helps me feel alive
Rejection developed my defensive shell
Music helped me to escape the prison cell

In his second song, “Christopher” reflected on some of the mental adjustments he had to make in subacute rehabilitation, including the potential for permanent disability:

My wings have been clipped, dignity has been stripped
I've never been trapped like this before
They tell me that I should lower my expectations
This might be a permanent situation

The final song by “Christopher” captured feelings of optimism alongside reliance on important personal relationships:

This forest I'm in obstructs my view
If we can stick together babe we should get through
Everything'll be different, not what I'd choose
But if I could choose one thing, I'd choose you

Interpretation of case studies

“Robert”, “Steve”, and “Jacob” demonstrated increasing engagement with the songwriting process across the intervention period, as evidenced by their MSQ scores. “Michael” and “Christopher” remained more stable in ratings of meaningfulness for all songs. Thematically, all participants made reference to the importance of personal relationships with friends, family and partners in supporting them to adjust to their injury and plan for the future. Participants were also able to reflect on the challenges they faced during rehabilitation, and the personal difficulties to overcome in planning for future discharge. Song lyrics for some participants were also suggestive of some level of post-traumatic growth, in that they were making meaning of what had occurred and were re-evaluating their future goals and priorities.

Suggested trends in identity, wellbeing, distress and functional gains

An examination of the absolute rate of change in identity, wellbeing, distress indices and FIM ratings shows that changes in outcome measures from baseline to post-intervention were generally varied, both across patients and within patients across outcome measures. With reference to Beninato et al.'s (2006) minimal clinically important difference (MCID) cut-off scores, all participants made clinically meaningful gains in motor function, and all but one participant made clinically meaningful gains in cognitive function. All participants in the current study exceeded the published threshold for the minimal clinically important difference in the FIM as outlined in Beninato et al. (2006). While it was evident that all participants made functional gains, there appeared to be a trend toward greater functional gain in those participants who also appeared to

demonstrate the most positive treatment response to the songwriting intervention (as evidenced by positive shifts on identity and mood-related indices). For example, “Steve” demonstrated a 76-point increase in FIM from admission to discharge, and also showed consistent shifts in expected directions on all identity and mood indices (i.e., increases in identity and wellbeing, and decreases in distress). It also appeared that the most functionally impaired participants, requiring the most support in cognitive and motor functions on admission (“Jacob” and “Christopher”), were also those who showed generally negative responses to the intervention, with decreases in wellbeing and identity and increases in distress, although this was not a consistent pattern across all indices for both participants.

Discussion

The current study aimed to explore the self-concept, subjective wellbeing and distress ratings of five participants post brain injury undertaking a self-concept-focused therapeutic songwriting intervention. While the highly heterogeneous nature of the sample in both demographics and injury types makes comparisons challenging, the current case series analysis is suggestive of a number of key themes.

At an individual case level, all participants engaged with the songwriting process and reflected personally meaningful themes through their song lyrics. The broad themes emerging from the song lyrics are aligned with some of the prior literature on post-traumatic growth, where participants are able to re-evaluate their goals and values to find new life meaning post-injury (Hawley & Joseph, 2008; McGrath & Linley, 2006; Nalder, Fleming, Cornwell, Shields, & Foster, 2013; Powell, Ekin-Wood, & Collin, 2007; Powell et al., 2012). Relationships and family also emerged as a prominent theme for many participants across their songs, a finding which is also more broadly echoed in the literature (Lorenz, 2010; Webster, Daisley, & King, 1999; Yeates, Gracey, & McGrath, 2008).

Participants with more severe injuries (i.e., intracranial haemorrhage (ICH) and multi-territorial strokes) tended to demonstrate more negative shifts in self-concept and mood ratings, which may be suggestive of slower or more complex individual rehabilitation in these cases. It is notable that changes in functional capability (as operationalised through FIM ratings) appeared to mirror the trends evident in self-concept and wellbeing indices, such that those with positive changes to self-concept and mood were also those who had made more functional gains in rehabilitation.

The comparatively greater negative outcomes for the two participants who experienced a more severe stroke is in keeping with what might be expected on the basis of existing literature, which has identified a worse prognosis and increased risk of psychopathology (Lincoln et al., 2013; Schöttke & Giabbiconi, 2015). In particular, baseline clinical presentation and functioning has been identified as an independent predictor of functional gains (Cramer et al., 2007), which might explain the more modest functional gains experienced by those with worse prognosis in the current study. These outcomes also align with Ellis-Hill and Horn’s (2000) finding that patients tend to describe themselves post-stroke in more negative terms than prior to the stroke. Of the participants in this study, “Christopher”, who had sustained the ICH was noted to have been severely disabled on admission, with much greater need for support in motor and cognitive functions than the remaining participants. Although “Christopher” made comparable functional gains to those with neutral trends (“Michael” and “Jacob”) across his admission, he remained comparatively more impaired. It was of interest also that

“Christopher” appeared to show negative shifts that were concentrated to mood-related measures, while self-concept ratings remained neutral or unchanged. This may have been reflective of post-injury adjustment difficulties similar to what has been reported in past literature (e.g., Baker et al., 2015; Falk-Kessler, 2011). There is a scarcity of literature directly comparing relationships between self-concept and mood ratings and functional outcomes in early rehabilitation, and future investigation of these inter-relationships might help to further explain the current findings.

The participant with hypoxic brain injury (“Steve”) had demonstrated comparatively worse cognitive function on the FIM on admission but made comparable gains to “Robert” throughout his admission. Further, “Michael” appeared to derive the most benefit from rehabilitation and the intervention, showing large, positive shifts on all indices. As “Michael” had a reported history of prior psychopathology in the context of a suicide attempt and was reported by therapists to have difficulties adjusting to the rehabilitation environment, it is encouraging to note the extent of positive change (and functional gains) during his inpatient rehabilitation. This finding may provide preliminary support for the use of therapeutic songwriting for mood support in a population with neurological injuries, which prior studies have found to be effective (Baker & Tamplin, 2006; Hitchen, Magee, & Soeterik, 2010; Magee, Clark, Tamplin, & Bradt, 2017; Magee & Baker, 2009; Magee & Davidson, 2002; Tamplin et al., 2015).

In the context of the current study design, it is not possible to imply any directionality or causality, and there are therefore multiple possible variables and interrelationships that might contribute to the trends observed. It is feasible that greater functional improvements may have altered self-perception favourably, or that more positive self-conceptualisations may have led to increased functional change. As highlighted above, this area remains un-examined due to the lack of research specifically linking identity and functional changes in early rehabilitation. There is also a potential role for self-awareness, in that as participants gain self-awareness during rehabilitation, they become more aware of the potential gravity of their prognosis, and may internalise feelings of hopelessness or grief (Baker et al., 2015). From a self-concept perspective, it is conceivable that those participants with a more disabling injury (or less functional gain) may perceive a greater threat to self, and therefore have greater challenges through the post-injury adjustment process. Due to the varying injury types across the different trends, it would be of interest in future research to determine any corresponding differences in the perception of “recoverability” for hypoxic brain injury as compared to those with TBI or more complex stroke. The nature of specific injury-related perceptions of recovery requires further investigation in future, larger scale studies.

It is not possible on the basis of the current study to gauge direct treatment effects resulting from the therapeutic songwriting intervention. However, the findings of the current study suggest that adoption of a music therapy-based self-concept rehabilitation intervention may be of benefit to those with less severe injuries. Conceptualisations of self-concept following hypoxic brain injury specifically remain understudied, and future research would benefit from exploring the potential for therapeutic benefit from songwriting for this population. When considering treatment applicability, it was of note in the current study that music engagement (operationalised through hours of music listening) was not markedly different among participants, and that not all participants reported prior musical training. Since apparent “musicality” or prior music tuition are sometimes perceived as barriers to choosing music therapy interventions

(Baker, 2015a, 2015b), it is encouraging to note that these did not appear to impact treatment engagement in the current sample.

Treatment timeframe is also an area for further consideration. The current study applied a six-week intervention period, and this may be insufficient to detect meaningful change on self-concept- and mood-related indices, particularly where more disabling injuries have been sustained. Functional changes may similarly be slower for some participants.

The current study is limited in generalisability due to the small and heterogeneous nature of its sample. While the case series approach is helpful to give a more in-depth understanding of patterns of change over time for individuals and any emergent trends, it is not possible to make any direct, statistically controlled comparisons or infer causality. It should be noted also that FIM ratings were recorded at admission and discharge, and the intervention occurred at different time points during the overall admission period for participants. Therefore, it is difficult to draw direct parallels between the functional gains observed over the whole admission period and the changes in self-concept- and mood-related measures during the songwriting intervention.

The current paper provides a snapshot of post-injury self-concept and mood ratings in a sample of five subacute patients undertaking a six-week self-concept-focused therapeutic songwriting programme. The findings highlight the potential for multiple trends in response to self-concept-focused rehabilitation interventions. The potential for injury type and severity to shape treatment response was also apparent. The current study suggests a potential benefit from therapeutic songwriting among those who also show the greatest functional gains during rehabilitation. Present findings also highlight the complexity of stroke rehabilitation, and the need for continuing investigation of self-concept-focused interventions for this population.

It is anticipated that the findings from the current study will inform larger-scale studies to further understand the relationships between post-injury self-concept, adjustment and functional gains in rehabilitation, and provide further evidence on the efficacy of therapeutic songwriting. Control-group comparison studies of participants in inpatient subacute rehabilitation who do not undertake the songwriting programme are also critical to enable evaluation of the impact of natural recovery on identity and mood. Further research would also benefit from more clearly mapping self-concept and mood trajectories from the subacute environment through to discharge and community-based care, as this can be a critical juncture in the development of healthy post-injury adjustment.

The current study highlights that meaningful positive changes in self-concept and mood ratings can occur with implementation of an identity-focused music therapy intervention in the subacute care environment. With increased understanding of the potential benefits of such therapies in future research, early awareness and intervention for identity-related disturbance may help prevent longer-term adjustment difficulties and reduce future psychopathology risk.

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CHAPTER 6:

COMPARISON GROUP AND INTERVENTION GROUP ANALYSES

This chapter constitutes a manuscript presenting the full control and intervention outcomes which is currently in preparation.

Roddy, C., Rickard, N., Tamplin, K., Lee, Y-E. C., & Baker, F.A. (2018). Hear my song: A control comparison study of the effectiveness of self-concept-focused therapeutic songwriting in subacute rehabilitation. *In preparation*.

Preamble

The following paper presents the findings of the comparison between intervention and control group participants with neurological injury, and also considers the relationships between time since injury, self-concept across the intervention period, and functional change during inpatient rehabilitation. In this instance, due to recruitment challenges and associated sample size restrictions (which are discussed further in the discussion section of the paper and the thesis general discussion), injury groups were kept combined with pooled data across SCI and ABI groups. It is recognised that this exacerbates the heterogeneity of the current sample and precludes analysis of specific intervention impact by injury group, and it is thus recommended that future larger-scale studies aim to also complete separate injury group comparisons. This manuscript has been formatted in accordance with APA formatting requirements.

Hear my song: A control comparison study of the effectiveness of self-concept-focused therapeutic songwriting in subacute rehabilitation

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Hear my song: A control comparison study of the effectiveness of self-concept-focused therapeutic songwriting in subacute neurorehabilitation

Early changes in self-concept, mood and quality of life remain understudied in subacute neurorehabilitation. The current study aimed to evaluate the effectiveness of a self-concept-focused therapeutic songwriting program on a range of self-concept, subjective wellbeing, distress and emotion regulation measures for inpatients of a subacute rehabilitation centre in Australia. Participants in the intervention group received a six-week, 12-session songwriting program creating songs on past, current and future self. Comparison group participants received care as usual. Measures of self-concept, wellbeing and distress were completed at 3 time points (pre, mid, and post intervention). Significant differences over time were evident between groups on the Identity, Behaviour and Physical scores of the Tennessee Self-Concept Scale (TSCS-2). A significantly greater reduction in Identity scores from mid- to post-intervention for comparison group participants, and a trend towards reduction in Physical scores from mid- to post-intervention approaching significance for comparison group participants, was observed, reflecting poorer outcomes for the comparison group than for participants receiving the songwriting intervention. No significant changes over time between groups were found on remaining indices. The current study highlights the potential efficacy of music therapy in the subacute rehabilitation context, and reinforces the importance of monitoring self-concept and mood change across inpatient rehabilitation in future research.

Keywords: brain injury; self-concept; identity; rehabilitation; music therapy, songwriting.

Neurological injuries such as acquired brain injury (ABI) or spinal cord injury (SCI) necessitate a complex process of adjustment to make meaning of the injury and resulting impairments (Doering, Conrad, Rief, & Exner, 2011a, 2011b; Yeates, Gracey, & McGrath, 2008). The site and severity of injury further influence individual recovery trajectories, which shape associated cognitive, behavioural, and emotional sequelae. Individual patterns of recovery can be difficult to predict due to the heterogeneous nature of neurological injuries. Models of 'healthy' or adaptive adjustment to neurological injury suggest that individuals engage in a period of expected grieving for the losses associated with their injury and their significant change to life circumstances (Carroll & Coetzer, 2011; Gelech & Desjardins, 2011; Smith & Sparkes, 2005), but are able to re-engage with valued activities over time.

Psychosocial adjustment to neurological injury is influenced by factors such as mood state or prior history of psychopathology (Bowen, Neumann, Conner, Tennant, & Chamberlain, 1998; Crisp, 1992; Gould, Ponsford, Johnston, & Schönberger, 2011), coping styles (Anson & Ponsford, 2006; Kendall & Terry, 2008; Nochi, 2000) and social supports (Haslam et al., 2008; Jagnoor & Cameron, 2014; Walsh, Muldoon, Gallagher, & Fortune, 2015). One key factor that heavily influences post-injury adjustment is identity (Cloute, Mitchell, & Yates, 2008; Ylvisaker & Feeney, 2000; Ylvisaker, McPherson, Kayes, & Pellett, 2008). Identity can be considered a complex construct that is both individually and socially shaped (Gendreau & de la Sablonnière, 2014; Ylvisaker & Feeney, 2000). Self-perceptions of identity encompass elements such as life roles, occupation, achievements, values and beliefs (Bryson-Campbell, Shaw, O'Brien, Holmes, & Magalhaes, 2013). Neurological injuries pose an immediate and significant threat to sense of self, whereby individuals can perceive themselves as having a 'shattered' or 'broken' self (Gelech & Desjardins, 2011; Nochi, 1998). Individuals may feel fundamentally different after injury and sometimes struggle to resume valued life roles (Wolfenden & Grace, 2012). Where an individual is wholly focused

on resuming life roles but this is not achievable due to injury constraints, this can become a barrier to healthy adjustment (Nochi, 1997). Individuals who are able to view identity in a more continuous manner (e.g. 'I'm still the same me') have been found to have a higher likelihood of healthier adjustment (Gendreau & de la Sablonnière, 2014; Wolfenden & Grace, 2012). A recent review of changes in self-concept following traumatic brain injury (TBI) concluded that the majority of research had focused on primarily negative changes, rather than considering possible stability or positive change in identity perceptions (Beadle et al., 2016). Identity and self-concept changes have also been historically challenging to measure, due to varying conceptualisations of each construct (Beadle et al., 2016) and related measures of identity such as the Head Injury Semantic Differential Scale (HISD) (Tyerman & Humphrey, 1984) and the Tennessee Self-Concept Scale 2nd edition (TSCS-2) (Fitts & Warren, 1996). Both measures continue to be utilised as measures of self-concept in current research, and further validation of each is warranted.

Art-based therapies such as art therapy and music therapy provide a powerful means of examining individual identity and self-concept changes post-neurological injury (Gonen & Soroker, 2000; Kline, 2016; Learmonth & Gibson, 2010; Magee & Davidson, 2002; Magee & Baker, 2009). Adopting a creative means of reflecting on and 'capturing' self through drawings or song creation allows the creation of an individually pertinent 'product' that communicates how an individual may be feeling at a given point in time (Baker & MacDonald, 2013; Baker, Wigram, Stott, & McFerran, 2008; Baker et al., 2017; Baker & MacDonald, 2014). Therapeutic songwriting is a music therapy technique that has a history of successful application for those with neurological injuries, to express emotions, alleviate mood disturbance and promote the experience of flow and creative immersion (Baker & MacDonald, 2013; Baker et al., 2008; Baker et al., 2017; Tamplin, Baker, Macdonald, Roddy, & Rickard, 2015). Therapeutic songwriting involves a collaborative process between

music therapist and client to capture life history, key emotions and messages through the medium of song. When considering a focus on identity, therapeutic songwriting is ideal as it allows for individualised lyrics, choice of musical genre, style and harmonies to reflect individual personalities and identities. The song product itself also becomes an important means of communicating to others.

In the subacute rehabilitation environment, music therapy offers an accessible and novel means of introducing a self-concept-focused intervention to this population. It is hoped that an early focus on self-concept in this context may assist participants in developing a more integrated sense of self and achieving positive shifts in self-concept, mood and quality of life. Self-concept remains understudied in subacute rehabilitation environments, thus it is unclear as to whether it can be meaningfully rehabilitated in the early stages post-injury. The current study aims to investigate post-injury changes in self-concept, subjective wellbeing and distress in a sample of ABI and SCI patients in subacute rehabilitation. Further, it aims to explore the efficacy of a self-concept-focused therapeutic songwriting intervention in promoting positive shifts in self-concept and subjective wellbeing and reductions in subjective distress indices. Compared to the comparison group, it was hypothesised that the intervention group would demonstrate significantly greater improvements over time in core measures of self-concept, subjective wellbeing (flourishing, satisfaction with life and positive affect) and emotion regulation, and significant reductions in subjective distress (depression, anxiety, and negative affect).

Method

Participants

Twenty-nine inpatients (14 intervention and 15 comparison group participants) were recruited from a subacute rehabilitation facility in Victoria, Australia and completed the study. Two

participants who had GBS were removed from the sample to provide a more heterogeneous sample of ABI participants. In the final sample, seven participants (one intervention and six comparison group) were female and the sample varied in age from 17 to 78 years of age ($M = 45.11$, $SD = 18.34$ years). Remaining participant demographics are outlined in Table 1 below.

Table 1

Sample Descriptive Statistics

Variable	Statistics	Intervention	Comparison Group
Age	Range	17 – 51 ($n = 13$)	22 – 78 ($n = 14$)
	Mean	34.38	55.07
	SD	11.84	17.93
Gender	Male/ Female	1 female, 12 male	6 females, 8 males
Days since injury	Range	31 – 322 ($n = 13$)	18 – 552 ($n = 14$)
	Mean	111.02	107.80
	SD	74.38	140.5
Education	No higher than Year 10 at school	2 (15%)	4 (28%)
		4 (31%)	3 (22%)
	Completed high school/ V.C.E.	2 (15%)	2 (14%)
	Completed Apprenticeship/ T.A.F.E / College Diploma	3 (24%)	3 (22%)
		2 (15%)	2 (14%)
	Undergraduate University Degree / Graduate Diploma	$n = 13$	$n = 14$
	Post Graduate University Degree		
Hours playing music (per day)	0 hours	8 (67%)	7 (50%)
	1 hour	1 (8%)	7 (50%)
	2 hours	2 (17%)	0 (0%)
	3 hours	0 (0%)	0 (0%)
	4 hours	1 (8%)	0 (0%)
		$n = 13$	$n = 14$
Hours spent listening to music	Less than once a year	1 (8%)	0 (0%)
	Several times a month	0 (0%)	4 (28%)
	Several times a week	4 (34%)	2 (14%)
	For about an hour each day	3 (24%)	3 (22%)
	For several hours each day	4 (34%)	5 (36%)
		$n = 13$	$n = 14$

Taking mood-altering medication at the time of intervention	No medication	10 (77%)	13 (93%)
	Medication	3 (23%)	1 (7%)
		<i>n</i> = 13	<i>n</i> = 14
Plays instrument	No	11 (85%)	8 (57%)
	Yes	2 (15%)	6 (43%)
		<i>n</i> = 13	<i>n</i> = 14
Marital status	Single	6 (46%)	4 (28%)
	In a relationship but not living together	0 (0%)	2 (14%)
	Married/ defacto	6 (46%)	5 (36%)
	Divorced/ separated	1 (8%)	0 (0%)
	Widowed	0 (0%)	3 (22%)
		<i>n</i> = 13	<i>n</i> = 14

SD = Standard Deviation

Injury type varied across the sample, and is summarised in Table 2 below.

Table 2

Summary of Injury Types

Acquired brain injury (ABI) group	Spinal cord injury (SCI) group
Hypoxic brain injury (heroin overdose)	C1 ASIA D incomplete CCS
Left frontoparietal tumour (grade 3 oligoastrocytoma)	C2 ASIA C incomplete quadriplegia
Left MCA aneurysm (2 participants)	C3 ASIA C incomplete quadriplegia
Left MCA infarct	C4 ASIA A complete quadriplegia
Left parietal ischaemic stroke	C4 ASIA A complete quadriplegia
Multiple Sclerosis	C4 ASIA A complete quadriplegia
Multiterritorial strokes	C5 ASIA C incomplete quadriplegia
Right intracranial haemorrhage	C7 ASIA A complete quadriplegia
TBI (fall) - GCS on scene 8/15	L1 ASIA D incomplete paraplegia
	T10 ASIA C complete paraplegia
	T12 ASIA B incomplete paraplegia
	T12 ASIA D incomplete paraplegia

T3 ASIA A complete paraplegia
T4 ASIA A complete paraplegia
T4 incomplete paraplegia (tumour)
T5 ASIA A complete paraplegia
T8 ASIA C incomplete paraplegia

Confirmation was sought from a treating neuropsychologist of the patient's cognitive ability to complete assessment measures, where this may have been unclear based on patient history or presentation. Exclusion criteria were severe cognitive impairment or memory problems, severe language problems or hearing impairment, history of severe mood disorder, or current Post Traumatic Amnesia (PTA) state. Detailed information about the site and severity of injury, including imaging, was not always accessible via existing patient medical records in subacute rehabilitation.

Measures

Demographic questions. Information on participant age, gender, date of injury, time since injury, diagnostic information, country of birth, education level, relationship status, music engagement (music learning and music playing history, current music listening habits, and medication use (mood-altering medication) was sourced as part of participant demographic questions.

Self-concept. The following measures were used to assess changes in self-concept. Both measures were included to inform future larger-scale studies and to assist in determining the respective sensitivity of each measure given varying conceptualisations of self-concept and identity used in past research.

Tennessee Self-Concept Scale – 2nd edition (TSCS-2).

The Tennessee Self-Concept Scale – 2nd edition (TSCS-2) (Fitts & Warren, 1996) is an 82-

item self-report measure of self-concept across six key domains: physical, personal, moral, family, academic and social self-concept, rated on a 5-point Likert scale from 'always false' to 'always true'. The measure also enables scoring of self-perceptions of behaviour, conflict, and overall self-concept. Fitts and Warren (1996) cite the TSCS-2 as having a median internal consistency (Cronbach's alpha) of .80 and sufficient test-retest reliability ($\alpha = .82$). The TSCS-2 takes approximately 20 minutes to administer for respondents. An overview of the scoring interpretation for each score, subscale score, and supplementary score is included in the article supplementary materials.

Head Injury Semantic Differential Scale (HISD).

The Head Injury Semantic Differential Scale (HISD) (Andrew Tyerman & Humphrey, 1984) is a 20-item scale consisting of contrasting adjective pairs rated on a 7-point rating from one adjective to its opposite (e.g. 1 = unfriendly, 7 = friendly), with a higher score indicating more positive self-concept. Respondents are asked to rate each item to reflect how they see themselves on each attribute. The HISD has been noted to have strong internal reliability (Cronbach's alpha 0.88) (Tyerman, 1987; Tyerman & Humphrey, 1984), and sufficient concurrent validity with the Leeds Scale for emotional distress (Ellis-Hill & Horn, 2000). (Ellis-Hill & Horn, 2000).

Subjective Wellbeing. The following measures were used to assess changes in subjective wellbeing and positive affect.

Flourishing Scale. The Flourishing Scale (FS) (Diener et al., 2010) is an 8-item measure which assesses self-perceived flourishing (thriving or self-perceived success in life) gauged on a 7-point Likert scale from strongly disagree to strongly agree. Higher scores indicate greater levels of self-perceived flourishing. Diener's (2010) validation of the Flourishing Scale noted adequate psychometric properties (Cronbach's $\alpha = 0.87$).

Satisfaction with Life Scale. The Satisfaction with Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985) is a measure of subjective life satisfaction, administered via 5-items rated on a 7-point Likert scale from strongly disagree to strongly agree, with higher scores reflecting greater levels of satisfaction. The SWLS has been found to be reliable, with a Cronbach's alpha of 0.78 (Vassar, 2008).

Positive Affect subscale (PANAS). The Positive and Negative Affect Schedule (PANAS) (Watson, Clark, & Tellegen, 1988) is a 20-item measure of affective state capturing both subjective positive and negative affect on a 5-point Likert scale ranging from 1 ('very slightly or not at all') to 5 ('extremely'). Respondents rate the degree to which they experienced a specific affective state, covering both negative affective states (e.g. unhappy) to positive affect states (e.g. joy). The Positive Affect (PA) subscale was used as a measure of subjective wellbeing in the current study. Cronbach's alpha for the PA subscale was reported as .89 in Crawford and Henry's validation study (2004), and between 0.86 to 0.90 in the original scale validation (Watson et al., 1988).

Subjective Distress.

Patient Health Questionnaire – 9-item scale (PHQ-9). The Patient Health Questionnaire (PHQ-9) (Kroenke & Spitzer, 2002) is a 9-item measure of depressive symptoms on a 4-point Likert scale ranging from 0 (not at all) to 4 (nearly every day). The PHQ has been cited to have sufficient sensitivity and specificity in a TBI population (Fann et al., 2005), and excellent reliability, with Cronbach's alpha ranging from 0.89 to 0.86 across prior studies (Kroenke, Spitzer, & Williams, 2001).

Generalised Anxiety Disorder Questionnaire – 7-item scale (GAD-7). The Generalised Anxiety Disorder 7-item (GAD-7) is a 7-item questionnaire (Spitzer, Kroenke, Williams, & Löwe, 2006) designed to measure anxious symptomatology on a 4-point Likert

scale ranging from 0 (not at all) to 4 (nearly every day). The GAD-7 has been found to be a reliable instrument, with adequate reliability ($\alpha = 0.89$ (Löwe et al., 2008)).

Negative Affect subscale (PANAS). The Negative Affect (NA) subscale of the PANAS was used as a measure of psychological distress in the current study. The PANAS has been found to have significant convergent validity with the Depression Anxiety and Stress Scales (Lovibond & Lovibond, 1995) and the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983). Cronbach's alpha for the NA subscale of the PANAS has been reported at .85 (Crawford & Henry, 2004) and between 0.84 to 0.87 (Watson et al., 1988).

Songwriting measures. The following measures were administered to further understand the experience of songwriting for participants. Exploration of these measures is beyond the scope of the current manuscript, although further details of these measures in the current project have been published previously (Baker et al. 2017; Baker, Rickard, Tamplin, & Roddy 2015; Roddy, Rickard, Tamplin, & Baker, 2017; Tamplin, Baker, Macdonald, Roddy, & Rickard, 2015).

Core Flow State Scale (CFSS). The CFSS is designed to measure the subjective experience of flow, of being 'in the zone', immersed and focused (Martin & Jackson, 2008).

Short Flow State Scale (SFSS). The SFSS is a nine-item brief measure of flow states aligning with the work of Csikszentmihalyi (1990) and Jackson and Eklund (2004). The measure assess some of the states that pre-empt or lead to the experience of flow.

Meaningfulness of Songwriting Scale (MSS). The MSS (formerly the Song Process and Product Questionnaire, see Baker & MacDonald, 2013) is a measure of engagement in, and perceptions of, the songwriting process and resulting song product. Baker and colleagues noted sound psychometric properties for the MSS in a sample of university students (Baker, MacDonald, & Pollard, 2016) and also a psychiatric/clinical population (Baker, Silverman, & MacDonald, 2016).

Procedure

Comparison group and intervention participants were recruited from the Royal Talbot Rehabilitation Centre in Kew, Victoria, during inpatient rehabilitation. Participants were screened according to the inclusion and exclusion criteria and consent was obtained.

Participants undertaking the songwriting program completed a total of twelve songwriting sessions across a 6-week period, working collaboratively with a music therapist to create three songs, focused on past-, current- and future self. Further details of the intervention protocol are available in Baker et al. (2017) and Tamplin et al. (2015).

Both comparison group and intervention participants completed an assessment battery comprising the TSCS-2, HISD, FS, SWLS, PANAS, PHQ-9, GAD-7, and the ERQ. The battery was administered at pre-, mid- and post-intervention timepoints. Songwriting participants also completed three songwriting questionnaires (CFSS, SFSS, MMS) as a means of capturing the personal experience and meaningfulness of the songwriting process. All surveys were administered via a specially developed iPad app, which contained all questionnaires. Assistance was provided to participants with sensory or motor impairments as required. Ethics approval was obtained through the Austin Health Human Research Ethics Committee (HREC) (REF H2013/05038).

Results

Data were collated in SPSS Version 24 for Windows. Four extreme outliers were detected via SPSS (values of more than three box-lengths) and Winsorized. All remaining values were within ± 3.26 SDs of the mean for each variable group.

Descriptive Statistics

The means change scores between pre- and mid- (T1-T2), mid- and post- (T2-T3), and pre- and post-intervention (T1-T3) for all outcome measures are recorded in Tables 3 (identity-related measures) and 4 below (subjective wellbeing and distress measures).

Table 3
Changes in Mean Self-concept Measures and Subscales over Time

Measure/ Subscale	Average Change T1 – T2		Average Change T2 – T3		Average Change T1 – T3	
	Intervention	Comparison	Intervention	Comparison	Intervention	Comparison
HISD	2.18	11.72	11.00	-1.29	8.31	10.43
TSCS-2 TOTAL	-.50	4.57	4.00	-3.57	4.54	1.00
TSCS-2 CONFLICT	-4.80	4.57	3.50	-.143	-3.00	4.43
TSCS-2 BEHAVIOUR	.000	2.14	3.40	-6.14	4.46	-4.00
TSCS-2 SATISFACTION	.500	.93	2.20	-.29	3.69	.63
TSCS-2 IDENTITY	.00	2.50	1.70	-3.36	2.31	-.86
TSCS-2 PHYSICAL	1.20	1.57	3.70	-3.39	5.00	-2.36
TSCS-2 MORAL	-.10	4.14	-.20	-3.21	1.31	.93
TSCS-2 PERSONAL	-4.50	3.29	7.40	-3.93	4.23	-.64
TSCS-2 FAMILY	-.90	4.64	4.50	-4.29	4.08	.36
TSCS-2 SOCIAL	-4.70	1.57	5.20	-2.64	1.62	-1.07
TSCS-2 ACADEMIC	2.30	2.00	2.80	.14	6.08	2.14

Note: Increases in HISD scores indicate an increase in global self-concept. Increases in domain TSCS-2 scores (i.e. for Physical, Moral, Personal, Family, Social and Academic subscales) generally indicate a more positive view of self-concept within the respective domain. For further TSCS-2 index score interpretations, please refer to Supplementary Table 1.

Table 4
Changes in Mean Subjective Wellbeing and Distress Indices over Time

Measure/ Subscale	Average Change T1 – T2		Average Change T2 – T3		Average Change T1 – T3	
	Intervention	Comparison	Intervention	Comparison	Intervention	Comparison
FS	.89	2.86	2.60	.79	1.67	3.64
SWLS	.10	.08	-1.90	.46	-1.08	.50
PANAS PA	-6.83	-.29	8.25	1.93	1.38	1.64
PHQ-9	-1.09	-2.64	-1.64	1.29	-2.08	-1.36
GAD-7	-.50	-2.21	-.11	.50	.83	-1.72
PANAS NA	-1.83	-3.79	1.42	2.43	-1.15	-1.36
ERQ REAPPRAISAL	5.45	2.79	-4.09	-1.14	.46	1.64
ERQ SUPPRESSION	2.09	-1.64	-1.36	2.14	.00	.50

Note: Increases in FS, SWLS and PA scores indicate increases in flourishing, satisfaction with life, and positive affect respectively. Decreases in PHQ, GAD, and NA scores indicate improvements (reductions) in depressive

symptoms, anxious symptoms, and negative affect respectively. Higher ERQ reappraisal and suppression scores indicate greater levels of reappraisal and suppression respectively.

Baseline Differences

To establish the presence of any significant baseline differences between intervention and comparison groups, a series of t-tests were run. The results are outlined below in Table 5.

Table 5

Comparison of Baseline Differences between Intervention and Comparison Group

Participants

Measure	Baseline Mean		Significance (2-tailed)
	Intervention	Comparison	
Age	34.38	55.07	.002
Days Since Injury	111.02	107.80	.942
FS	45.33	43.86	.628
SWLS	19.31	21.07	.574
PHQ	9.69	7.79	.458
GAD	5.69	4.71	.978
HISD	98.92	93.79	.549
ERQ REAPP	29.54	31.93	.324
ERQ SUPP	13.46	14.79	.527
PA	32.77	30.71	.586
NA	21.54	18.71	.235
TSCS IDN	25.77	29.71	.019
TSCS SAT	28.62	35.07	.039
TSCS BHV	43.38	55.93	.007
TSCS PHY	39.77	46.57	.053
TSCS MOR	38.08	47.86	.011
TSCS PER	38.31	50.64	.017
TSCS FAM	40.38	51.14	.013
TSCS SOC	39.92	51.71	.038
TSCS ACA	40.15	47.29	.075
TSCS TOT	35.92	47.57	.012
TSCS CON	57.46	49.50	.053

Inferential Statistics

Mixed ANOVAs: Pooled data

A series of two-way mixed ANOVAs were run with the data pooled across SCI and ABI participants. Violations of normality, as assessed by the Shapiro-Wilk statistic, were detected on the PHQ, GAD, HISD, ERQ Suppression subscale, PA, NA, and the TSCS Identity, Satisfaction, Behaviour, Personal, Social, and Academic subscales. Levene's test for equal variances was violated for GAD7 and the NA subscale of the PANAS. However, given the robustness of ANOVAs to violations of assumptions (particularly where sample sizes are similar), this form of inferential analysis was retained. Caution is however advised in the interpretation of the results. Mauchly's test of sphericity was violated for FS, PHQ, and HISD, and the Greenhouse-Geisser correction was applied when reporting the outcomes for these variables. Homogeneity of covariances (via Box's test) was met, and the remaining assumptions for ANOVA were met.

There was a statistically significant interaction between groups over time on the Identity scale of the TSCS, $F(2, 44) = 5.20, p = .009$, partial $\eta^2 = .191$. The significant interaction effect is plotted in Figure 1 below. There was a statistically significant difference in Identity subscale scores between groups at the pre-point (Time 1), $F(1, 25) = 6.26, p = .02$, partial $\eta^2 = .20$, and mid-point (Time 2) of the intervention, $F(1, 22) = 10.82, p = .003$, partial $\eta^2 = .33$. There was no statistically significant difference in Identity subscale scores between groups post- intervention (Time 3), $F(1, 25) = .25, p = .622$, partial $\eta^2 = .01$.

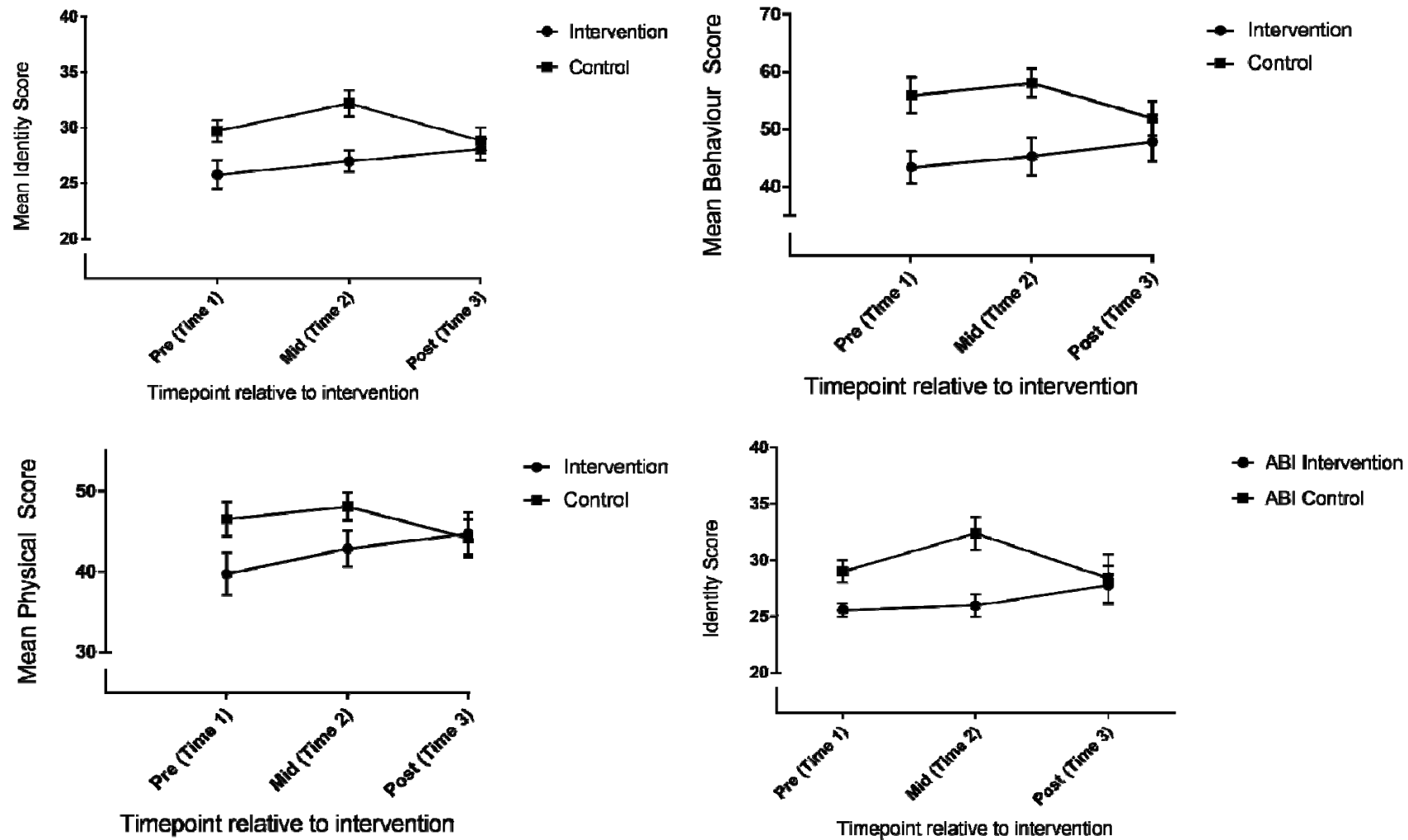


Figure 1. Significant interaction effect between groups over time for Identity, Behaviour, Physical scores on TSCS-2, and Identity scores for ABI participants.

Post-hoc analyses revealed that there was no statistically significant effect of time on Identity scores for the intervention group, $F(2, 18) = 1.90, p = .179$, partial $\eta^2 = .17$. There was a statistically significant effect of time on Identity scores for the comparison group, $F(2, 26) = 4.94, p = .015$, partial $\eta^2 = .28$. For the comparison group participants, Identity scores were statistically significantly lower at post-intervention ($M = 28.86, SE = 1.167$) compared to mid-intervention ($M = 32.21, SE = 1.15, p = .030$).

There was also a statistically significant interaction between groups over time on the Behaviour scale of the TSCS, $F(2, 44) = 4.19, p = .022$, partial $\eta^2 = .16$ (Figure 2). There was a statistically significant difference in Behaviour subscale scores between groups at the pre-point (Time 1), $F(1, 25) = 8.74, p = .007$, partial $\eta^2 = .26$, mid-point (Time 2), $F(1, 22) = 9.72, p = .005$, partial $\eta^2 = .31$, and post-point (Time 3), $F(1, 25) = .82, p = .375$, partial $\eta^2 = .03$, of the intervention. Post-hoc analyses revealed that there was no statistically significant effect of time on Behaviour scores for the intervention group, $F(2, 18) = 1.85, p = .186$, partial $\eta^2 = .17$, or the comparison group, $F(2, 26) = 3.05, p = .065$, partial $\eta^2 = .19$.

Finally, there was a statistically significant interaction between groups over time on the Physical scale of the TSCS, $F(2, 44) = 5.13, p = .010$, partial $\eta^2 = .19$ (Figure 2). Post-hoc tests failed to detect any significant difference in Physical subscale scores between groups at the pre-point, $F(1, 25) = 4.11, p = .053$, partial $\eta^2 = .14$, mid-point, $F(1, 22) = 3.46, p = .076$, partial $\eta^2 = .14$, or post-point of the intervention, $F(1, 25) = .025, p = .875$, partial $\eta^2 = .00$. Post-hoc analyses revealed that there was no statistically significant effect of time on Physical scores for the intervention group, $F(2, 18) = 2.22, p = .137$, partial $\eta^2 = .20$. There was a statistically significant effect of time on Physical scores for the comparison group, $F(2, 26) = 3.58, p = .042$, partial $\eta^2 = .22$, with Physical scores approaching a statistically significant difference between mid-intervention ($M = 48.14, SE = 1.76, p = .053$) and post-intervention ($M = 44.21, SE = 2.33$).

While approaching significance, there was no statistically significant interaction between groups over time on the Conflict subscale of the TSCS, $F(2, 44) = 3.20, p = .050$, partial $\eta^2 = .13$. There were no statistically significant interactions between group and time on remaining indices (FS, SWLS, PANAS (PA and NA), GAD-7, PHQ-9, and ERQ).

Mixed ANOVAs by Injury Category

There was a statistically significant interaction between groups over time for ABI participants on the Identity scale of the TSCS, $F(2, 14) = 4.06, p = .041$, partial $\eta^2 = .16$. The significant interaction effect is plotted in Figure 2 above. For ABI participants, there was a statistically significant difference in Identity subscale scores between groups at the pre-point of the intervention, $F(1, 8) = 8.50, p = .019$, partial $\eta^2 = .52$, and at the mid-point, $F(1, 7) = 11.54, p = .011$, partial $\eta^2 = .62$. There was no statistically significant difference in Identity subscale scores for ABI participants between groups post- intervention, $F(1, 8) = .05, p = .832$, partial $\eta^2 = .01$. Remaining measures did not demonstrate significant changes over time between groups for both SCI and ABI participants.

Discussion

The current study aimed to investigate the effectiveness of a therapeutic songwriting program in a subacute rehabilitation environment, and to gauge changes resulting from the therapeutic songwriting intervention on mood and quality of life. The present results demonstrated significant improvements in the intervention group relative to the comparison group over time for the Identity, Behaviour and Physical subscales of the TSCS-2, but not for remaining TSCS-2 scores, the HISD or any of the remaining wellbeing or distress indices.

The patterns of change for intervention and comparison group participants over time on Identity, Behaviour, and Physical scores suggest a potentially protective role for those participants engaging in the therapeutic songwriting. That is, comparison group participants evidenced increases from pre- to mid-intervention but declined from mid- to post-intervention, while intervention participants made steady gains from pre-, to mid- and post-intervention. Engaging in the therapeutic songwriting program appeared to therefore promote positive shifts in self-perceptions, perceptions of behaviour, and physical self-concept, while protecting songwriting participants from the declines in self-concept faced by comparison group participants toward the end of the intervention. As prior literature has established potential declines in self-concept at key transition points such as discharge from inpatient care (Turner et al., 2007; Turner, Fleming, Cornwell, Haines, & Ownsworth, 2009), it is possible that an opportunity to directly address present and future self through song may have been beneficial in minimising some of the potential reductions in self-concept that may have occurred for participants with approaching discharge from inpatient rehabilitation.

Interpretation of the TSCS-2 is complex and relies at least partly on subjective interpretation of the profile-based scoring in the TSCS-2 manual (Fitts & Warren, 1996). In relation to the TSCS-2 Identity scores, it is notable that, although the intervention group showed comparatively greater changes over time than the comparison group, all participants

demonstrated Identity scores that are in keeping with an actively negative self-concept, according to TSCS-2 interpretation. This suggests that self-identity, although trending more positively in both groups, still remains compromised in the early stages of neurorehabilitation. It is of interest that physical self-concept was the only self-concept domain of the TSCS-2 to demonstrate significant differences between groups over time, while global self-concept through both the total TSCS-2 scores and the HISD did not demonstrate group differences over time. The significant group differences over time for physical self-concept were found for pooled data across injury types but not for SCI participants, as might have been expected on the basis of prior literature (Bailey, Gammage, van Ingen, & Ditor, 2016; Lannem, Sørensen, Frøslie, & Hjeltne, 2009). It therefore appears that songwriting participants derived increased physical self-concept over time relative to comparison group participants, irrespective of injury type.

The lack of changes in remaining self-concept domains, TSCS-2 conflict scores and global self-concept measures highlights the need for ongoing evaluation of measure sensitivity, and consideration as to whether or not shifts in remaining domains and global self-concept may be evident over the longer-term post-injury. From a measurement perspective, it also appears that the HISD and the TSCS-2 may be tapping into different aspects of identity. The current study included both measures in order to gauge the sensitivity of each in detecting identity shifts. Although both measures have variable outcomes in prior research (e.g. Kelly, Ponsford, & Couchman, 2013; Ponsford, Kelly, & Couchman, 2014; Vickery, Gontkovsky, & Caroselli, 2005), the TSCS-2 was the only measure to detect change over time between groups in the current study, despite the overall rates of change from pre- to post-intervention being significantly correlated between measures. Further identity measure validation and development of means for monitoring identity changes post-injury is warranted.

Baseline differences may also have impacted the current results to some degree, as there were differences between intervention and comparison groups in age, and in all TSCS-2 subscales except for Academic self-concept and Physical self-concept. Comparison group participants demonstrated comparatively higher scores than intervention participants on all indices at baseline, and were also 20 years older, on average. In light of the small overall sample size adopted in the current study, it is difficult to determine the extent to which baseline differences may have influenced the likelihood of participants opting to undertake the intervention, or the resulting impact of the intervention on self-concept ratings.

The current study did not identify any significant group differences over time on measures of subjective wellbeing, distress and emotion regulation. This outcome is somewhat surprising in light of the history of efficacy of music therapy for mood disturbance (e.g. Baker, Kennelly, & Tamplin, 2005; Baker & Tamplin, 2006; Baker et al., 2008; Magee & Davidson, 2002; Magee & Baker, 2009). It may be that mood and emotion regulation changes occur over the medium- to long-term post-injury, when participants are more likely to have been discharged or are residing in community-based rehabilitation, as has been found in prior studies (Carroll & Coetzer, 2011; Turner, Fleming, Cornwell, Haines, & Ownsworth, 2009b; Turner, Fleming, Ownsworth, & Cornwell, 2011). Alternatively, as self-awareness can be reduced in the early-stages post-injury (Ownsworth, Desbois, Grant, Fleming, & Strong, 2006), it may be that participants are not able to accurately gauge more nuanced fluctuations in mood. Further research is required to determine why this pattern might have occurred, and to establish whether music therapy may be effective in the longer-term.

The current study highlights some of the early post-injury changes in identity indices during subacute rehabilitation and provides some evidence for the efficacy of identity-focused therapeutic songwriting in promoting early identity changes. The diversity of musical experience and music listening engagement across the intervention group suggests that

perceived or actual musicality did not present a barrier to meaningful engagement with the songwriting intervention. Whether therapeutic songwriting serves a potentially preventative role for those engaging in songwriting by lessening or avoiding future identity disturbance is not possible to gauge on the basis of the current intervention length. Further study of longer-term interventions that include systematic follow-up is important to examine how identity changes over the longer-term, and the utility of therapeutic songwriting in rehabilitating identity longer-term. The current results support wider-scale evaluation of music therapy within the subacute rehabilitation context.

The present study presented some key clinical challenges and complexities when implementing a six-week, 12-session intervention in subacute rehabilitation. The nature of the intervention meant that inclusion and exclusion criteria required careful adherence, so that participants were cognitively and linguistically able to engage in the intervention. Careful and thorough psychosocial screening was also necessary to ensure that participants were emotionally ready to take part in the songwriting sessions, given the sensitive nature of identity topics discussed. There was a degree of attrition, both through the initial screening process, and through the intervention period as participants faced difficulties in completing the intervention while also undertaking busy rehabilitation schedules. The length of the intervention, while necessary to provide adequate engagement with past-, present- and future-focused songs, also made completion of intervention challenging. Some participants were lost to discharge, and discharge timeframes varied for individual cases, which prohibited consistent compliance with the six-week intervention in some cases.

The small sample size in the current study limits the generalisability and power of the current findings. The lack of power also prohibits more in-depth examination of changes over time by injury group, which would have allowed for a richer contrast of the experiences of songwriting participants with ABI and SCI. Combining ABI and SCI groups also exacerbates

the heterogeneity of the sample, which remains a challenge in any neurological injury-focused research. In light of the variety of injury types and mechanisms of injury evident in both ABI and SCI groups in the current study, there was notable variability in baseline variables within each injury type, which further evidences the heterogeneity of groups. Combining ABI and SCI groups to form a larger neurological injury group increases statistical power, but compromises on the injury-specific changes or effects that might otherwise be found by maintaining injury-based separation. For this reason, further research studies comprising larger injury-specific groups would be helpful to distinguish how identity and mood changes may differ between those with ABI and SCI. The prospective nature of the current study design meant that recruitment occurred as prospective participants were screened, but this introduced a source of variability in that the intervention occurred at different points of time for different participants. Given that a fully randomised clinical trial approach was beyond the scope of the current study, a more flexible approach to intervention timing was necessary.

While the current study provides some promising evidence of the potential efficacy of therapeutic songwriting in altering identity perceptions, future studies incorporating longer intervention periods and a more controlled systematic approach to recruitment would be beneficial to provide further empirical evidence. The present study emphasises the importance of considering early identity-changes post-injury, and future research could explore in more depth the patterns of change in identity and mood indices from subacute rehabilitation through to early discharge and longer-term community integration.

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Further exploratory analyses

As part of the exploratory analyses for Study three, it was hypothesised that there would be a significant positive correlation between time since injury and functional gains during rehabilitation (as measured by Functional Independence Measure (FIM) change from admission to discharge). It was predicted that there would be a significant positive correlation between average change in HISD scores across the intervention (pre- to post-intervention) and functional gains during rehabilitation (as measured by FIM change from admission to discharge). Finally, it was hypothesised that there would be a significant positive correlation between average change in TSCS-2 Total scores across the intervention (pre- to post-intervention) and functional gains during rehabilitation (as measured by FIM change from admission to discharge).

From the participants in Study three, the breakdown of FIM data across the intervention was as outlined in Table 6 below.

Table 6

Summary of FIM Data for Intervention and Comparison Group Participants

Variable	Statistics	Intervention	Comparison
FIM on admission	FIM Total Range	18 – 82 ($n = 12$)	43 – 95 ($n = 14$)
	FIM Total Mean	54.92	67
	FIM Total SD	18.85	17.63
	FIM Motor Range	13 – 52	13 – 78
	FIM Motor Mean	30.08	38.57
	FIM Motor SD	12.5	23.32
	FIM Cognitive Range	3 – 35	14 – 35
	FIM Cognitive Mean	24.83	28.43
	FIM Cognitive SD	12.38	8.17
FIM on discharge	FIM Total Range	31 – 125 ($n = 12$)	48 – 123 ($n = 14$)

FIM Total Mean	97.83	93.36
FIM Total SD	30.03	27.65
FIM Motor Range	18 - 91	13 – 91
FIM Motor Mean	67.75	60.21
FIM Motor SD	24.43	28.96
FIM Cognitive Range	25 – 35	25 – 35
FIM Cognitive Mean	32.58	33.14
FIM Cognitive SD	3.75	3.28

It is notable that the comparison group appeared less severe in initial functional impairment compared to the intervention group, suggesting that music therapy may have been of interest to those with more severe injuries.

Functional Independence Measure (FIM). The FIM is an 18-item measure of functional support required as a result of functional disability in both cognitive and motor impairments (Hamilton, Granger, Sherwin, Zielezny, & Tashman, 1987). The FIM assesses the degree to which an individual can perform a range of activities of daily living (ADLs) across multiple functional domains, comprising communication, psychosocial adjustment, cognition, bowel and bladder management, mobility, and self-care (Sandhaug, Andelic, Langhammer, & Mygland, 2015). All FIM items are scored on a 7-point sliding scale gauging levels of assistance required, ranging from 1 (total assistance) to 7 (complete independence). The FIM returns global function scores alongside two subscales; FIM Motor (FIM-M) and FIM Cognitive (FIM-Cog). In subacute rehabilitation environments, the FIM can be administered both at admission and discharge to provide a means of assessing functional change during rehabilitation. The FIM has been previously found to have strong convergent validity with the Barthel ADL Index (Gosman-Hedström & Svensson, 2000), and adequate internal consistency and reliability (Ottenbacher, Hsu, Granger, & Fiedler, 1996;

Stineman et al., 1996). A breakdown of the aggregate changes in FIM from admission to discharge for both intervention and comparison group participants is shown in Table 7.

Table 7

Changes in Mean FIM score from Admission to Discharge

Group	FIMS Cog			FIM Motor			FIM Total		
	Admission	Discharge	Change	Admission	Discharge	Change	Admission	Discharge	Change
Intervention	28.5	33.12	6.73	28.13	63.5	37.07	56.63	92.88	44.85
Comparison	27.93	32.73	4.8	36.87	57.13	20.27	64.8	89.87	25.06

Exploratory correlational analyses

To assess the relationships between days since injury and total FIM change (T1-T3), HISD change (T1-T3) and total FIM change, and Total TSCS-2 change (T1-T3) and total FIM change, a series of Pearson's product-moment correlations were conducted. The relationships were deemed to be linear with normal distribution of both variables, as demonstrated by Shapiro-Wilk's test ($p > .05$). There were no outliers. There was a weak, non-significant positive correlation between days since injury and FIM change, $r(24) = .092$, $p = .654$, with days since injury explaining 0.8% of the variation in total FIM change. There was a weak, non-significant positive correlation between HISD change and FIM change, $r(24) = .170$, $p = .406$, with HISD change explaining 2.9% of the variation in total FIM change. There was a large, significant positive correlation between Total TSCS-2 change and FIM change, $r(24) = .521$, $p = .006$, with Total TSCS-2 change explaining 27.15% of the variation in total FIM change. Remaining interrelationships between DVs are outlined in Table 8. HISD was significantly positively related to the TSCS-2 TOT, strongly associated with the Flourishing Scale and PA. Remaining interrelationships were in the expected directions.

Table 8

Intercorrelations between Dependent Variables

	FS	SWLS	PHQ	GAD	HISD	REAP P	SUPP	PA	NA	IDN	SAT	BHV	PHY	MOR	PER	FAM	SOC	ACA	TOT	CON
FS	1	.708**	-	-	.871**	.304	.204	.756**	-.461*	.197	.400*	.055	.124	-.144	.485*	.369	.471*	.331	.512**	.226
SWLS		1	.650**	.625**	-	.321	.073	.563**	-.450*	.403*	.490**	.159	.291	-.012	.549**	.501**	.468**	.333	.599**	.055
PHQ			1	.526**	.647**	-.173	-.202	-	.635**	-.431*	-	-.238	-.310	-.060	-	-	-	-	-	.230
GAD				1	.657**	-.224	-.321	.661**	.590**	-.151	-.296	-.202	-.198	.112	.616**	.666**	.740**	.496**	.767**	.077
HISD					1	.565**	.437*	.615**	.659**	.382*	.444*	.095	.301	-.195	.569**	.541**	.529**	.271	.602**	.202
REAPP						1	.437*	.585**	.659**	-	.382*	.444*	.095	.301	-.195	.569**	.541**	.529**	.271	.176
SUPP							1	.313	-.343	.201	.014	-.329	.004	-.097	.076	.134	.072	-.045	0.49	-.188
PA								1	-.589**	.277	.512**	.015	.121	-.113	.420*	.537**	.500**	.431*	.561**	-.087
NA									1	-.258	-.364	-.104	-.229	.186	-.302	-.539**	-.431*	-.268	-.457*	.116
IDN										1	.667**	.289	.675**	.320	.756**	.649**	.563**	.463*	.727**	-.260
SAT											1	.302	.335	.403*	.866**	.777**	.788**	.596**	.909**	-.275
BHV												1	.487**	.258	.283	.317	.385*	.499**	.426*	-.060
PHY													1	.179	.362	.318	.413*	.260	.516**	-.200
MOR														1	.381*	.250	.400*	.341	.467*	.071
PER															1	.720**	.789**	.437*	.895**	-.060
FAM																1	.606**	.489**	.821**	-.121
SOC																	1	.363	.885**	-.227
ACA																		1	.564**	-.015
TOT																			1	-.148
CON																				1

Note: * denotes $p < .05$, ** denoted $p < .01$. FS = flourishing scale, SWLS = satisfaction with life scale, PHQ = patient health questionnaire, GAD = generalised anxiety disorder scale, HISD = head injury semantic differential scale, REAPP = ERQ reappraisal, SUPP = ERQ suppression, PA = positive affect, NA = negative affect, IDN = identity, SAT = satisfaction, BHV = behaviour, PHY = physical, MOR = moral, PER = personal, FAM = family, SOC = social, ACA = academic, TOT = total, CON = conflict.

The baseline FIM in the current sample was notably lower for the intervention group, suggesting that those in the intervention group were comparatively more impaired (requiring more assistance in ADLs) than the comparison group. It may be that the music therapy intervention was of interest to those with more severe initial injuries, or that inpatients with more severe injuries were more likely to be admitted for a suitable length of time to undertake the intervention. In the current exploratory analyses, time since injury was not significantly related to functional change during rehabilitation, suggesting that those participants longer post-injury had not necessarily experienced greater functional improvements. This further highlights the heterogeneity of injuries across the current sample. The contrasting results between the TSCS-2 and the HISD correlations with the FIM are of interest. In this instance, HISD change across the intervention was not significantly associated with functional change during rehabilitation, but TSCS-2 total score was. Taken in combination with the results of the comparison group/ intervention comparisons outlined earlier in the current chapter, this result further reinforces the possibility that the HISD and the TSCS-2 total index are tapping into differing conceptualisations of self-concept. The results outlined here are preliminary and it should be noted that the FIM score was administered at admission and discharge to the inpatient rehabilitation (subacute) facility, and this did not necessarily align with the intervention period for participants. As has been emphasised in the current thesis, research evidence for the relationships between self-concept change and functional change is lacking, and the current mixed results also justify further research attention on this area in future.

CHAPTER 7:
GENERAL DISCUSSION

The current doctoral project presents the exploratory outcomes of a self-concept focused therapeutic songwriting program for inpatients in subacute rehabilitation. Broadly, the current project sought to address a number of exploratory research questions to examine the practicality of implementing a self-concept focused music therapy intervention during subacute rehabilitation, and to characterise some of the individual experiences of early changes in self-concept, wellbeing and distress for songwriting participants. Across the three studies presented, the project has examined data changes in self-concept, subjective wellbeing and distress, and emotion regulation in both SCI and ABI populations in the early stages of neurorehabilitation. The project has also reported some preliminary comparisons between intervention participants and comparison group participants over time.

Collective findings of the current project suggest that self-concept is able to be changed in the early stages post-injury. Completion of an individualised therapeutic songwriting intervention can be associated with personal gains in self-concept and wellbeing, and reductions in subjective distress, particularly among those participants who also tend to make clear functional gains over the period of admission to subacute rehabilitation. Feedback from a subset of intervention participants also suggests that the songwriting program was personally meaningful, with the created song product serving as a salient communication tool for some participants after the completion of the intervention.

This project makes a novel contribution to both the neuropsychology and music therapy literature by its investigation of the application of a music therapy intervention in the early stages of neurorehabilitation. Further, a specific self-concept focus was adopted in the therapeutic songwriting intervention with the intention of promoting early changes in self-concept during subacute rehabilitation. Preliminary evaluations of such a self-concept focused intervention, and specifically a music therapy intervention, have been lacking from the wider literature base to date, and this project has helped to examine the use of such an

intervention during subacute rehabilitation. Clinically, the project further helps to explore potential benefits associated with participation in songwriting, as well as the broader challenges of implementing the program with participants undertaking busy rehabilitation schedules. The collective findings of the current project also emphasise early changes in self-concept, subjective wellbeing and distress, and emotion regulation in subacute inpatients, an area which has been historically understudied due to the majority of research attention having been focused on discharge, home transition or community-based care. The project provides an exploratory comparison of outcomes for intervention group and comparison group participants across the course of the intervention, the outcomes of which will serve to direct future research on self-concept interventions, self-concept rehabilitation, and music therapy interventions. Finally, at a more theoretical level, the current project may foster continued research attention on self-concept and identity changes after neurological injury, the definitional overlap and operational challenges in evaluating these changes in research, and the importance of considering both constructs in the early stages of neurorehabilitation.

Each study within the current project makes a unique contribution to the broader field of neurorehabilitation and the music therapy literature. Study one adopted a case series approach to examine trends in participants with SCI. The findings of this study highlighted the tendency for individuals with more severe spinal injuries to demonstrate fewer gains associated with the songwriting intervention, and correspondingly fewer functional gains during admission (as measured by the FIM data). This study contributes to the broader literature by examining early changes in outcome variables for people with SCI and calling for further research attention to the role of injury severity as a potential predictor of music therapy treatment response. For participants with SCI, further understanding of the associations between functional gains, physical self-concept, remaining domains of self-concept and associated mood indices remains a future research priority.

Study two presented five individual case histories of ABI songwriting participants, bringing together individual medical histories, trends in outcome variables across the intervention, select songwriting data, and functional skills ratings to summarise individual experiences of the songwriting intervention. This study highlighted the tendency for those with more severe injuries to demonstrate more negative shifts in these indices over time, while those with less severe injuries demonstrated the opposite trend. The study also emphasised the capacity for individuals engaging in songwriting to find meaning in the songwriting process.

Study three contributed an exploratory quantitative analysis of outcome variables between comparison group and intervention participants, and also examined the associations between functional gains over inpatient admission and self-concept scores on the TSCS-2 and HISD. The hypothesis that the intervention group would demonstrate significantly greater improvements over time compared to the comparison group in self-concept, as measured by the HISD and TSCS-2 domain, total and supplementary scores, was partially supported. In this instance, participation in the songwriting intervention appeared to play a protective role in shielding participants from the significant declines between mid- and post-intervention that were evident for comparison group participants in the Identity and Behaviour supplementary scales of the TSCS-2 and the Physical self-concept scale of the TSCS-2. It is of interest that changes were evident on only the Physical self-concept scale, and not the social, academic, moral, personal, or family subscales (domains). Although this finding is in line with prior studies that noted inconsistent or no significant differences in the TSCS-2 resulting from intervention (e.g. Kelly et al., 2013), it is somewhat surprising that no other domains of self-concept, or the HISD, showed any significant differences between groups over time, which might have been expected despite variable past results (Beadle et al., 2016).

It is somewhat conceptually confusing that changes were evident on the Identity supplementary score of the TSCS-2, for which the items related to the degree of an individual's assertion with "I am" statements in the TSCS-2, for example "I am not good at games and sports" and "I am satisfied with the way I treat other people". It is the labelling of this score as 'Identity' that has led to this confusion, since the items all relate to internal self-perceptions, and those items that relate to social situations or social behaviour are also contributors to the social self-concept domain score. This further highlights some of the definitional uncertainty and conceptual overlap between identity, self-identity, and self-concept in the broader literature that has been acknowledged by Ownsworth (2014) and others. The move toward more consistent definitions and measurement of self-concept would be beneficial in promoting more easily comparable research outcomes. Labelling aside, it is evident that study three demonstrated an ability for engagement in therapeutic songwriting to help intervention participants avoid some of the more negative shifts in self-perceptions ('Identity' score) over time faced by the comparison group participants. The reasons underlying this are as yet unclear. It may be that in the face of impending discharge, which can be a difficult and distressing transition for many people with neurological injury as they seek to adjust to the home environment, the scaffolded focus from present self to future self enabled by the songwriting program may have helped songwriting participants to be more 'mentally prepared' for the future, and thus avoid the development of a more negative self-view. Prior research has suggested that impending discharge and/or longer time spent in rehabilitation can contribute to increased feelings of fear or anxiety about self, or increased focus on functional deficits (Turner et al., 2009a, 2009b). For comparison group participants, it may have been that as more time was spent in the subacute rehabilitation environment, individual adjustment to injury contributed to increasingly negative self-views. In the absence of a more rigorous research design, or the implementation of experimental controls for some

of these factors to hold constant rehabilitation timeframes or post-injury timeframes, these explanations can only be speculated.

The hypothesis within study three that there would be significantly greater improvements over time in the intervention group compared to the comparison group in measures of subjective wellbeing (FS, SWLS, and PA subscale of the PANAS) distress (PHQ-9, GAD-7, and NA subscale of the PANAS), and emotion regulation (ERQ Reappraisal and Suppression scales) was not supported. This is in contrast to the prior studies that have supported the use of music therapy to improve mood/ subjective wellbeing, reduce depressive symptoms and anxiety (Kim et al., 2011; Magee & Davidson, 2002). Little prior research has set a precedent for examining the changes resulting from self-concept-focused therapeutic songwriting, and the impact of this on mood, since the majority of past studies have instead focused on more general (i.e., non-self-concept focused) or mood-focused songwriting. While it might be expected that comparable benefits of music therapy would have been experienced in the current study, there are additional complexities evident in working with neurological populations in a subacute rehabilitation environment that could have contributed to the current pattern of results. For instance, with the focus primarily on self-concept during active songwriting sessions for intervention participants, it is possible that participants were not as actively aware of their mood state. Alternatively, it may be that significant alterations to mood state require a longer exposure period than the current six-week intervention. Prior randomised controlled trials of music therapy have found efficacy in the medium-term for mood (i.e., over six months or more) (Bradt et al., 2010; Li et al., 2012; Maratos et al., 2008). For this reason, future research investigating longer-term use of music therapy may be beneficial, potentially including therapy spanning the transition between inpatient rehabilitation and home discharge.

In terms of the exploratory analyses, the hypothesised correlation between time since injury and functional gains during rehabilitation was not supported, suggesting that those participants who were further progressed post-injury were not necessarily those who made the greatest functional gains during their rehabilitation stay. This further reinforces the individual variability evident in injury severity, time since injury and degree of functional gain during rehabilitation. The hypothesised correlation between total self-concept change on the HISD and functional gains during rehabilitation was not supported, but there was a significant correlation between total self-concept change on the TSCS-2 total and functional gains during rehabilitation. This suggests a tendency for those participants with the greatest functional change during rehabilitation to also demonstrate the most positive shift in total TSCS-2 self-concept score. It is not possible to infer either causality or directionality in this relationship, but this suggests an increased likelihood of greater change in self-concept in those who also make functional gains. It may be, that with evident functional gains, sense of self-concept improves, or that feeling more positive about oneself may motivate one to engage more fully in rehabilitation and promote functional gains. Further research would be beneficial to untangle the precise nature of the interrelationship between these two variables, and the patterns of change evident in subacute rehabilitation.

Study three revealed some differences in the patterns of response for intervention and comparison groups over time. It was anticipated that intervention participants might demonstrate a more extensive growth in positive outcome measures over time than would comparison group participants. In reality, both groups demonstrated a reduction in positive outcome measures at the mid-point of the intervention, with a trend toward improvement at the post-point of the intervention. This improvement was more pronounced in the intervention group than in the comparison group.

It is of interest that intervention group participants in Study three experienced comparatively smaller gains (or larger declines) in self-concept from pre- to –mid intervention, than comparison group participants. For songwriting participants, it may have been the shift to focusing on the ‘present self’ that was confronting as participants came to grips with the reality of their current injury state and rehabilitation progress. Moving to a future-focused song may have promoted some (albeit small) positive shift in songwriting participants, whereas comparison group participants continued to show relatively depressed perceptions of self-concept toward the end-point of intervention. The future focus for songwriting participants may have enabled participants to tap into aspects of post-traumatic growth, and this would be an area worthy of more direct future research.

Limitations

While considering the benefits and outcomes of the current study, caution needs to be applied in interpreting the findings, and it is recommended that future researchers take account of some of the challenges of conducting research in a clinical subacute rehabilitation environment. The present study presented some key clinical challenges and complexities when attempting to implement a six-week, 12-session intervention in subacute rehabilitation. From a research design perspective, the subacute rehabilitation environment necessitated many compromises and deviations from what would be considered best practice research design in order for the project to be viable and feasible. While some comparison was achieved between what might be termed the ‘typical’ subacute inpatient experience (termed ‘comparison group’) and the intervention group, a full control group was not feasible as no experimental control of the inpatient rehabilitation process could be achieved. This meant that there was a high degree of variability in individual programs of therapy among an already heterogeneous sample. The lack of experimental control in research design means it is impossible to infer causality and state that any outcomes found to differ between groups

are attributable to the songwriting intervention. While this is a significant overall limitation, it is one that is not easily overcome when conducting research in inpatient rehabilitation settings, unless a randomised controlled trial is feasible.

A number of compromises were also necessary in project delivery, including limited screening, a lack of blinding, non-random group allocation and variability in session/ intervention timing. The constraints of therapist and patient availability, timetabling, and variability of discharge timing contributed to these limitations. Careful psychosocial screening was implemented to ensure that participants were emotionally ready to take part in the songwriting sessions, given the sensitive nature of self-concept topics discussed. There was a degree of attrition, both through the initial screening process, and through the intervention period as participants faced difficulties in completing the intervention while also undertaking busy rehabilitation schedules. The length of the intervention, while necessary to provide adequate engagement with past-, present- and future-focused songs, also made completion of intervention challenging. Some participants were lost to discharge, and discharge timeframes varied for individual cases, which prohibited consistent compliance with the six-week intervention in some cases.

The small sample size in the current study limits the generalisability and power of the current findings. The lack of power also prohibits more in-depth examination of changes over time by injury group, which would have allowed for a richer contrast of the experiences of songwriting participants with ABI and SCI. Combining ABI and SCI groups also exacerbates the heterogeneity of the sample, which remains a challenge in any neurological injury-focused research. In light of the variety of injury types and mechanisms of injury evident in both ABI and SCI groups in the current study, there was notable variability in baseline variables within each injury type, which further evidences the heterogeneity of groups. Combining groups to form a larger neurological injury group increases statistical power, but

consequently ‘washes out’ the injury-specific changes or effects that might otherwise be found by maintaining injury-based separation. For this reason, further research studies comprising larger injury-specific groups would be helpful to distinguish how identity and mood changes may differ between those with ABI and SCI. This would also enable more in-depth comparisons of potential contributing factors such as injury severity. Richer data such as imaging / brain scans, more in-depth cognitive assessments and injury event information (e.g. Glasgow Coma Scale (GSC) at scene) would help to enable further comparisons of effectiveness by injury type and severity. Further, with respect to functional gains, the FIM rating captured participant functional status at admission and discharge from subacute rehabilitation, which in many cases would have covered a longer period than the six-week intervention period. The prospective nature of the current study design meant that recruitment occurred as prospective participants were screened, but this introduced a source of variability in that the intervention occurred at different points of time for different participants. Given that a fully randomised clinical trial approach was beyond the scope of the current study, a more flexible approach to intervention timing was necessary.

While the current study provides some initial outcomes of therapeutic songwriting and self-concept perceptions, future studies incorporating longer intervention periods and more controlled systematic approach to recruitment would be beneficial to provide more controlled empirical evidence. The present study emphasises the importance of considering early self-concept-changes post-injury, and future research could explore in more depth the patterns of change in identity and mood indices from subacute rehabilitation through to early discharge and longer-term community integration.

The current project has provided some novel evidence for the use of therapeutic songwriting in subacute rehabilitation and has highlighted that the completion of specific self-concept-focused music therapy interventions in subacute rehabilitation is achievable and

of potential benefit to those with neurological injury. Whether the current significant outcomes on Identity, Behaviour and Physical self-concept scores are attributable to the specific focus on self-concept within the current intervention protocol is unknown, but this is a plausible contributor, especially in the absence of any identifiable mood or emotion-related changes as might be expected from previous (non-self-concept-specific) applications of therapeutic songwriting. The wider clinical significance of this type of intervention remains to be established in future, larger-scale studies that should examine further the potential protective effect on self-concept of engaging in therapeutic songwriting. The question of whether (and if so, the extent to which) self-concept can be rehabilitated or reintegrated within the subacute rehabilitation environment remains open to further investigation. Nevertheless, the current study indicates some promising evidence for the use of therapeutic songwriting in this context.

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Flow and meaningfulness as mechanisms of change in self-concept and well-being following a songwriting intervention for people in the early phase of neurorehabilitation

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Anecdotal evidence suggests that songwriting assists people with spinal cord injury (SCI) or acquired brain injury (ABI) to explore threats to self-concept, yet studies that explore the mechanisms of change have not been reported. In a pilot study, we explored the correlations between changes in self-concept and well-being, with mechanisms of flow and meaningfulness of songwriting. Five people with ABI (all male) and 5 SCI (4 males, 1 female) (mean age 38.90 years, SD = 13.21), with an average 3 months post-injury, participated in a 12-session songwriting program that targeted examination of self-concept. Measures of self-concept, depression, anxiety, emotion regulation, affect, satisfaction with life, and flourishing were collected pre-, mid-, and post-intervention, and compared with repeated measures of flow and meaningfulness of songwriting. Medium effects were found for changes in self-concept ($d = 0.557$) and depression ($d = 0.682$) and approached a medium effect for negative affect ($d = 0.491$). Improvements in self-concept over time were associated with decreases in depression ($r_p = -0.874$, $n = 9$, $p < 0.01$), anxiety ($r_p = -0.866$, $n = 9$, $p < 0.01$), and negative affect ($r_p = -0.694$, $n = 10$, $p < 0.05$), and an increase in flourishing ($r_p = +0.866$, $n = 9$, $p < 0.01$) and positive affect ($r_p = +0.731$, $n = 10$, $p < 0.05$). Strong experiences of flow were not positively correlated with positive changes to self-concept and well-being, whereas deriving high levels of meaning were associated with increased negative affect ($r_p = +0.68$, $p < 0.05$), increased anxiety ($r_p = +0.74$, $p < 0.05$), and reduced emotional suppression ($r_p = -0.58$, $p < 0.05$). These findings show that the targeted songwriting intervention appears to be positively associated with enhanced well-being outcomes. However, the findings also suggest that people who find the songwriting process has strong meaning for them might be more likely to start accepting their emotions and as a result experience an increase in anxiety and depression, although full, mediated regression analyses with larger sample sizes are required to explore this further. Acknowledging their changed circumstances may nonetheless assist people with SCI and ABI to grieve their losses and facilitate the building of a healthy post-injured self-concept. We propose that there may be other mechanisms more critical in facilitating the positive changes in self-concept

and well-being than flow and meaning, such as the role of story-telling and the impact of music in facilitating the consolidation of self-concept explorations in memory.

Keywords: songwriting, self-concept clarity, spinal cord injuries, acquired brain injury, depression and anxiety disorders, well-being, flow theory

Introduction

The self-concept is a set of beliefs that, when combined, enables people to have a sense of who they are in the world. The self-concept is derived from an integration of self-schemas constructed by temporal frameworks that encompass the past, present, and future selves (Markus and Nurius, 1986) and is multidimensional, comprising the personal, physical, family, social, academic/vocational, and spiritual/moral self domains (Fitts and Warren, 1996). Recent research suggests that the self-concept has neuropsychological and structural properties that, when combined, form a continuum from unhealthy-fragmented to healthy-integrated self-concept (Gana, 2012). Importantly, the self-concept forms a nomological network of relationships that involve an individual's personality, psychological adjustment, and achievement (Gana, 2012). Emotional or significant life events may be catalysts for personal examination of the self-concept, particularly when these stimulate opportunities to reassess purpose and meaning in life and construct an alternative future self that aligns with realistic possibilities (Habermas and Bluck, 2000). People who report having a strong sense of self tend to thrive because encountering failures in life does not dramatically affect their positive view of themselves. However, for those with a more negative self-concept, there is a risk that they will not achieve in life because they tend to avoid opportunities for growth by avoiding risk (Fitts and Warren, 1996).

The concept of the self is constantly evolving throughout life as a consequence of maturation and encountering new people and experiences (MacKinnon and Helse, 2010). However, in some circumstances, a significant and traumatic life event interrupts this gradual process and demands a more focused review of the past, present, and future selves. Acquiring a neurodisability calls for a reappraisal of the self and may involve a process of grieving for components of the self that have been damaged or lost as a result of the trauma (Hinkebein and Stucky, 2007). Finding meaning, purpose, and fulfillment in life is challenging for people with acquired neurodisabilities (Vickery et al., 2005) and there is a risk for people with acquired brain injury (ABI) or spinal cord injury (SCI) that the lens through which they frame and experience life will be dominated by the "disabled self" if an integrated and balanced self-concept is not constructed post-injury (Lennon et al., 2014). A number of studies have concluded that people with ABI or SCI report incongruities in past, present, and future selves that do not improve naturally over time when compared to the normal population (Anson and Ponsford, 2006; Kelly et al., 2013).

Engaging people with ABI or SCI in a narrative process that explores the residual self alongside the disabled self enables them to grieve the lost self and construct a new and healthy present and future self (Feinstein and Krippner, 2008). When provided with opportunities to tell and retell their stories, and have a listener support and gently challenge their perceptions of themselves,

alternative selves are identified and long-term integration of the self-concept is more likely (Obodaru, 2012).

Therapeutic songwriting is a method that has been extensively used across a range of clinical and non-clinical populations as a medium for people to tell their stories (Baker et al., 2008). In a study of song lyrics created by people with ABI, inductively derived themes illustrated that their songs focused on past, present, and future selves (Baker et al., 2005a,b,c). Songs about the past included descriptions of relationships with significant others and past events (16.9%). Songs about the present comprised reflections on or sending messages to family and friends (22.6%) or expressions of their adversity in relation to their physical impairments and their efforts in rehabilitation (9.6%). Of particular interest, 28% of the lyrics focused on self-reflections, including questioning life's meaning and describing what makes them happy. A small percentage of the lyrics (7.4%) also focused on the future self. The songs reviewed in this study were, however, not created according to any specific protocol, as they were drawn from the large collection of songs that had been accumulated over a number of years of therapeutic practice and later analysed. We have recently developed and piloted a songwriting protocol specifically designed to explore the past, present, and future self for people with ABI or SCI using a narrative approach (Tamplin et al., 2015). Constructing the most effective protocol is, however, also likely to be dependent upon understanding the mechanisms of change. Currently, no songwriting study has specifically tested which mechanisms are active during the songwriting process.

Theory of Mechanisms of Change

In an earlier article (Tamplin et al., 2015), we presented a theory of possible mechanisms active during the songwriting process for people with neurodisability that enabled them to successfully integrate multiple injured and non-injured narratives. We proposed that songwriting accommodates for memory impairments typical in people with ABI because of the strong links between music, memory, and emotions, which enable exploration of the self to be consolidated more effectively in memory (Cahill and McGaugh, 1996; Judde and Rickard, 2010) and stimulate autobiographical memories that are important in raising awareness of the residual self (Janata, 2009). Our mechanisms of change theory suggests that because engagement in music-based activities activates the neural "pleasure" network in the brain (e.g., Menon and Levitin, 2005; Salimpoor and Zatorre, 2013), songwriting has the potential to enhance mood and coping and decrease or prevent depression and anxiety. Through achieving this positive-affect shift, people may access the inner strength needed to face the challenges associated with processing and revising their self-concept post-injury.

Flow theory is of particular importance in our theory of mechanisms of change because of its clear links with well-being (Csikszentmihalyi, 2008; Seligman, 2011). Songwriting studies by Baker and MacDonald (2013a,b) found that creating songs

about positive or negative personal experiences generates strong experiences of flow in healthy populations and that participants derive meaning from both the songwriting process and the song product they created. A regression analysis determined that a predictive relationship existed between meaning and flow during songwriting experiences. More recently, Silverman et al. (under review) examined the relationship between flow, meaning, and health and well-being during songwriting interventions in a group of adults in a psychiatric unit (study 1, $N = 54$) and in adults undergoing detoxification (study 2, $N = 170$). Although these songwriting approaches were not specifically tailored to address self-concept, correlational and multiple regression analyses determined that flow and meaningfulness of songwriting were significantly correlated and that strong flow experiences were predictors of increases in hope (study 1) and readiness to change (study 2).

As strong flow experiences and meaning activated by songwriting are predictors of readiness to change and hope in adults with substance addictions and with acute psychiatric illnesses, in the current study, we aimed to explore whether songwriting activates flow and creates meaning for people with ABI and SCI, and whether these mechanisms of change correlate with changes in well-being indicators.

Study Hypotheses

Hypothesis 1: greater improvements in self-concept will be positively correlated with lower levels of anxiety, depression, and negative affect, and increased levels of satisfaction with life, sense of flourishing, and emotion regulation.

Hypothesis 2: greater improvements in self-concept and well-being will be positively correlated with stronger feelings of flow and meaningfulness of the songwriting experience.

Materials and Methods

Design

A non-randomized, quasi-experimental design with repeated measures (pre–mid–post-intervention) was employed to determine: (a) whether there was a therapeutic effect (outcome measures) and (b) what mechanisms might explain this effect (mechanism measures). Outcome measures were collected at baseline, mid-point (between sessions 6 and 7), and post-intervention. Mechanisms of change (flow and meaning measures) were collected after the completion of each song during the 12-session songwriting program (see **Figure 1**).

The study was reviewed and approved by Human Research Ethics Committees at The University of Melbourne (1339728), Monash University (CF13/2098 – 2013001081), and Austin Health (H2013/05038).

Participants

Over the study period, 16 inpatients with either SCI or ABI were identified as meeting the inclusion criteria and were invited to participate in the study. Inclusion criteria comprised: (1) inpatient status at Royal Talbot Rehabilitation Centre from the ABI, Spinal or Neurology wards; (2) diagnosis of SCI or ABI (including traumatic brain, stroke, brain tumor, and substance abuse); (3) aged between 18 and 65 years of age; (4) <12 months post-injury/onset; (5) cognitive capacity sufficient to complete self-report measures; (6) without significant language or hearing impairments; and (7) not in posttraumatic amnesia.

A member of each patient's treating team (not one of the researchers) was responsible for informing the patient of the study and obtaining consent. Two patients declined to participate, one female patient was recruited but found the self-report measures too emotionally confronting and dropped out before treatment commenced, and three other participants had substantial amounts of missing data and were subsequently excluded from the analysis. Ten participants (five ABI and five SCI) completed the study; nine males and one female aged between 20 and 64 years of age (Mean 38.9, SD 13.2). The time since injury or incident ranged from 30 to 157 days (Mean 89.6, SD 44.29).

Procedure and Music Therapy Approach

Following recruitment, participants completed a battery of tests via iPad before engaging in a 12-session-targeted songwriting program (Tamplin et al., 2015). During the 12 (twice weekly, 1 h) sessions, the therapist and participant co-created three songs using a narrative songwriting approach (Baker, 2015). Each song incorporated the various domains of self-concept: personal, social, family, physical, academic, and moral/spiritual self. Song 1 (sessions 1–4) was focused on these domains for the past self, song 2 (sessions 5–8) was focused on these domains for the present self, and song 3 (sessions 9–12) was focused on these domains regarding the conceptualized future self. The therapist worked carefully with the participants to ensure that their stories of self were authentically represented in each song both musically and lyrically so that they could make meaning from their stories and self-descriptions. Further details of the intervention and the role of the therapist in facilitating the song creations are presented in a previously published paper (Tamplin et al., 2015).

Outcome Measures

Therapeutic outcomes were determined by collecting data pre–mid–post-intervention using the following battery of measures.

Self-Concept

As self-concept was the primary outcome measure of interest in this study, the 20-item *Head Injury Semantic Differential*

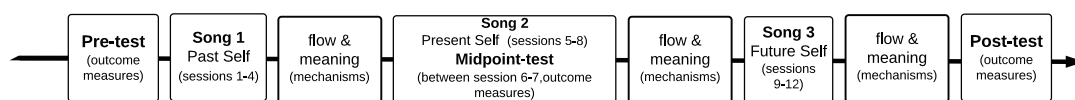


FIGURE 1 | Research design.

Scale (HISDS; Tyerman and Humphrey, 1984) was used to measure self-concept. It uses adjective pairs, such as unfeeling-caring, worried-relaxed, etcetera, along a 7-point Likert Scale, to determine their view of various aspects of self. This measure focuses on perception of personal attributes with scores ranging from 20 to 140, where higher scores indicate a healthier, more positive, self-concept. The HISDS has been used previously in studies with people who have ABI (Vickery et al., 2005).

Well-being Measures

Well-being data were collected using seven different measures to evaluate sense of flourishing, life satisfaction, coping, affect, depression, and anxiety.

The *Flourishing Scale* is an eight-item measure of psychological well-being, specifically self-perceived success in areas such as relationships, self-esteem, purpose, and optimism. Statements are rated across a 7-point Likert Scale with scores ranging from 6 to 56; higher scores indicate stronger sense of flourishing. The measure has good psychometric properties with Cronbach's α of 0.87, temporal stability of 0.71, and construct validity ranging from 0.43 to 0.70 (Diener et al., 2010). Mean of flourishing for healthy populations range from 42.2 (Singaporean sample, SD = 6.4) to 46.6 (New Jersey Sample SD = 5.0). The Flourishing Scale has been used previously in studies with people who have an ABI (White, 2014).

The *Satisfaction with Life Scale* (SWLS; Diener et al., 1985) is a five-item scale designed to measure satisfaction with life. The items are scored using a 7-point Likert scale with scores ranging from 5 (low satisfaction) to 35 (high satisfaction). It has good construct validity (ranging from 0.5 to 0.75), test-retest reliability (0.82–0.84), and internal consistency (0.87) (Diener et al., 1985). Normative data for adults range from 23.6–27.9 (Pavot and Diener, 1993/2009). Normative data have been collected for people at 1 and 2 years post-ABI with mean scores of 20.32 (SD = 8.13) and 20.80 (SD = 8.42), respectively, and 22.7 (SD = 7.28) for people with SCI <60 days post-injury (Fortmann et al., 2013).

The *Emotion Regulation Questionnaire* (ERQ; Gross and John, 2003) is a 10-item questionnaire designed to assess individual differences in the habitual use of two emotion regulation strategies: cognitive reappraisal (six items) and expressive suppression (four items). Items are rated on a scale from 1 (strongly disagree) to 7 (strongly agree) with scores ranging from 6 to 42 (Reappraisal) and 4 to 28 (Suppression). Mean α reliabilities were 0.79 for Reappraisal and 0.73 for Suppression and test-retest reliability across 3 months was 0.69 for both Reappraisal and Suppression scales. Higher mean scores on each subscale indicates that the reappraisal or suppression strategy is more endorsed. Testing the psychometric properties of the ERQ showed that the cognitive reappraisal subscale ($\alpha = 0.79$) and expressive suppression ($\alpha = 0.73$) subscales have high internal consistency for both (Gross and John, 2003). Good convergent validity has been reported with the COPE scales (Carver et al., 1989), discriminant validity with the 44-item Big Five Inventory (see Gross and John, 2003), and stability across 3 months ($r = 0.69$; Gross and John, 2003). Normative data for Reappraisal are 28.92 (6.27) and 28.48 (6.29) for females and males, respectively, and for Suppression,

13.12 (4.99) and 14.91 (4.67) for female and males, respectively (Melka et al., 2011).

The *Positive Affect and Negative Affect Scale* (PANAS-20; Watson et al., 1988) is a 20-item scale measuring the hedonic aspect of well-being using 10 positive items [Positive Affect scale (PA)], 10 negative items [Negative Affect scale (NA)]. Each item is scored on a 5-point Likert scale and each positive and negative scale ranges from scores of 10 to 50. Normative data indicate a mean score of 31.31 (SD = 7.65) and 16.00 (SD = 5.90) for the PA and NA scales, respectively (Crawford and Henry, 2004). Internal consistency of the PA was 0.89 (95% CI = 0.88–0.90) and 0.85 (95% CI = 0.84–0.87) for the NA scale. The PANAS has convergent validity when correlated with the Depression and Anxiety Stress Scale [$t(986) = 7.523, p < 0.001$] and the Hospital Anxiety and Depression Scale [$t(737) = 7.667, p < 0.001$] (Crawford and Henry, 2004). PANAS has been used in both ABI (e.g., Juengst et al., 2014) and SCI research (Salter et al., 2013).

The *Patient Health Questionnaire-9* (PHQ-9; Kroenke et al., 2001) is a nine-item scale that screens for severity of depression. Each item is scored from 0 to 3 with the total scale scores ranging from 0 to 27. Higher scores are indicative of moderately severe (15–19) and severe (20–27) levels of depression. Internal reliability (Cronbach's α of 0.86–0.89) and convergent validity as measured against the SF-20 Health-related Quality of Life Scale ($p < 0.05$ for most pairwise comparisons) were good (Kroenke et al., 2001). The PHQ-9 has been validated on both ABI (Fann et al., 2005) and SCI samples (Bombardier et al., 2012).

The *Generalized Anxiety Disorder* scale (GAD-7; Spitzer et al., 2006) is a 7-item measure of generalized anxiety for use with the general population, measured along a 4-point Likert scale. Scores range from 0 to 21, with scores of ≥ 5 , ≥ 10 , and ≥ 15 representing mild, moderate, and severe anxiety symptom levels, respectively (Löwe et al., 2008). The internal consistency of the GAD-7 was excellent (Cronbach's $\alpha = 0.92$) and test-retest reliability was also good (intraclass correlation = 0.83). Construct validity was good as evidenced by strong association between increasing GAD-7 scores and worsening function on Short-Form Health Survey (SF-20) and convergent validity was good when compared with Beck Inventory ($r = 0.72$) (Spitzer et al., 2006).

Mechanisms of Change Measures

To capture changes in flow and meaningfulness of the songwriting experience throughout the process, three measurement tools were used.

Short Flow Scale and Core Flow Scale

After completion of each of the three songs (after sessions 4, 8, and 12), participants completed the 9-item Short Flow Scale (SFS) and the 10-item Core Flow Scale (CFS) to measure their subjective absorption and motivation during the songwriting task (Martin and Jackson, 2008). High levels of flow are indicative that the activity is engaging and meaningful to them. While flow may have been experienced during any songwriting session, we chose to only measure flow after sessions 4, 8, and 12 to minimize assessment burden for participants.

The SFS measures the strength of the nine dimensions of flow (challenge-skill balance, action-awareness merging, clear goals, unambiguous feedback, concentration on task, sense of control,

loss of self-consciousness, time transformation, and autotelic experience). When their scores are combined, they represent a measure of the psychological state of flow. The CFS, however, measures the strength of the lived experience of flow, rather than a psychological state. Both the SFS and CFS have demonstrative internal validity (CFI = 0.97; SRMR = 0.05). Construct validity has been tested across several domains (work, sport, and music) and has acceptable reliability (Cronbach's $\alpha = 0.82$; Martin and Jackson, 2008). Internal validity for SFS flow in work and sport were good, and more so for music ($\chi^2 = 136.78, 112.38$, and 44.11 , respectively) and external validity was also good ($\chi^2 = 6088.56, 4479.03$, and 4056.76 , respectively).

Meaningfulness of Songwriting Scale

Meaningfulness of Songwriting Scale is a 21-item scale constructed to measure the meaningfulness of the songwriting process and the song product post-creation Baker et al. (under review). This measure was administered to participants after the completion of each song (after sessions 4, 8, and 12). Developed by Baker and MacDonald (2013a,b), the self-report scale measures 11 domains of meaning relevant to songwriting experiences and the song product: enjoyment, discovery/self reflection, arousal of emotions, creativity, engagement, challenge, understanding context, associations, achievement, personal value, and identity. Items are measured on a 5-point Likert scale with total scores ranging from 21 to 105. Larger numbers are indicative of stronger meaning derived from the songwriting experience and song product. The measure has good face validity, strong internal consistency (Cronbach's $\alpha = 0.96$), test–retest reliability (ICC = 0.89–0.93), and construct validity ($r = 0.56$ – 0.68) when used with people with acute mental illness and with people who have substance use disorder Baker et al. (under review). Its psychometric properties have not been measured with people with neurodisability. We have noted anecdotally that people with ABI and SCI find songwriting a meaningful experience (Baker et al., 2005d; Tamplin, 2006). The questions in the scale were intentionally worded as simply and clearly as possible to make the scale appropriate to use for people with mild cognitive impairments.

Analyses

The data set was first screened for missing data, and occasional missing data were found for one time-point for at most two

participants on any variable. Given the missing data points were not systematic in any way, analyses were conducted on the available remaining data for each variable. Distributions for all variables were generally normal and no outliers were identified, and despite the small sample sizes, parametric analyses were performed to maintain sufficient sensitivity (although caution is advised in interpreting significant findings due to the small sample sizes).

Self-concept and well-being outcome measures were operationalized as the change in each measure from baseline to mid-point (time 2–time 1), mid-point to post-intervention (time 3–time 2), or baseline to post-intervention (time 3–time 1). Flow and meaningfulness of songwriting measures were obtained by averaging ratings provided for the three songs. Pearson's bivariate correlations (two-tailed, α set at 0.05) were performed to test the relationship between measures for each hypothesis.

Results

Potential Confounds

As both age and time since head injury could potentially influence self-concept and well-being outcome measures independent of the songwriting intervention, Pearson's correlations were first performed and showed no significant covariates.

The measures of self-concept and well-being at baseline, mid-intervention, and post-intervention are detailed in **Table 1**. The mean self-concept at baseline was 94.30 (SD = 25.88) out of a possible range 20–140, indicating a moderate view of the self-concept. Participants did not have a very poor or negative self-concept, but it was not particularly positive either. Mean self-concept improved across time and the effect size of this improvement in self-concept was medium ($d = 0.557$). Baseline levels of depression ($M = 9.7$, $SD = 6.15$) were bordering on moderate depression (10–14) and decreased to mild depression at post-intervention, and also had a medium effect ($d = 0.682$). Anxiety levels at baseline were at the lower end of the moderate anxiety range and decreased to the mild anxiety range at post-intervention. Negative affect at the baseline ($M = 22.90$) was higher than a normative sample ($M = 16.00$, Crawford and Henry, 2004) but also decreased at post-intervention, with a small effect size ($d = 0.461$). Positive affect ($M = 34.5$) was slightly above the normal range ($M = 31.31$). Baseline Satisfaction with Life Scale data were below normative

TABLE 1 | Levels of self-concept and well-being across the different time-points.

Variable (range)	Baseline			Mid-intervention			Post-intervention			<i>d</i>
	M	SD	N	M	SD	N	M	SD	N	
Self-concept (20–140)	94.30	25.88	10	106.88	16.58	8	109.00	26.88	10	0.557*
Negative affect (10–50)	22.90	6.89	10	19.57	6.63	7	19.50	6.95	10	0.491
Depression (0–27)	9.70	6.15	10	5.75	3.20	8	5.90	4.93	10	0.682*
Anxiety (0–21)	5.10	6.06	10	4.25	3.92	8	4.56	4.90	9	0.098
Suppression emotion regulation (4–28)	12.90	6.26	10	17.63	6.65	8	12.40	4.53	10	0.092
Positive affect (10–50)	34.50	10.71	10	33.57	7.74	7	35.70	8.87	10	0.122
Flourishing (6–56)	44.33	12.56	9	47.75	5.60	8	47.80	7.19	10	0.339
Satisfaction with Life (5–35)	18.80	9.31	10	21.57	7.11	7	21.78	6.22	9	0.376
Reappraisal emotion regulation (6–42)	29.40	5.40	10	31.75	4.40	8	30.00	5.62	10	0.108

d reflects effect sizes for baseline to post-intervention changes only.

* $p < 0.05$.

levels but moved toward this over time ($M = 21.78$). Emotion regulation (suppression) was below the normative data set and the appraisal was higher.

The Association Between Changes in Self-Concept and Well-being Across the Intervention Period

Table 2 shows means and SD for the change in self-concept and well-being measures and the correlations between changes in the self-concept measure and each of the well-being measures, at each period between time-points (baseline, mid-intervention, and post-intervention).

It can be seen from **Table 2** that across the entire intervention period there were significant negative correlations between improvements in self-concept scores and decrease in ratings of negative affect, depression, and anxiety, and significant positive correlations with improvement in positive affect, flourishing, and satisfaction with life scores. From baseline to the mid-intervention point, there was a significant negative correlation between improvements in self-concept score and decreases in both negative affect and anxiety ratings, and the correlation with depression ratings approached significance. A positive correlation was also observed in change in self-concept scores over this period and satisfaction with life ratings. From mid-intervention to end of intervention, a negative correlation was observed between

self-concept scores and ratings of both depression and anxiety, and a positive correlation was observed between change in self-concept score and flourishing ratings.

The Association Between Self-Concept and Well-being Outcome Measures and Mechanisms of Change Measures (Flow and Meaning)

Table 3 shows the means and SD for change in self-concept and well-being measures, and for mechanisms of change (flow and meaningfulness of songwriting) averaged across the entire intervention period (that is, from baseline to post-intervention), and the bivariate correlations between these variables.

Table 3 reveals that the flow measures did not correlate with any of the changes in self-concept or well-being variables. The Meaningfulness of Songwriting Scale correlated positively with increased negative affect, anxiety and suppressive emotion regulation, and the negative correlation with increased positive affect approached significance.

Discussion

Changes to Self-Concept and Well-being

Research indicates that integrating a past, present, and future self is difficult for people with ABI and SCI, and the self-concept does not improve naturally over time (Anson and Ponsford, 2006; Kelly et al., 2013). This study found that self-concept changed from baseline to post-intervention [mean change 14.70 (39.27)] supporting our theory that songwriting can strengthen the positive aspects of the self-concept and make a difference in how people with disability view themselves at a critical time in their rehabilitation process (Tamplin et al., 2015).

The data revealed that the largest changes in self-concept emerged from baseline to mid-point (first six sessions). During this phase of the program, the participants were exploring the past (first four sessions) and present self (sessions 5 and 6). This positive change in self-concept suggests that they had a more positive view of themselves when compared with baseline. The theory underpinning this study proposed that by exploring the past self, participants were guided to explore who they were as people prior to their injury – a focus on the residual self that may have been forgotten or hidden by the more prominent issue of the current disabled self (Lennon et al., 2014). The process of focusing on who they were prior to their injury (song about the past self), and which parts of themselves remain the same (song about the present self), led to a stronger, healthier self-concept by the mid-point assessment. As participants continued to explore the present self (sessions 7–8) and then the future self (sessions 9–12), there was a further strengthening of the self-concept although this change was less marked than during the initial six sessions. This might indicate that although there were additional improvements in self-concept that exploring the future has less benefits than reflecting on the past and the here-and-now. Perhaps for some participants, the future remains too uncertain at this early stage in their rehabilitation journey and therefore creating songs about the future self should be introduced at a later period of time post-injury. Alternately, it may be that after an initial rapid improvement in self-concept, further improvements are more gradual. In

TABLE 2 | Descriptive statistics and Pearson's bivariate correlations between self-concept and well-being outcomes.

	M	SD	Correlation with self-concept		
			<i>r</i>	<i>p</i>	<i>n</i>
CHANGE FROM BASELINE TO POST-INTERVENTION					
Self-concept	14.70	39.27	–	–	–
Negative affect	–3.40	9.62	–0.69*	0.026	10
Depression	–3.80	7.10	–0.87*	0.001	10
Anxiety	0.67	7.60	–0.87*	0.003	9
Suppression emotion regulation	–0.50	6.79	0.25	0.479	10
Positive affect	1.20	13.90	0.73*	0.016	10
Flourishing	2.56	16.92	0.85*	0.003	9
Satisfaction with life	4.11	10.41	0.87*	0.003	9
Reappraisal emotion regulation	0.60	9.01	0.48	0.162	10
CHANGE FROM BASELINE TO MID-INTERVENTION					
Self-concept	16.38	26.22	–	–	–
Negative affect	–2.86	11.26	–0.96*	<0.001	7
Depression	–4.50	6.14	–0.68	0.063	8
Anxiety	–1.75	5.92	–0.77*	0.025	8
Suppression emotion regulation	6.50	6.85	0.07	0.864	8
Positive affect	–1.29	8.90	0.35	0.443	7
Flourishing	3.57	13.31	0.67	0.102	7
Satisfaction with Life	3.43	11.41	0.96*	0.001	7
Reappraisal emotion regulation	3.13	7.61	–0.15	0.715	8
CHANGE FROM MID-INTERVENTION TO POST-INTERVENTION					
Self-concept	6.63	13.56	–	–	–
Negative affect	–1.86	4.67	–0.09	0.856	7
Depression	–0.63	4.81	–0.88*	0.004	8
Anxiety	0.71	4.71	–0.79*	0.034	7
Suppression emotion regulation	–6.00	3.21	–0.24	0.562	8
Positive affect	3.57	10.08	0.72	0.066	7
Flourishing	2.00	5.50	0.88*	0.004	8
Satisfaction with life	0.50	2.88	–0.08	0.885	6
Reappraisal emotion regulation	–1.38	7.19	0.29	0.489	8

TABLE 3 | Descriptive statistics for mechanisms of change variables, and correlations with change (from baseline to post-intervention) in self-concept and well-being variables.

	M	SD	cSC	cNA	cDep	cAnx	cSupp	cPA	cFlour	cSWL	cReapp
State flow	4.02	0.40	−0.10 0.808	0.33 0.423	−0.14 0.744	0.43 0.333	−0.25 0.543	−0.40 0.324	0.06 0.893	−0.25 0.594	−0.33 0.426
Core flow	4.14	0.46	0.02 0.954	0.02 0.960	−0.14 0.735	0.32 0.490	−0.13 0.752	−0.24 0.571	0.157 0.737	−0.23 0.618	−0.12 0.772
Meaningfulness of songwriting	90.80	8.25	−0.39 0.273	0.68* 0.031	0.43 0.216	0.74* 0.023	−0.73* 0.018	−0.58 0.079	−0.52 0.150	−0.31 0.418	−0.57 0.087

cSC, change in self-concept; cNA, change in negative affect; cDep, change in depression; cAnx, change in anxiety; cSupp, change in suppression emotion regulation; cPA, change in positive affect; cFlour, change in flourishing; cSWL, change in satisfaction with life; cReapp, change in reappraisal emotion regulation.
Ns range from 7 to 10.

* $p < 0.05$.

this case, greater improvements might be detected if a follow-up measurement was performed at a later stage.

Correlations between changes in self-concept and other well-being indicators were significant from baseline to post-intervention in all cases except for in the Emotion Regulation Subscales (suppressive and reappraisal). The data showed that as self-concept improved, this was positively correlated with enhanced sense of flourishing, positive affect, satisfaction of life, and was also significantly correlated with reductions in anxiety, depression, and negative affect. This indicates that as self-concept improved during the songwriting process, other well-being measures also improved. Low levels of self-concept have been associated with higher levels of depression and anxiety (Anson and Ponsford, 2006; Kelly et al., 2013). Therefore, it is noteworthy that our songwriting intervention had the reverse effect of improving self-concept and simultaneously reducing levels of anxiety and depression.

Improvements in affect, sense of flourishing, and satisfaction in life, and reductions in depression, anxiety, and negative affect are all important goals during the initial months post-injury. This is the time when recovery is most rapid and focused attention on rehabilitation is imperative (Schultz and Tate, 2013). It could be hypothesized that a process that involves grieving the past self, and facing the present and imagined future self might lead participants to overly focus on their disabilities and in doing so, negatively affect well-being. However, this was not the case in our study. The songwriting process enabled participants to be reminded of the residual self and this led to positive well-being outcomes. While other music therapy studies have not examined songwriting's impact on affect at baseline-mid-post, other music therapy interventions addressing other rehabilitation goals have been found to facilitate an improvement in affect and mood in people with SCI (Tamplin et al., 2013a) and ABI (Baker and Wigram, 2004; Tamplin et al., 2013b).

Mechanisms of Change

It was hypothesized that strong experience of flow, and high levels of meaningfulness of the songwriting experience are mechanisms active in the songwriting process that would contribute to a change in self-concept and other well-being indicators (Tamplin et al., 2015). The findings in this study did not support the hypothesis that strong flow was associated with improved self-concept and well-being indicators. In other words, having a stronger sense of flow had no bearing on whether the participant had a greater

change in self-concept or well-being when compared with participants who reported low levels of flow. The strength of meaning derived from the songwriting experience and song product did, however, significantly correlate with some well-being indicators; however, these correlations were in the opposite direction than expected. These correlations suggest that, as the songwriting experience becomes more meaningful, individuals' levels of anxiety and negative affect increase, while suppression of emotion decreases. In trying to understand these unexpected findings, we propose that positive songwriting experiences within the context of a therapeutic relationship with a highly skilled music therapist may have enabled individuals to start accepting their emotions, which led to an increase in anxiety and negative affect. Being authentic and honest with oneself in times of stress and grief can be challenging. However, when a process such as songwriting is meaningful and enables a person with an ABI or SCI to feel safe explore aspects of their self that they might otherwise suppress, the initial effect may be positive, but as a person reflects on the content of their songs over time, it may cause negative feelings to emerge into consciousness. Our finding is not necessarily an unfavorable outcome, as it is not possible to process fears and anxieties until they are acknowledged. The music therapist has specialist skills in enabling people to explore painful issues within the safety of a therapeutic relationship and within the safety of musical experiences so that these fears and anxieties can be addressed.

Overall Findings

When considering the two hypotheses of this study, there seems to be some contradictory findings. First, songwriting positively affected self-concept over time and this was, as hypothesized, correlated with positive changes in well-being. However, higher states of flow and more meaning derived from the songwriting experience were not significantly correlated with positive changes to self-concept and well-being, and at times, the trends were in the opposite direction than predicted. One explanation for why our second hypothesis was rejected stems from the possibility that participants were completing flow scales that had not previously been psychometrically tested with this population. It is unclear whether participants were able to reflect on their experiences well enough to be able to rate their experience of flow. The same may be said for the Meaningfulness of Songwriting Scale, which has to date only been psychometrically tested in a mental health population Baker et al. (under review). Hence, it is possible that this measure may not have accurately captured the meaningfulness

of the experience for our study's populations. Further, it is possible that the timing of the flow measures affected the results. If flow had been measured after each of the sessions rather than at the completion of each song, stronger flow experiences during the lyric writing or music creation process may have been identified. This would have provided a deeper understanding of whether flow is stronger at different points during the songwriting process.

An alternative explanation for the absence of positive correlations between the mechanisms of change (flow and meaning) and self-concept and well-being could be that other mechanisms are more significant contributors to a change in self-concept and well-being. Given that the songwriting protocol systematically facilitates an exploration of the full range of self-concept domains (physical, personal, family, social, moral, and academic self), perhaps this self-exploration and narrative approach (that just so happens to incorporate a songwriting experience), is the critical, mediating factor that enables the multiple aspects of self to be more integrated (Feinstein and Krippner, 2008). Similarly, the role of the therapist in offering support when the participant grieves lost parts of the self, challenging a participant's self view, or presenting potential alternative perspectives (Obodaru, 2012), might have a strong impact on changes to self-concept and well-being over time. If this is the mediating mechanism of change, the role of songwriting is therefore to provide a supportive yet challenging and stimulating context in which the narrative experience may evolve. Songs are an age-appropriate and culturally accepted medium for communicating people's stories (Baker, 2015). They provide a framework where key events, feelings, or self-perspectives can be highlighted in a chorus, thereby encouraging further processing, and more effective consolidation into memory (Cahill and McGaugh, 1996; Judde and Rickard, 2010). Finally, our findings indicated a positive change in mood and emotional well-being across the 12 sessions, supporting our earlier proposed ideas (Tamplin et al., 2015) that songwriting – a music-based intervention – engages the mesolimbic system in the brain and in doing so affects mood, depression, anxiety, and coping (Menon and Levitin, 2005; Salimpoor and Zatorre, 2013).

The proposed theory that (a) music facilitates consolidation of the self-exploration process into memory and (b) the role of the narrative process is pivotal in addressing self-concept that deserves further investigation. A study that compares the effects of narrative therapy with narrative songwriting on self-concept and well-being with cognitively compromised people (issues of ongoing memory) may shed light into the role of the songwriting process in reconstructing the self post-injury.

Limitations of the Study

This study comprised a small sample size of two cohorts (ABI and SCI) whose data were pooled. The sample size was insufficient to allow separate examination of the cohorts. Larger sample sizes would enable population differences to emerge regarding the effects of songwriting on self-concept and well-being, as well as the mechanisms of change. While measures for some outcome variables have been psychometrically tested, or at least been used, in other studies with people who have ABI or SCI (HISDS, SWLS, Satisfaction with Life Scale, Flourishing Scale, PANAS, and

PHQ-9), the ERQ and GAD-7 have not. It is unclear whether these scales are valid for use with people who have SCI and ABI. Similarly, the Meaningfulness of Songwriting Scale is a newly developed scale and only has data on two samples (patients in detoxification for substance use disorder and acute psychiatric patients). Finally, given the small sample sizes, non-parametric analyses may have been more cautious although would have reduced power considerably and therefore parametric analyses were retained. However, the significant findings should be interpreted as preliminary in nature and require replication with a larger sample size.

This study did not have a comparative or control condition to determine whether the changes in self-concept and well-being were due to natural recovery or were indeed an outcome of the songwriting intervention. As self-concept has not been found to improve naturally over time (Kelly et al., 2013), we have made an assumption that the songwriting intervention effected this change; however, this cannot be confirmed until a larger study with sufficient power has been implemented using a comparative or control condition with random assignment. Further, it is possible that the songwriting program was a distraction from thinking about their losses and thus led to the positive change in well-being. This is unlikely, however, because the program was directing participants to reflect on the self rather than distract them from thinking about the self and their future.

It is likely that strong flow experiences were evident across each of the 12 sessions of songwriting. Measuring flow after each of the 12 songwriting sessions may have yielded more data about how flow was experienced over the whole songwriting process. Such data may have enabled stronger correlations between the flow experiences and changes in self-concept and well-being measures to be captured. It is therefore recommended in future research that flow is measured after each songwriting session to provide a more complete picture of the experience of flow throughout the songwriting process.

Conclusion

This study has examined the impact of a therapeutic songwriting program on the self-concept and well-being of people with ABI and SCI, with a specific focus on measuring hypothesized mechanisms of change. Our songwriting protocol was specifically designed to explore the various domains of the self-concept via the creation of three songs about the past self, present self, and future self. We found that changes to self-concept and well-being facilitated by the intervention were highly correlated and changed in a positive direction indicating that people currently undergoing rehabilitation for SCI or ABI benefit from such a strategic songwriting approach. There were no correlations between levels of flow and self-concept and other well-being measures but found correlations with meaningfulness in the inverse-to-hypothesized direction. In particular, as the strength of the meaningfulness of the songwriting experience increased, levels of anxiety and negative affect increased and emotional suppression decreased. We propose that there may be other mechanisms more critical in facilitating the positive changes in self-concept and well-being that emerged in this study, such as the role of story-telling and the impact of music in facilitating the consolidation of self-concept explorations in memory.

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A theoretical framework and therapeutic songwriting protocol to promote integration of self-concept in people with acquired neurological injuries

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A positive self-concept after neurological injury is associated with enhanced quality of life and good mental health. Therefore, effective reconstruction of identity is heralded as an important goal of rehabilitation. We have developed and tested a songwriting protocol for people with acquired brain injury and/or spinal cord injury (SCI) that focuses on six domains of self-concept (physical, personal, social, family, academic/work, and moral). Over 12 music therapy sessions, people create three songs that reflect their perception of their past, present, and future selves. The therapeutic process of creating these songs aims to integrate residual components of the past self with that of the present injured self. This article outlines the theoretical foundations for the use of songwriting as a medium for change and describes the protocol in detail. We then present a case study of a man with SCI to illustrate the application of the protocol and the ensuing changes in self-concept.

Keywords: songwriting; self-concept; identity; neurological; rehabilitation; music therapy

Introduction

Since the emergence of neurologic music therapy as an evidence-based practice for people who have acquired or degenerative neurological conditions, there has been a notable increase in quality research, which focuses on physical, cognitive, and communicative functioning (Thaut & Hoemberg, 2014). This first began with a movement towards measuring music therapy's effect on functional outcomes (e.g. Baker, 2001; Baker, Wigram, & Gold, 2005; Hitchen, Magee, & Soeterik, 2010; Kim & Jo, 2013; Särkämö et al., 2008; Tamplin, Baker, Grocke,

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et al., 2013; Tamplin, Baker, Jones, Way, & Lee, 2013), and the documentation of the clinical protocols utilized in these studies (e.g., Baker, 2000; Magee, 2005; Baker & Tamplin, 2006; Tamplin & Grocke, 2008). However, published studies that track the clinical methods and associated outcomes of music therapy interventions that address the psychological and emotional consequences of acquiring a brain injury (ABI) or spinal cord injury (SCI) are still lacking.

This article outlines a clinical protocol developed for a pilot study currently undergoing clinical testing as part of a long-term research agenda. This agenda aims to examine how and to what extent songwriting impacts the process of integrating a pre-injured self with a post-injured self in people with acquired neurological impairments. Preliminary evidence suggests this songwriting protocol may lead to positive changes on measures of self-concept (Baker et al., 2014). The purpose of this article is not only to describe the protocol, but importantly, to also offer a theory concerning mechanisms of change that explain how this songwriting intervention leads to changes in self-concept.

Self-concept and acquired neurological impairments

The self-concept, also referred to as self-construction or self-identity, is a collection of beliefs about the self that answer the question “Who am I?” The self-concept comprises self-schemas (Markus & Nurius, 1986) and beliefs about the past, present, and possible future selves. It is a multidimensional construct crossing several domains, namely, the physical self, personal self, social self, family self, academic, or vocational self, and moral or spiritual self. For example, the physical self denotes how a person perceives his/her own body, state of health, physical appearance, and sexuality whereas the personal self concerns a self-evaluation of one’s own personality (Fitts & Warren, 1996).

The self-concept is continually transformed throughout life as people encounter new experiences and events. It is not a fixed construct, but a dynamic and changing set of ideas about the self, shaped by the world, the people with whom they interact, and life events that are experienced (MacKinnon & Helse, 2010). People with a strong self-concept tend to define themselves as generally competent people who like themselves (Fitts & Warren, 1996). They perceive themselves as people of value and worth, and have self-confidence to act accordingly. Their many positive aspects can be called upon to compensate for threats to specific aspects of their self-image and therefore they are likely to take a risk because they can absorb anticipated failure. In contrast, people with a low self-concept are doubtful about their own worth. They are more likely to say negative things about themselves even when these are unwarranted and tend to be anxious, depressed, unhappy, and exhibit limited self-confidence (Byrne, 1996). Due to an avoidance of failure, they tend to avoid risk and set unchallenging goals (Fitts & Warren, 1996).

According to Markus and Nurius (1986), the self-concept is derived from a combination of self-schemas, concepts of the past self, present self, and future or

possible selves, and differs from self-esteem or self-worth, which involves an appraisal of the self. Therefore, the self-concept is “built on a temporal framework containing the actual past, the actual present, and potential future” (Obodaru, 2012, p. 34). There are neuropsychological and structural aspects of the self-concept including the unhealthy fragmented self-concept versus the healthy integrated self-concept, and a nomological network of relationships that include the self-concept and personality, self-concept and psychological adjustment, and self-concept and achievement (Gana, 2012). Theory suggests that emotional or significant events (such as acquiring a disability), can be catalysts to consider and reappraise meaning, purpose or direction in people’s lives and are opportune moments to reflect and consider alternative future selves (Habermas & Bluck, 2000).

When people acquire disabilities as a consequence of stroke, brain injury, or SCI, they may experience an existential crisis (Hinkebein & Stucky, 2007). The sudden loss of function demands a re-visioning of their future lives faced with potential prospects of not being able to return to work, to perform previously held family and social roles, to effectively communicate with others, and to partake in leisure activities. When unable to adjust to the many changes presented to them, people with acquired disabilities inevitably face enormous challenges in finding meaning in, satisfaction with, and quality of life (Vickery, Gontkovsky, & Caroselli, 2005).

Adjusting to permanent disability tends to be a cyclic process with the initial encounter demanding that a person confronts reality both emotionally and cognitively, with a subsequent retreat and an active avoidance of the reality both in the short and long term. Over time, through a series of cyclical processes, there is an eventual return to equilibrium (Shontz, 1975). However, one of the risks associated with acquiring a disability is that the disability narrative becomes the dominant narrative, the story through which all life is experienced and framed. A review of the literature indicates that self-narratives of people with ABI and SCI are comparable (Lennon et al., 2014).

Studies have found that people with ABI or SCI commonly experience a loss of sense of self, report discrepancies between the past, present, and future self, and rate self-concept domains substantially lower than matched controls (Anson & Ponsford, 2006; Kelly, Ponsford, & Couchman, 2013). This is in part due to facing the challenge of constructing a future possible timeline that differs to the one they had envisaged pre-injury. They showed lower global self-esteem, and higher levels of depression and anxiety were strongly associated with a low self-concept. Further, these fragmented self-concepts did not naturally improve over time. Other studies have confirmed the association of a decline in self-concept with negative changes in mood (Carroll & Coetzer, 2011) and nonproductive coping (Geyh et al., 2012; Kelly et al., 2013). Thus it is possible to theorize that improvements in mood and self-concept could make a person more resilient to coping with traumatic events.

As a positive self-concept after neurological injury is associated with increased quality of life (Vickery et al., 2005) and reduced likelihood of

experiencing depressive symptoms (Carroll & Coetzer, 2011), effective reconstruction of an organized, compelling, and realistic identity is considered an important goal of rehabilitation (Biderman, Daniels-Zide, Reyes, & Marks, 2006). However, there are currently no evidenced-based treatments that can successfully address this important rehabilitation need. Researchers have concluded that cognitive impairments present in people with ABI may interfere with the ability to benefit from verbally mediated therapeutic discussions, as these dialogs may not be effectively consolidated into long-term memory (LTM) (Anson & Ponsford, 2006; Kelly et al., 2013). For example, each time a person attends a therapy session, s/he may be unable to recall the therapeutic discussions from the previous session due to short-term memory (STM) deficits. Subsequently, there is a sense that the therapeutic process is beginning again each time the person attends a therapy session.

In Figure 1, we present the conditions needed to utilize the narrative process to construct a healthy, integrated self-concept post-injury. Under optimal conditions, the person with an injury would tell his/her story exploring the disabled self and residual self, draw awareness to the residual self, reframe and reconstruct a present and future story, and over time, embed these thoughts and self-perceptions in memory. However, for people with neurodisability, impairments in STM are a barrier to progressing through the process. Conversely, LTM becomes a resource that highlights the (hidden) residual self. Utilizing strategies that increase the potential for encoding the process in memory increases the likelihood that people will reconstruct a healthy sense of self.

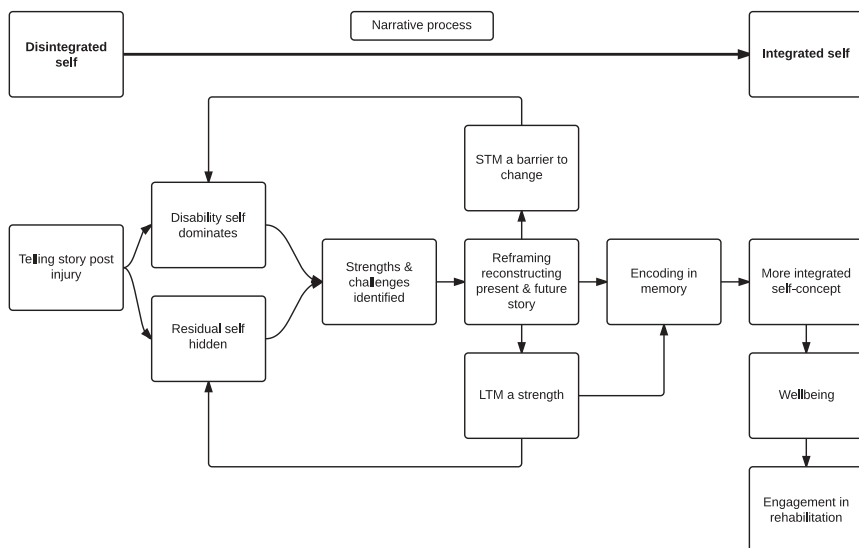


Figure 1. Cognitive processes active during narrative approaches to addressing self-concept post injury.

Narrative and therapeutic songwriting

Narrative therapy is one approach that has been used with a range of populations for addressing self-concept. Essentially, it is grounded in the view that people's self-concept is shaped by their life stories and that by exploring these, they can construct meaning about their past, understand the present, and give direction for their future (Feinstein & Krippner, 2008).

When people experience unexpected traumatic events such as an ABI or SCI, their narratives in the continuum of past, present, and future can be significantly disrupted (Pennebaker, Mayne, & Francis, 1997). To live life more fully, it has been suggested that there is a need to re-author and reconstruct their stories (Neimeyer, 2000) so that life can continue to have meaning. The therapist's role in the narrative process is to hear people tell and retell their stories, and in doing so, provide feedback and gently challenge them so that they become aware of alternative explanations and understandings to events they have experienced in life. Research suggests that reflecting on events by "repeatedly narrating the self" assists in long-term integration of the self-concept (Obodaru, 2012, p. 40).

Songwriting within a therapeutic context is an approach that allows people to tell their stories – past, present, and future (Baker, Wigram, Stott, & McFerran, 2008). Through the creation of lyrics and music, people are able to create an historical account of their lives, reconstruct a previous specific life event, express their feelings about a current situation, or construct a story about a possible future. In a study of songs written by ABI patients, self-concept themes emerged from the inductive (and later deductive) analysis of 82 songs (Baker, Kennelly, & Tamplin, 2005a, 2005b, 2005c, 2005d). The songs created during music therapy sessions were client-centered and organic in nature. That is, songwriters were not provided with specific themes on which to base their songs, but allowed to create songs on whatever themes were pertinent to them at the time. While there was a notable focus on describing the past (16% of lyrics), and to a lesser extent, the future (7%), most narratives focused on the present. For example, lyrics focused primarily on self-reflections (28%) and reflections on, and messages to family (35%).

Mechanisms of change

Songwriting offers a range of musical and therapeutic experiences that contribute to a successful integration of multiple injured and non-injured self-narratives, which are illustrated in [Figure 2](#). First, research indicates that music has strong links to memory and emotions ([Figure 2](#), pathway 1). If effective learning and memory is a necessity for successful negotiation of past, present, and future identities, then music's potential to facilitate consolidation of information, and retrieval of information from LTM, deem it a useful medium to work through issues. Studies indicate that music holds greater meaning, emotion, and mnemonic potential than speaking alone because emotionally powerful events are

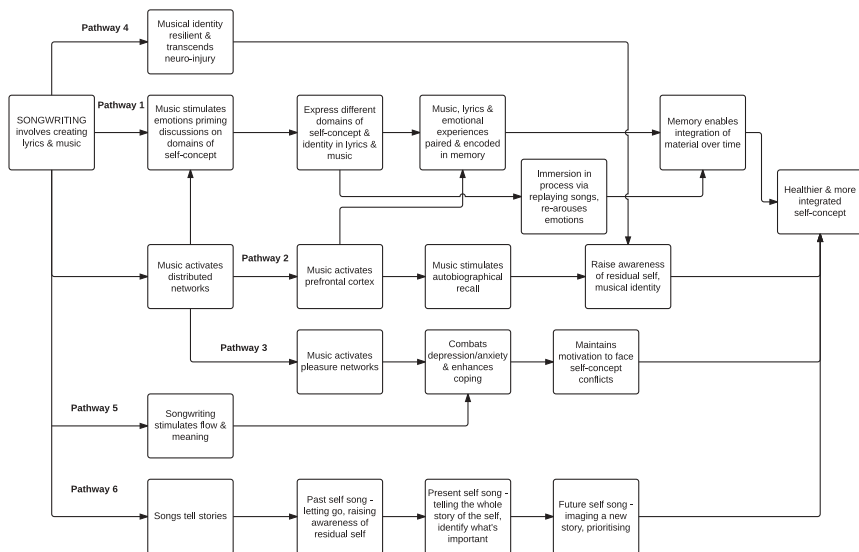


Figure 2. Pathways active during songwriting designed to address fragmented self-concept.

encoded strongly into memory (Cahill & McGaugh, 1996), and can enhance consolidation of coincident events (Judde & Rickard, 2010). There is also neurobiological evidence that the medial prefrontal cortex is a key region linking music, memory, and emotion (Figure 2, pathway 2). This evidence suggests that where music, emotional experiences, and significant events occur together, there is a greater chance that the specific music heard at the time, would later trigger strong autobiographical memories (Janata, 2009). These autobiographical memories are important in raising awareness of the residual self (including the musical identity), enabling a healthier, more integrated self-concept to emerge. Further, there is evidence that combining music with other modes (e.g., written or spoken words), leads to a more intense emotional experience and/or a greater chance that the experience will be encoded in ongoing memory (Baumgartner, Lutz, Schmidt, & Jäncke, 2006; Schön et al., 2008). Therefore, when music is paired with lyrics that coincide with activation of emotions, there is a greater chance the process will be encoded in memory.

Songwriting can be a more useful approach than verbally mediated interventions for people with cognitive impairments. There is overwhelming evidence to suggest that music activates distributed neural networks (Wu, Zhang, Ding, Li, & Zhou, 2013). Indeed, music listening has been shown to enhance cognitive recovery in studies with stroke patients (Särkämö et al., 2008), suggesting that music listening facilitates neurological reorganization. There is also emerging evidence that engagement in music-based activities activates the “pleasure”

neural network of the brain (e.g., Menon & Levitin, 2005), which may assist in alleviating symptoms of depression and anxiety and enhance capacity for coping (Figure 2, pathway 3). A more positive attitude may lead to greater motivation to face self-concept crises so that they can be processed and revised.

Another factor that supports the use of songwriting as a medium for addressing self-concept concerns musical identity (Figure 2, pathway 4). While song creations might tell a story of personal identity, the songs are also an expression of musical identity. For example, the musical genre (e.g., Gangsta Rap or Punk Rock) selected for a self-composed song can be an important way to express the songwriter's musical identity. Research indicates that musical preferences, engagement, behaviors, and identity remain intact despite neurological impairment caused by dementia (Caddell & Clare, 2011) and multiple sclerosis (Moreira, França, Moreira, & Lana-Peixoto, 2009). People typically draw on residual musical memory and resilient musical identities to stimulate autobiographical recall, and, importantly when faced with degeneration of functioning, preserve their pre-illness identity. Our own experiences, supported by the research of Baird and Samson (2014), suggest that musical identities of people with ABI or SCI are also preserved post-injury.

Well-being and positive mood are essential if a person is to have the inner strength and cognitive and emotional capacity to face the difficult reality imposed by an ABI or SCI. Adequate personal resources are needed to reflect honestly and openly on their current and future worlds. There is a burgeoning body of evidence indicating that experiences of flow and meaning in life are positively correlated with general well-being (e.g., Csikszentmihalyi, 2008; Seligman, 2011). For example, a study of Japanese university students found that flow enhanced mood, and self-esteem, reduced anxiety, increased satisfaction with life, and strengthened the use of active coping strategies (Asakawa, 2010). Studies by Baker and MacDonald (2013a, 2013b) found that songwriting leads to strong experiences of flow and meaningfulness. As flow and meaning are predictors of well-being and coping, songwriting has the potential to directly impact people's capacity to use coping strategies when facing crises (Figure 2, pathway 5). Further, songwriting is a culturally acceptable and appropriate means for emotional expression (Baker et al., 2005c, 2005d). It provides an alternative outlet for people who may find it difficult to verbally express how they are feeling. This is particularly important for people in the rehabilitation process because repressed negative emotions can lead to depression and/or lack of motivation for therapy.

Finally, songwriting, as mentioned earlier, is a form of narrative expression, an effective way for people to explore their life stories (Pennebaker et al., 1997) and focus on meaning making (Neimeyer, 2000). Through narrative approaches, people attempt to make sense of their past, present, and future, and, with the support of a guiding therapist, work together to construct a healthy identity. Songwriting enables people to tell their stories at the micro-narrative level which contributes to the creation of a macro-narrative (Figure 2, pathway 6). In the right

context, these creative outputs become not only important markers of identity but also a medium through which the individual can process crises and construct a new and healthy identity (Bruner, 1986). Songwriting studies confirm the potential of lyric writing as a means of expressing personal and musical identity and providing a meaningful opportunity to narrate life experiences (Baker et al., 2005a, 2005b, 2005c, 2005d; Baker & MacDonald, 2013a, 2013b; Day, Baker, & Darlington, 2009).

The songwriting protocol targeting self-concept

Songwriting in therapy can have an advantage over verbally mediated therapies because it demands the songwriter remain present with confronting issues, feelings, and events in the process of discussing these and incorporating them into original lyrics and music. The prolonged engagement with the content (over many sessions) allows the songwriter to process, reprocess, and reconstruct his/her feelings and perspectives on the issue or story and re-author a story (Baker & MacDonald, *in press*). This extended processing time is necessary to ensure an authentic representation of personal experiences and to allow the necessary time for processing and reflection that is key to the songwriting protocol presented in this article. Previously published songwriting protocols (e.g., O'Brien, 2011; O'Callaghan, 1996) often involve entire songs being completed in a single session (e.g., in acute or palliative care). In our songwriting protocol – which focuses on changes in self-concept – the song product functions to keep the songwriter's attention on the process of self-reflection over many sessions. As the song is designed to tell a complete story, the therapist can redirect the songwriter during any digression from the topic. While such digression may represent deliberate or unconscious avoidance, the focus of completing the song encourages the songwriter to stay with the material.

The emphasis in our protocol on a person's story is grounded in concepts from narrative therapy as discussed previously. Self-concept is strongly connected to a person's life stories and the meaning they give to these stories. Our songwriting protocol thus places a clear and distinct emphasis on the songwriter's sense of past self, present self, and future self by creating a new song for each of these foci. This process provides a framework for recognizing features of the past self, making sense of the present, and provides perspective to contemplate what the future might bring. Although different, there are many similarities in the disruptions to self-concept evident in those who have received a brain injury or spinal injury. Both trigger shock due to the unexpected nature of injury, both impact physical function and independence, and both can lead to changes in sense of self, and grief over lost function and changes in life roles.

The music therapist's role in this songwriting protocol is to hear a person's stories and help to bring order to the chaos that such a traumatic event causes to the person's self-stories. The therapist works together with the songwriter to reconstruct his/her stories to make meaning from them. This process can include asking

pertinent questions, providing feedback on reflections, and gently encouraging the exploration of alternative possibilities and meanings attributed to life events. The therapist then assists the songwriter to create a song that musically captures the essence and emotional authenticity of the story that s/he wishes to convey. The development of a strong therapeutic alliance is essential to the process as the songwriter needs to trust the therapist and feel safe enough to explore sensitive and personal topics that they feel define or challenge their sense of identity.

The songwriting protocol we present here specifically targets changes in self-concept, and as such focuses on the different domains of self-concept outlined by Fitts and Warren (1996) together with a sequential focus on past, present, and future based on narrative therapy. In this way we aim to deal with the perception of self as a multidimensional paradigm that is constantly evolving and being constructed over time. The intervention consists of 12 individual sessions over 6 weeks (2 per week). The sessions are specifically designed to assist people to create songs that explore issues of identity – with the aim of integrating aspects of the past pre-injured self with that of the new injured self. We use a prompt sheet listing the domains of self-concept: physical self, personal self, social self, family self, academic/vocational self, and moral self to guide discussions during each session and to ensure each domain of self-concept is covered in the therapeutic process. The physical self refers to a person's perception of his or her health, appearance, physical ability, and sexuality, whereas the personal self relates more to perceived personality traits and sense of adequacy and self-definition aside from physical attributes or relationships with others. Family and social self indicate how people view themselves in terms of their roles and relationships with family, friends, and peers. Academic/work self-concept refers to how people perceive themselves and their roles in school or work settings, and moral self reflects satisfaction with one's conduct and sense of being able to control one's behavior. So, for example, in a songwriting session, if the participant has talked primarily about his/her physical impairments and role within his/her family, we might ask him/her to explore how he/she feels about his/her role as a working person or a "breadwinner," we might also probe to explore whether he/she feels he/she is a "good" person and his/her understandings of himself/herself in a spiritual or existential context.

The effects of this songwriting protocol on measures of self-concept, well-being, mood, and anxiety for inpatients with ABI and SCI have been measured in a pilot study (Baker et al., 2014). In this study, 10 people with ABI or SCI were offered the songwriting program and their data were compared with matched controls (10 people with ABI or SCI). Data were collected pre, mid-therapy program, post, and at 6-month follow-up and comprised measures of self-concept, flourishing, satisfaction with life, affect, depression, anxiety, and emotional regulation. Data on control participants and follow-up data are still being collected but preliminary evidence suggests an overall movement towards a more positive self-concept and improvement in the other well-being measures.

Changes in self-concept over time

The first four sessions are spent focusing on the past, hearing the songwriter’s life story and creating a song that expresses the songwriter’s perception of their pre-injured self. The middle four sessions focus on the present and the songwriter is encouraged to reflect on changes in self-concept that have arisen due to their injury and its consequences and a second song is written with this focus on the present. The final four sessions and third song focus on the songwriter’s conceptions about the future and how they perceive themselves to be in the future. Each song is therefore written over four sessions (see [Figure 3](#)).

Session 1 – Brainstorming ideas, telling the story, exploring feelings

It is vital to the therapeutic process that adequate time is spent in the initial sessions building rapport. Most people who participate in music therapy are

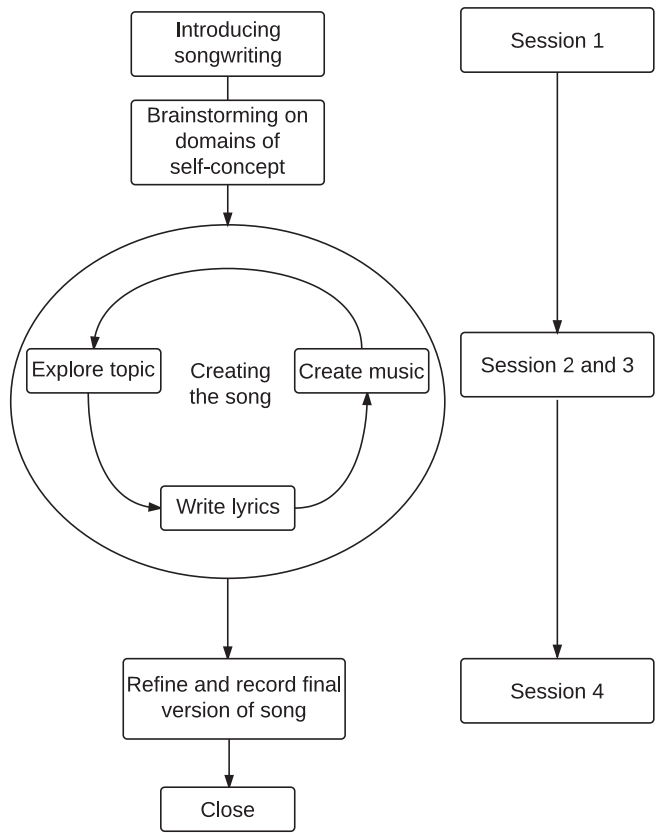


Figure 3. Songwriting for self-concept protocol.

nonmusicians and can find the thought of writing a song overwhelming. Thus, spending the first session talking and not actually commencing the song creation can alleviate potential anxiety about songwriting. We need to provide reassurance regarding the support provided by a trained music therapist in the creation of meaningful, person-centered songs. We use the very first session to get a sense of the songwriter's personality and musical identity. This can include asking about music preferences in terms of genre, favorite artists, bands, or songs and any reasons for these preferences. It may be appropriate to listen together to significant songs with which the songwriter closely identifies. This helps us to gain deeper insight into the songwriter's personality and can help the songwriter express his/her musical identity and emotional self.

In the first session for each song, the therapist listens to and documents the songwriter's story. These notes should be a verbatim record of the songwriter's words if possible, in order to preserve the integrity and authenticity of the songwriter's ideas when using the notes to create lyrics. By giving the role of note-taker to the therapist, the songwriter can talk freely and without interruption to the thought process. The therapist may need to assist in this process of brainstorming by asking questions about statements made, or asking for expansion of ideas.

Session 2 – Generating ideas for the music and lyrics and commencing the song

The second session is where we decide how to start the song creation process by presenting options to the songwriter. If the songwriter has a strong sense of the desired musical style for the song, this can be a good place to start. The therapist can then offer several musical ideas in that style and ask the songwriter to guide and direct the music creation process. However, in many cases, people prefer to start with the words, as this is more familiar (Baker et al., 2005c, 2005d). The therapist and songwriter can together review the notes from the brainstorming session and draw out significant points that reflect the different domains of self-concept. As the story unfolds in the lyrics, ideas for music may emerge. It is important to give the songwriter as much control over the music creation process as possible to ensure a greater sense of ownership over the completed song (Baker & MacDonald, 2013a). We have outlined the processes we use to facilitate co-creation of music in a previous publication (Baker et al., 2005c, 2005d). Providing musical options can be helpful, for example, “do you want the end of this line to go up (sing example) or down like this (sing example)?” It can also be helpful to leave an audio recording of the initial ideas for the song for reflection between sessions. Most people have easy access to technology, even in hospital, via their phone or laptop. It is therefore possible to document progress by recording ideas on a person's phone or making a recording using a digital recorder or software such as Garageband™ and emailing it to the patient. We may also email incomplete lyric sheets or deliver a hard copy to patients for reflection between sessions.

Session 3 –Writing the remaining verses and chorus and adapting the music or song structure as necessary

The third session is a continuation of the lyric and music creation process. We provide the songwriter with the opportunity to make changes after having time for reflection since the previous session. This may include changes in the wording of lyrics or restructuring the order of ideas, changing melody lines, or instrumentation. We then add more verses and a chorus and contemplate how to record the final version, including ideas for instrumentation. Often the song is completed in this third session. Again, we leave the songwriter with a record of progress via audio recording and updated copy of lyrics.

Session 4 –Making final adjustments and recording and/or mixing the final version of the song

Session four is where the final version of the song is recorded and mixed. Sometimes we record an acoustic version with a digital recorder using just voice and guitar or piano. Other times we use Garageband™ and involve the patient in making decisions about instrumentation, harmonies, and sound levels of various tracks. We may listen to the entire song several times during this session as the musical decisions change the song. We also allow time for reflection on the entire process of writing the song: the story the songwriter has chosen to tell through the song, and the degree to which the songwriter feels that the song truly captures his/her sense of self at the time point under consideration. The songwriter receives a recorded copy of his/her completed song together with printed lyric sheets.

There is a strong therapeutic focus in this songwriting protocol. Prior to and during the creation of each song, there is considerable dialog and significant processing of issues and emotional responses. However, it is not possible to include everything that is discussed in a session in the songs. Therefore, although the completed songs are a significant and tangible outcome, the positive effects on self-concept and well-being arise from the whole therapeutic process. To illustrate the use of this protocol within the therapeutic process, we will now present a case illustration.

Case illustration: “Jim”

“Jim” was a sheep shearer from a country town in Victoria, Australia, prior to his SCI. At age 46, he was kicked in the head by a sheep whilst shearing and fell, causing an incomplete SCI at the C3/4 level. Jim had a de facto wife and four children aged 9–17. He was from a low socioeconomic background and had not finished school. Jim enjoyed country, rock, and blues music and described himself as “just an average bloke” (which became the title for his first song). He reported that he was a hard worker, often away from home for weeks at a

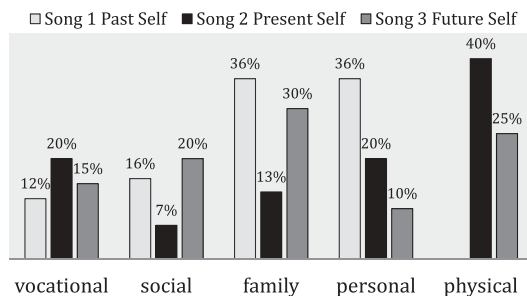


Figure 4. Percentage of song lyrics related to each specific self-concept domain.

time shearing. When he was home, he was a devoted father and enjoyed spending time with his children playing sport and participating in outdoor activities, such as hunting, fishing, and camping. An analysis of the song material (Appendix 1) explicates his strong identity as a family man and his sense of personal self (Figure 4).

Jim selected a country music genre, which he believed was a good match with his pre-injury self. He used rhyme intermittently, but driven more by lyrical intent than the need to rhyme words. The music was a simple three-chord country song with a catchy, upbeat feel. We used Garageband™ to record the acoustic guitar and added in double bass, drums, and a vocal harmony in the chorus.

The focus on the present in song two was more confronting for Jim and he chose to start with the music this time, in a blues style. This musical genre was able to capture the mixture of grief and anger that Jim felt while also incorporating some black humor (Appendix 2). It was also a genre that enabled him to express strong emotions in a way that did not challenge his masculinity (i.e., it was personally and culturally appropriate). Figure 4 illustrates a distinct shift in the thematic focus between song 1 and song 2. This shift is characterized by a move away from family and personal self, to a strong focus on the physical self. His lyrics describe feeling trapped, useless, and dependent, and how his physical limitations have impacted his roles as worker and physically active father. The instrumentation was guitar, bass, and drums, with 2 blues guitar solos.

After completing the first two songs, a strong therapeutic alliance had been established and Jim felt more comfortable to explore his deeper feelings about the changes in his life and their impact on his sense of identity. Subsequently, his final song exposed more raw emotions with a shift back to focusing on family, social, and vocational identity (Figure 4). This clearly highlights Jim's concerns about changes from pre- to post-injury in these self-concept domains that he felt were defining features of himself. Jim chose a contemplative rock ballad with a slow tempo for this song to match the reflective nature of the lyrics. The sound of the electric guitar with effects (delay and reverb) set the mood for his authentic

expression of his fears about the future. However, he also incorporates hope and a willingness to reconstruct his vision of his future self ([Appendix 3](#)). A gradual deepening can be seen in Jim's self-reflection and expression in the lyrics of the three songs, which were complemented by appropriately matched musical styles.

Contraindications

There are some circumstances where this songwriting protocol targeting changes in self-concept may be contraindicated. Given the high-level language and cognition skills required to generate ideas relating to self-concept and shape these into song lyrics, this protocol is really only suitable for people with intact language processing. Therefore, this intervention is not indicated for people with aphasia, however people with severe dysarthria or dyspraxia of speech who are able to use alternative and compensatory communication systems and strategies may still be able to benefit from participation in this targeted songwriting protocol. This songwriting process also requires high-level cognitive processing skills including executive functions and insight into disabilities. For example, a person who is unable to comprehend that he/she has physical impairments that will significantly change his/her life is unlikely to process changes in self-concept. Further, this protocol may be too confronting for someone who is emotionally fragile or unstable, as it requires deep introspection and evaluation of personal qualities. For example, it is possible that this songwriting protocol may exacerbate symptoms of anxiety or depression following traumatic injury.

Although it is conceivable that prolonged reflection on significant changes to sense of self may be overwhelming or even re-traumatize someone, our preliminary findings do not suggest this. However, it appears that halfway through the process (during the writing of song 2 about the present self), people tend to experience greater conflict about their sense of self. The process of self-reflection brought about through the songwriting process may bring to awareness, the stark contrast between the past and present self and a feeling of "not being myself". This conflict may arise from a desire to hold on to the past self while at the same time facing the reality of present. Such a conflict is not regarded as a negative outcome; conversely, it can indicate a turning point in the therapeutic process. Through songwriting we can assist people to work through this conflict in a constructive and supported way towards an integration of past and present self.

Summary and conclusions

There is a clear pattern to the four sessions used to create each song: brainstorming ideas, writing lyrics and music, refining, and recording the song. As the therapeutic relationship develops over the course of the 12 sessions, there is a deepening of the songwriter's exploration of self. For example, the brainstorming for the second and third songs often reflect back to previous sessions and build

on prior discussions. The development of this therapeutic alliance and trust is essential to the process and allows the songwriter to feel safe and heard.

Often during the brainstorming and lyric creation process, the therapist needs to help the songwriter to focus on the specific time under consideration for the current song (past, present, or future). In order to facilitate the therapeutic process and allow the songwriter to talk freely, it is sometimes helpful to “bracket” out parts of what the songwriter shares for another song. For example, when reflecting back on the past it is natural to compare this to the present situation and how this contrast feels. We might say, “these are really great ideas and strong feelings that relate more to your next song about the present. I’ll write them down so we can bring these into song 2.” Similarly, when reflecting on the present and how the current situation has brought about so many changes, it is natural to then think about how these changes will impact the future. It is important to allow the songwriter the freedom to express these thoughts and feelings, but when it comes to the song creation, we use ideas related only to the time period for that song.

In conclusion, the songwriting protocol that we have developed and tested assists people to tell their story and integrate their past, present, and future self-concept. The structured nature of this songwriting protocol enables people with SCI or ABI to grieve losses, appreciate what remains, and construct a new perception of their future selves. Our approach is grounded in a theoretical framework informed by neuroscience, music psychology, music therapy, and narrative therapy. We propose that songwriting is an effective medium because:

- (1) the neurological connection between music, memory, and emotion enhances a person’s capacity to move forward in the therapeutic process by using music in the song creation process to stimulate emotional expression and enhance memory, both of which are necessary to work through changes in self-concept,
- (2) music activates distributed neural networks and engages more pathways than just language alone; therefore, music therapy can be more effective than verbal therapies for people with cognitive or language deficits. During songwriting, activation of the prefrontal cortex stimulates autobiographical recall and awareness of residual identity, and activation of pleasure networks works to combat depression and anxiety and increases motivation to face challenges,
- (3) musical identities remain intact despite other fractured identities so songwriting capitalizes on intact resources,
- (4) songwriting is personally meaningful and leads to strong experiences of flow, which can enhance mood and coping mechanisms needed to face confronting issues,
- (5) songwriting enables the telling of micro-narratives, making sense of, accepting, and appreciating past, present, and future self-concepts.

Previous research with ABI and SCI patients has demonstrated the value of songwriting to facilitate self-reflection concerning life experiences, memories, relationships, and the impact of an acquired disability on a person's future. To our knowledge, however, this is the first published therapeutic songwriting protocol focused specifically on addressing a fragmented self-concept. Our theory-informed and evidence-based protocol describes the therapeutic and creative process, encompasses a process targeting self-concept, and accommodates for the physical, cognitive, communicative, and emotional challenges imposed by the injury. The songwriting protocol described in this article outlines such a therapeutic process for people who are negotiating changes in self-concept as a result of neurological injury.

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Appendices

Appendix 1. Just An Average Bloke

Verse

I've been a shea-rer all my life since I was se-ven - teen.

worked a - cross the coun - try from the out - back to the sea. I

worked real hard and par - tied hard till I was twen-ty sev - en

then I had my first son but it did-nt work out

Chorus

I'm just an a - verage bloke al - ways loved a beer and smoke

do-ing just what most blokes do hav-in a drink and play-ing up too

Verses

I've been a shearer all my life, since I was 17	(vocational)
Worked across the country from the outback to the sea	(vocational)
I worked real hard and partied hard til I was 27	(vocational/social)
Then I had my first son, but it didn't work out	(family)

And then I met, the love of my life	(family)
She came and helped me out, when I was in strife	(family/personal)
She helped my raise my boy, then we had 3 kids of our own	(family)
With [child 1], [child 2], [child 3], and [child 4] I finally found my home	(family)

And on weekends I love my time at home	(personal)
With the kids around and friends popping in, never alone	(family/social)
Tinkering and playing pool in the shed, I've got so much to share	(personal)
Everyone knows that [JJB]'s place is where you'll get cold beer	(social)

When I'm home I love to make the most of my time	(personal)
Watching the kids playing sports fills me with pride	(family)
We're quiet town country bumpkins, who love doing what we do	(personal/family)
Hunting, fishing and camping and chasing kangaroos	(family)

Appendix 2. Feel Like A Burden

Swing ♩ = ♩³♩

Verse

E

Feel like my world has end-ed when I woke up like that but now it's starting to look bet-ter now I'm in ___ re-hab

A

Got a great team a-round me ___ but the nur-ses ___ still give me grief

B

Still feels like a ja-il ___ but my time here's on - ly brief

Chorus

E

Feel like a bur-den ___ stuck in this chair no a-moun-t of bour-bon's gon-na take aw-ay ___ this fear

A

I dont know who I am now ___ and how I'll ___ pro- vide ___

B

I've lost my mo-ti-va-tion but ___ not my will to sur- vive

Verses

Felt like my world had ended when I woke up like that (physical)
 But now it's starting to look better now I'm in rehab (physical)
 Got a great team led by [Simon], but [Pam] still gives me grief
 Still feels like a jail, but my time here's only brief

Feel like a burden, stuck in this chair
 And no amount of bourbon's gonna take away this fear (personal)
 I don't know who I am now (personal), and how I'll provide (family)
 I've lost my motivation, but not my will to survive (personal)

Feeling pretty useless, can't even wipe my own arse (physical)
 No options for work now, things'll be different from the past (vocational)
 Hard to find what to do now, can't get my head around it (vocational)
 Gotta find a way through though, so I can do things with my kids (personal/family)

I've started walking now, rehab is good (physical)
 Hope I can still keep it going, when I get back home (personal)
 I've lost my identity, no more shearing for me (personal/vocational)
 Hard to talk to my mates now, nothing comes up easily (social)

Appendix 3. It's So Hard

Verse

A^b D^b E^b A^b

I'm look-ing for-ward to go-ing home but it's hard to know what it's go-nna be like

A^b D^b E^b A^b

The thought of lea-ving here fills me with fear but I've got to get on with liv-ing life

Chorus

G^b D^b A^b

Life was-n't meant to be ea-sy but right now it's so hard

G^b D^b A^b

The toll this takes on my fam-i-ly leaves me sca-rred

G^b D^b A^b

For-ev-er is how long it feels it'll take to heal

G^b D^b A^b

I know in time we'll sur-vi-ve this or-deal

Verses

I'm looking forward to going home	(family)	Feels like not much in common with my mates anymore	(social)
But it's hard to know, what it's gonna be like		But I reckon that'll change when I back, that's for sure	(social)
The thought of leaving here, fills me with fear	(physical)	So overwhelmed by support from my friends and community	(social)
But I've got to get on with living life	(personal)	Don't know how to thank them for what they've done for me	(social)

Don't know yet, how much movement I'll get back	(personal)	I'll be home more now and see more of the kids	(family)
Don't know how I'll support my family	(family/vocational)	Have to work out how to do things with them differently	(physical/family)
We won't be able to live like we used to	(vocational)	Worried about the missus coping, can't do much to help	(family)
Gotta change my life and do something new	(vocational)	They reckon I'll keep improving and do more for myself	(physical)

Chorus

Life wasn't meant to be easy, but right now it's so hard (moral)

The toll this takes on my family leaves me scarred (family)

Forever is long how it feels, it'll take to heal (physical)

I know in time we'll survive this ordeal (family)

Exploring the Self through Songwriting: An Analysis of Songs Composed by People with Acquired Neurodisability in an Inpatient Rehabilitation Program

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Background: *Neurological trauma is associated with significant damage to people's pre-injury self-concept. Therapeutic songwriting has been linked with changes in self-concept and improved psychological well-being.*

Objective: *This study analyzed the lyrics of songs composed by inpatients with neurological injuries who participated in a targeted songwriting program. The aim of this study was to understand which of the*

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subdomains of the self-concept were the most frequently expressed in songs.

Methods: An independent, deductive content analysis of 36 songs composed by 12 adults with spinal cord injury or brain injury (11 males, mean age 41 years \pm 13) were undertaken by authors 1 and 2.

Results: Deductive analysis indicated that when writing about the past self, people created songs that reflected a strong focus on family and descriptions of their personality. In contrast, there is a clear preoccupation with the physical self, on the personal self, and a tendency for spiritual and moral reflections to emerge during the active phase of rehabilitation (song about the present self). Statistical analyses confirmed a significant self-concept subdomain by song interaction, $F(10, 110) = 5.98$, $p < .001$, $\eta_p^2 = .35$, which was primarily due to an increased focus on physical self-concept and a reduced focus on family self-concept in the present song, more than in either past or future songs.

Conclusions: The analysis process confirmed that songwriting is a vehicle that allows for exploration of self-concept in individuals with neurological impairments. Songwriting may serve as a therapeutic tool to target the most prevalent areas of self-concept challenges for clients undergoing inpatient neurological rehabilitation programs.

Keywords: brain injury; spinal cord injury; self-concept; songwriting; adjustment to disability

People with acquired brain injury (ABI) or spinal cord injury (SCI) often experience a disintegrated sense of self as they attempt to come to terms with the implications of acquiring a permanent injury (Beadle, Ownsworth, Fleming, & Shum, 2016). Reconstructing a positive self-concept and identity after neurological injury is considered to be an important goal of rehabilitation, as it reduces the likelihood of experiencing depressive symptoms (Carrol & Coetzer, 2011) and assists in maintaining motivation to engage in rehabilitation, contributing to better patient outcomes (Biderman, Daniels-Zide, Reyes, & Marks, 2006). Therapeutic songwriting is one approach that has been shown to be effective in addressing self-concept and identity issues in people with acquired neurological injuries (Baker & MacDonald, 2016; Baker, Rickard, Tamplin, & Roddy, 2015). However, there remain gaps in knowledge about the most commonly reported struggles and triumphs that people experience as they create songs expressing changed identity. In this study, we deductively identified themes embedded in songs created by people with neurological injuries as part of a larger clinical trial.

Literature Review

Acquired brain injury (ABI) or spinal cord injury (SCI) can trigger profound and lasting negative changes to an individual's sense of self (Beadle et al., 2016). Self-concept is a collection of beliefs about the self that enables people to have a sense of who they are in the world (Fitts & Warren, 1996). It enables them to answer the question "Who am I?" and comprises six broad subdomains—the personal self, moral self, social self, physical self, academic/career self, and family self (Fitts & Warren, 1996). Each of these subdomains can contribute to a person's sense of self. The personal self refers to how people describe their personality, for example outgoing, serious, hardworking, or happy-go-lucky. The moral self represents people's described experiences of themselves in terms of being a moral, spiritual, religious, or ethical self. The family self and social self are understood to be people's perception of their place within their family unit and social circles, respectively. The physical self is a subdomain that refers to how people perceive their own bodies, states of health, physical appearances, and sexuality, while the academic self concerns self-perceptions in relation to education, training, career, and employment.

Research findings indicate that people with ABI and SCI commonly experience a disintegrated sense of self (Muenchberger, Kendall, & Neal, 2008), report discrepancies between the past, present, and future self, and rate self-concept subdomains substantially lower than matched controls (Anson & Ponsford, 2006; Kelly, Ponsford, & Couchman, 2013; Ponsford, Kelly, & Couchman, 2014; Yoshida, 1993). Research by Lennon and colleagues (2014) found that people with SCI and people with ABI reconstruct their sense of self in much the same way. Both groups reported that the experience of acquiring the injury and undergoing rehabilitation afforded them opportunities for creating positive change. For example, reflecting on the impact of their injuries was perceived to have made them more resilient, more open-minded, to engage in a re-evaluation of priorities, and to have a deeper appreciation of and a need to search for meaningful relationships. Similarly, both populations have described similar negative self-narratives, including negative views about their bodies. Importantly, Lennon and colleagues found that people communicated positive self-narratives immediately following the negative ones (often within the same sentence), and that people with ABI or with SCI "experienced their

self-reconstruction as paradoxically simultaneously changing and continuous” (p. 36).

Several models of how people reconstruct their sense of self following neurological injuries have been proposed (Amiot, de la Sablonniere, Terry, & Smith, 2007; Gendreau & de la Sablonniere, 2014; Muenchberger et al., 2008). Muenchberger and colleagues (2008) presented a four-phase process: 1) examining the pre-injury identity, 2) understanding the injury, 3) accepting the injury, and 4) integrating the injury into their lives. Their research found that people oscillate between an expansion (adding new facets of themselves to their self-definition) and contraction (relegating or removing facets of themselves from their self-definition) of identity as they construct a new sense of self. Gendreau and de la Sablonniere (2014) draw on the Cognitive-Developmental Model of Social Identity Integration (CDMSII, Amiot et al., 2007), whereby identity (re)development occurs when compartmentalized components of the self become more organized via new cognitive associations. In this model, people begin by valuing their pre-injury self over their post-injury self and engage in categorizing and comparing aspects of the two selves (categorization phase). During the compartmentalization phase, people make links between their pre- and post-injury selves. The integration phase occurs when similarities between pre-injury and post-injury components are organized and merge into a more cohesive sense of self (Gendreau & de la Sablonniere, 2014).

A recent systematic review described 10 studies that highlighted the success of some interventions on improving self-concept in people with brain injury (Ownsworth & Haslam, 2014). There was some support for cognitive rehabilitation interventions, including interpersonal feedback, problem-solving skill training, or memory rehabilitation. However, the studies all focused on global self-evaluations rather than exploring the various subdomains of self-concept, such as the physical self, family self, and personal self (Fitts & Warren, 1996). There are still evidential gaps in the literature about the extent of change that occurs within the different subdomains of the self-concept (e.g., physical, social, family) following an acquired neurodisability, and how these contribute to the constructive of a global self-concept (Ownsworth & Haslam, 2014). Further, there is a lack of knowledge about whether interventions are effective in addressing all aspects of self-concept, or whether they might be more effective for certain subdomains.

Songwriting is an active and highly personal form of music engagement and may be an effective means of enhancing identity and well-being after neurological injury. Some of our early studies explored the role of songwriting as a medium to assist people with ABI to adjust to their changed circumstances (Baker, Kennelly, & Tamplin, 2005a,b). More recently, we have developed and published a songwriting protocol that specifically targets the fragmented post-injury self-concept (Tamplin, Baker, Rickard, Roddy, & MacDonald, 2015). Our paper provides theoretical perspectives to illustrate why narrative songwriting (songwriting as a storytelling process) represents an appropriate medium through which to explore a person's sense of self.

Theories of therapeutic songwriting suggest that it enables people to tell their story (akin to narrative approaches that have been previously described as useful for people recovering from neurological injury [Fraas, 2015]) so that they can construct meaning about their past, present, and future lives (Baker 2015a; Davis & Novoa, 2013) and integrate multiple injured and non-injured self-narratives (Baker et al., 2015). As music can elicit emotionally potent experiences, song lyrics have the potential to be better encoded in memory than verbal dialogue alone (Baumgartner, Lutz, Schmidt, & Jäncke, 2006). Further, musical identity is often unaffected by neurological injury (Baird & Samson, 2014), so songwriting is a resource that allows the person with neurodisability to access the continuity of identity, bringing it into conscious awareness rather than focusing purely on the disabled self. As people with acquired neurological injuries experience prolonged engagement with exploring the self while creating songs, we can provide them with the opportunity to process and reconstruct a new, integrated identity that incorporates enduring and new components (Baker et al., 2015).

Songs created by people with neurological disabilities provide a unique and emotionally potent window into their lived experience (Baker et al., 2005a,b). Song creations are typically raw expressions of the inner self; they permit the songwriter to authentically express feelings and experiences, censoring less than they might in conversations. Song structures also allow for repetition of the most salient points and the addition of melodic, rhythmic, and harmonic features that intensify these expressions (Baker, 2015b). Engagement with songwriting offers opportunities to explore fundamental issues relating to participants' sense of self. Moreover, the concept of musical

identity is an area of research currently receiving considerable attention, since music is linked to our sense of self in many important ways—for instance, in beliefs about musicality, music preferences, and listening practices (MacDonald, Hargreaves, & Miell, 2016). When participants actively contribute thoughts and feelings, tell stories about themselves, and then choose the most salient of these to include in their song, analyzing the lyrics offers a unique opportunity to understand the process of constructing a new sense of self.

To support the theory (Tamplin et al., 2016) and emerging evidence (Baker et al., 2015) that therapeutic songwriting enables people to explore the self-concept and reconstruct a healthy sense of self, we sought to analyze the themes of songs created by people with ABI and SCI undergoing an inpatient rehabilitation program who were part of a larger randomized controlled trial. Pilot outcome data from this trial (Baker et al., 2015) indicate that the protocol can positively impact self-concept ($d = 0.557$, $p < 0.05$) and significantly reduce depressive symptoms ($d = 0.682$, $p < 0.05$). Each participant randomized into the songwriting condition had been assisted by a music therapist to create three songs (a song about the past self, the present self, and an imagined future self) where the focus was on exploring and rebuilding a new and realistic sense of self, using the following six subdomains of the self-concept as the focus: physical self; spiritual/moral self; family self; social self; personal self; and academic/vocational self to guide the process. Our study aimed to answer the following questions:

1. When offered six subdomains of the self-concept for inclusion in songs created during music therapy, what subdomains are chosen by people with acquired neurological injuries?
2. Which of these six subdomains of the self-concept are the most represented in songs?
3. Are there any differences in the extent to which these subdomains are present in songs about (1) the past, (2) the present, and (3) the imagined future?

Method

Study Design

As the intervention was informed by theories of the self-concept proposed by Fitts and Warren (1996), we used a content analysis

approach to explore where, and how often, the self-concept subdomains (the physical, academic/vocational, personal, social, family, and spiritual/moral self) were present in the participants' song lyrics. Content analysis is a systematic method of research that operationalizes procedures of data analysis to make replicable and valid inferences about the data it is analyzing (Krippendorff, 2013). While the approach has been extensively used in analyzing media messages, Riffe, Lacy, and Fico (2014) suggest that it is appropriate to extend the content analysis approach to the analysis of song lyrics. Importantly, approaches to coding the data—lyrics in this case—are guided by the theory underpinning the study (Tamplin et al., 2016). Therefore, the content is deductively coded to identify trends (Riffe et al., 2014). In content analysis, data deal with manifest content (surface meaning) rather than latent content (underlying meaning).

Participants

Over a nine-month period, we recruited 12 participants from a large metropolitan rehabilitation hospital who had either an SCI or ABI. Inclusion criteria comprised: (1) inpatient status at Austin Health's Royal Talbot Rehabilitation Hospital from the ABI, Spinal, or Neurology wards; (2) diagnosis of SCI or ABI (including traumatic brain injury, stroke, and substance abuse); (3) aged between 18 and 65 years of age; (4) < 12 months post-injury/onset; (5) cognitive ability to complete self-report measures that were part of the randomized control trial (as determined by a neuropsychologist); (6) without significant language or hearing impairments; and (7) not in posttraumatic amnesia.

We recruited six ABI and six SCI inpatients, 11 of whom were male, with a mean age of 41 years ($SD = 13$ years). All participants were undergoing active inpatient rehabilitation programs and were on average 86 days post-injury ($SD = 46$, range 15–157 days). Three participants were single, eight were married or in de facto relationships, and one was divorced. The highest level of education ranged from incomplete high school education ($n = 1$), to high school education ($n = 6$), trade/apprenticeship ($n = 1$), and undergraduate or postgraduate university education ($n = 4$). All participants gave written informed consent to the study, which was approved by the ethics committees of the University of Melbourne (approval

no. 1339728.1) and Austin Health (approval no. HREC/13/Austin/63). Informed consent included permission to publish song lyrics, musical scores, and audio recordings of songs.

Songwriting Program

Participants in the study attended a 12-session individual songwriting program designed specifically to explore the subdomains of the self-concept (Tamplin et al., 2016). Each songwriting session was one hour in duration, and sessions were held twice per week for six weeks. The program was divided into three phases. During Phase 1 (sessions 1–4), the participant was guided through the creation of an original song that was focused on the pre-injured, past self. It explored the notion of “Who was I before I received this injury?” A qualified music therapist (i.e., a Registered Music Therapist) with more than 15 years’ experience working with people with acquired neurological injuries supported the participant by transcribing these reflections, validating verbal contributions, encouraging the participant to explore all subdomains of the self-concept, helping shape the verbal contributions into a coherent story, co-creating lyrics, and assisting with construction of music to express the emotions that emerged in the lyrics.

During the creation of songs that were part of the program, the therapist prompted the participant to comment on each of the subdomains (e.g., physical self, social self, moral self) if these did not emerge organically as part of the self-exploration process. Only the aspects of the self that the participant identified as most salient and important were included in the song. So, even though all self-concept subdomains were discussed in the brainstorming process, not all were represented in each of the final song lyrics. The music for some songs was created and played on acoustic guitar or piano, whereas other songs were crafted using the IOS GarageBand music application. Each song was recorded and a copy provided to the participant.

During Phase 2 (sessions 5–8), the same process used in sessions 1–4 was repeated, except that during this phase, the participant created a song that reflected on the present self. Following this, Phase 3 (sessions 9–12) comprised the creation of a song about the imagined future self. The therapist remained vigilant not to influence the participants’ choice of lyrics throughout the songwriting process by ensuring that the participants’ own words were used in

the lyrics. Revisiting the constructed lyrics from session to session allowed the therapist to corroborate with the participants to ensure that the lyrics truly represented their own story of the self.

Lyric Analysis Process

The lyrics of 36 songs created by the 12 participants were independently analyzed by two authors (authors 1 and 2) using deductive content analysis (Elo & Kyngäs, 2008). In brief, the content of all lyrics was reviewed and assessed for content relating to each of the six subdomains of the self (i.e., physical, academic/vocational, personal, social, family, and spiritual/moral self; Fitts & Warren, 1996), which had been intentionally explored during the songwriting process. One of the coders (author 1) was blind to all participant characteristics, including gender, diagnosis, relationship status, and time since injury, and had no overview of each participant's therapeutic journey during the songwriting process. The second coder was the clinician (author 2), who facilitated the song creation process and had unique insight into the songwriting process for each participant.

Lyric lines that did not describe one of the subdomains of the self-concept, or were too abstract for the coder to reliably assign a code, received ratings of 0 (to avoid latent content analysis). For example, the lyric "I'm moving forward to a future that is full of light" (participant AS's song about the future self) was not clearly indicative of any subdomain of the self-concept, so was not coded. Other uncoded lyrics included descriptions of events, for example "Came from India, five years ago" (participant KB's song about the past self) or abstract or philosophical concepts, for example "Life is like the seasons, always changing" (participant KB's song about present) and "Like sunlight and clouds, together but apart" (participant AM's song about the present). In other cases, lyrics were assigned scores for multiple self-concept subdomains because they expressed aspects of two subdomains of the self-concept. For example, the lyrics "To rely on other people, you lose your dignity" (participant VS's song about the present self) were coded as physical self and personal self. An example of how an entire song titled "Surviving the Storm" was coded is presented in [Appendix 1](#), with the audio recording of the song (Audio 1) available as supplementary material.

Following the independent coding process, the two coders compared scores for each lyrical phrase within the song, and where there were discrepancies, these were discussed until arriving at a coding consensus. Inter-rater agreement was calculated by computing the percentages of discrepancies across the entire pool of coded lyrics prior to engaging in the scoring consensus process, which was high (94%). These data were considered equivalent to an interval rating of the relative presence of content relating to that subdomain in that song and therefore were suitable for parametric (repeated measures) statistical analyses.

Data Analysis

Repeated measures ANOVAs with injury type (between-group levels: SCI or ABI), self-concept subdomain (within-group levels: social, physical, moral, academic, family, and personal), and song (within-group levels: past, present, future self) were used to analyze the data. Significant interactions were followed with post hoc simple (repeated) main effects analyses with alpha adjusted to .016 for multiple comparisons across the three songs, and to .008 for multiple comparisons across the six domains. Two sided significance levels were used throughout. The assumption of sphericity was tested using Mauchly's test of sphericity. Where violated, a Greenhouse-Geisser correction was applied.

Results

Table 1 presents content for each of the six self-concept subdomains, for each song (past, present, future), for ABI and SCI patients. The song lengths varied across songs, so the percentage of each of the subdomains for each song category was calculated from the total number of coded lyrics for each song category.

A preliminary 2 (injury type) \times 6 (subdomain) \times 3 (song) mixed ANOVA was performed to assess whether song content differed between patient groups. No main effect of injury type was observed, $F(1, 10) = 0.03$, $p = .872$, $\eta_p^2 = .003$, so due to the small cell sizes the two patient groups were pooled for the main analysis. A two-way 6 (subdomain) \times 3 (song) repeated-measures ANOVA was performed to assess whether song content differed across subdomains and song, followed by post hoc simple (repeated) main effects analyses within subdomain and song.

TABLE 1
Prevalence Of Subdomains of the Self Concept Present In Songs

Song category	No. of codes for each subdomain (% of codes)						Total
	Social	Physical	Spiritual/moral	Academic/vocational	Family	Personal	
<i>SCI patients</i>							
Past	20 (22)	0 (0)	11 (12)	12 (13)	21 (23)	29 (31)	93 (100)
Present	5 (5)	35 (33)	20 (19)	4 (4)	11 (10)	30 (29)	105 (100)
Future	13 (13)	24 (24)	15 (15)	5 (5)	21 (21)	23 (23)	101 (100)
<i>ABI/TBI patients</i>							
Past	8 (8)	7 (7)	15 (14)	13 (12)	40 (38)	22 (21)	105 (100)
Present	4 (3)	43 (36)	19 (16)	8 (7)	14 (12)	30 (25)	118 (100)
Future	3 (4)	24 (33)	7 (10)	10 (14)	14 (19)	14 (19)	72 (100)
<i>Overall sample (total)</i>							
Past	28 (14)	11 (5)	29 (14)	23 (11)	62 (31)	50 (25)	203 (100)
Present	9 (4)	78 (35)	39 (17)	12 (5)	25 (11)	60 (27)	223 (100)
Future	16 (9)	48 (28)	22 (13)	15 (9)	35 (20)	37 (21)	173 (100)

In total, songs appeared to contain more personal, physical, and family content than social, moral, or academic/vocational content. A 6 (subdomain) \times 3 (song) repeated-measures ANOVA on content scores revealed a significant main effect of subdomain content, $F(5,55) = 6.59$, $p < .001$, $\eta_p^2 = .37$. The number of coded lyrics varied across the past-, present-, and future-focused songs, with most participants writing longer (and therefore more coded) lyrics for the song about the present self and the least number of lyrics about the future. No song main effect was, however, observed.

The relative mix of self-concept subdomain content also varied across songs. The song about the past self focused more on family and the personal self; the physical and personal self dominated the song about the present self; and the song about the future self focused primarily on the physical, personal, and family self. The two-way mixed ANOVA revealed a significant subdomain by song interaction effect, $F(10, 110) = 5.98$, $p < .001$, $\eta_p^2 = .35$. Post hoc simple main effects (repeated measures one-way ANOVAs with α reduced to .008) confirmed significant differences between the relative amount of self-concept subdomain content within the present song, $F(5, 55) = 10.42$, $p < .001$, $\eta_p^2 = .487$, but not the past (sphericity not assumed), $F(2.56, 28.12) = 4.54$, $p = .014$, $\eta_p^2 = .002$, or future (sphericity not assumed), $F(2.36, 25.95) = 3.19$, $p = .050$, $\eta_p^2 = .002$ songs. Within the present self songs, the subdomain of physical self was the most prominent content, with a substantial increase from 5% in the past to 35% in the present.

Post hoc analyses (with α reduced to .016) confirmed that physical content ratings varied significantly across songs, $F(2, 22) = 5.08$, $p = .015$, $\eta_p^2 = .316$ (sphericity assumed), with ratings significantly higher in the present and future self songs than in the past self song ($p < .001$ and $p = .009$, respectively). In contrast, the family self was the most prominently coded subdomain in the song about the past self and noticeably decreased in the song about the present and was again more frequently coded in the songs describing the future self. Family content ratings varied significantly across songs, $F(2, 22) = 5.08$, $p = .015$, $\eta_p^2 = .316$ (sphericity assumed), with ratings significantly higher in the past self song than in the present self song ($p = .006$).

Descriptions about the personal self (personality features) were strongly represented in each of the three song time points ($> 20\%$), and there was little difference in their representation across the three songs, $F(2, 22) = 1.37$, $p = .276$, $\eta_p^2 = .110$ (sphericity assumed). The academic/vocational and social self subdomains

were not strongly represented in the lyrics, suggesting that these individuals may not have defined themselves primarily according to their career and social life. Nevertheless, there was a small decrease in references to the academic/vocational and social self, and a small increase in spiritual self references, from past to present self songs. Post hoc analyses confirmed that ratings of moral, social, academic, and personal content did not significantly change over songs (moral: $F(2, 22) = 1.765, p = .195, \eta_p^2 = .138$ (sphericity not assumed), social: $F(1.32, 14.54) = 4.035, p = .054, \eta_p^2 = .268$ (sphericity not assumed), academic: $F(1.12, 12.27) = 1.29, p = .284, \eta_p^2 = .105$ (sphericity not assumed), and personal: $F(2, 22) = 1.366, p = .276, \eta_p^2 = .140$ (sphericity assumed).

Discussion

The results of our deductive content analysis of lyric content showed interesting trends in representation of self-concept subdomains across the three time points. Overall, participants wrote longer songs about their present self (and therefore more coded lyrics) and the least number of lyrics about the future. Longer songs may reflect the high degree of self-change being processed during the creation of a song about the present. They may have also had to process more confronting and challenging material in all the self-concept subdomains when focusing on the present. Furthermore, the present is likely to be more tangible and easier to access, as people may find it easier to write about what they are thinking and feeling right now, perhaps because it has more immediate relevance. It is unclear, however, how the songwriting process mapped on to existing models of self-integration as the oscillation between past, present, and future was not captured in the song lyrics (Gendreau & de la Sablonniere, 2014).

The future is less known, and particularly so for people who have recently experienced such a life-impacting injury. The lack of predictability in the extent of their recovery, their ability to adapt to ongoing impairments, and how their relationships might change means that writing about the future self is likely to be considerably less detailed or concrete than other songs. This might reflect the fact that during early stages of the process, participants might value their pre-injury self over their post-injury self (Gendreau & de la Sablonniere, 2014). These findings hold clinical relevance for music therapists working in rehabilitation, as they demonstrate preliminary indicators of how the process of self-change works for patients undergoing inpatient rehabilitation.

Specifically, and understandably, there was a noticeable increase in focus on physical self from past to present song category, likely reflecting the significant physical changes that most people face after a spinal or brain injury. Physical impairments are in the forefront of people's minds during their active rehabilitation phase as they work to regain as much function and independence as possible, a finding also noted by [Baker et al. \(2005a,b\)](#). Indeed, this compartmentalization of components of the self has been previously documented ([Gendreau & de la Sablonniere, 2014](#)). This is important for music therapists to be aware of when conducting interventions focusing on self-concept, to allow the time and space for this physical aspect of the self to be explored fully. The changes in physical function are also likely to have been highlighted for participants in their present self song, particularly in contrast to the pre-injured physical self that was the focus of song 1.

The higher focus on physical self also remained to a lesser degree in the future self song, as participants questioned how their altered physical function would affect their future ability to carry out life roles that contribute to their definition of self. Physical function also affects a person's ability to carry out many other life roles, including family responsibilities, work, and recreational pursuits. It is not surprising, then, that the physical self-concept subdomain dominated the present song.

This change in focus on physical self over the three songs indicates that songwriting may indeed have a positive role to play in processing changes in physical function and how these changes impact a person's overall sense of self. The therapeutic songwriting protocol used in this study allowed participants to explore different aspects of the self to varying degrees when focusing on the change in self-perception over time. However, it also prompted exploration of all self-concept subdomains, thus highlighting not only changes, but enduring aspects of the self. This is central to the adjustment process and the development of a new and integrated self-concept ([Muenchberger et al., 2008](#)).

The findings from our lyric analysis support [Lennon et al.'s \(2014\)](#) theory that experiencing traumatic injuries can have a positive impact on the self. Analysis of the song lyrics suggested that overall, the participants in our study appeared to gain strength, became more open-minded about life more generally, re-evaluated their priorities, and began to appreciate the importance of meaningful relationships. [Lennon and colleagues \(2014\)](#) proposed that

negative perspectives of the self were often followed immediately by positive aspects of the self, and indeed this was evident in many of the song lyrics created by the participants in our study. For example, in participant KB's first song, he says, "Sad moments, happy moments, it's hard but good fun." In his third song, he states that "I lost my legs, but not my hope, my wheels are now my feet," again illustrating the balance between the negative and positive perspectives. AS also illustrates this phenomenon when she says, "My body may be broken, but my mind has been set free, and it's improved my personality." These lyrics illustrate the oscillation between the positive and negative that [Muenchberger et al. \(2008\)](#) propose people with neurological injuries experience as they compare past and present and work toward an integration of the injury into their lives.

Methodological Issues Associated with the Study

The high inter-rater agreement was likely a result of the deductive nature of the coding and the fact that the self-concept subdomains used for coding were also the focus of the songwriting intervention. As described elsewhere ([Tamplin et al., 2016](#)), the intervention protocol specifically guided the participants to discuss all the subdomains, and then through a process of identifying the most salient of these to create lyrics to reflect the subdomains that were most reflective of their sense of self. The few discrepancies in rating occurred when the lyric was more obscure or abstract. In these cases, the second author was often better able to interpret the meaning of the lyric due to her involvement in the songwriting process with the participant. As the music therapist guided the songwriting experience, the therapist's prompting may have influenced the extent to which some themes were present in the song. While the therapist is trained to ensure that the song expresses the "voice" of the person with neurological injury, there may have been instances in redirecting the participant's attention to the task at hand, which may have impacted the direction of the discussion about the self, and inadvertently influenced which subdomains were expressed in the songs.

Another limitation associated with the study was that the lyrics were not analyzed in tandem with the music. The music within song creations has the potential to express conflicting or ambiguous emotions ([Baker, 2015a,b](#)). For example, in the song about the future created by participant BR, in his lyrics he expresses a sense of hope ("I remain hopeful that things will work out") and yet the positive lyrics are juxtaposed with minor harmonies and descending

melodies, conveying mixed emotions, an internal struggle. It's as if the music he expresses signals that he does not truly believe what is said in his words. Future investigations would benefit from a simultaneous analysis of musical content to provide an indication of the extent of conflicting emotions portrayed in the songs.

Finally, the sample size was relatively small, reducing the power of statistical analyses considerably, particularly given the exploratory nature of the comparisons. A number of non-significant trends were observed—for instance, differences between self-concept subdomain content within the future self song—which would be of interest to explore further with a larger sample size. We also acknowledge that as this was not a randomized control trial, we may have recruited a biased sample, a group that may have been more open to exploring the self-concept.

Conclusion

Our in-depth examination of the song stories people with spinal cord or brain injury created during a purposefully designed intervention targeting the self-concept illustrates how a creative process can be used to enable people to reflect on all subdomains of their past, present, and future self-concept. The engagement of music and lyric writing processes created opportunities for personal stories to be told, emotional responses to these stories to be expressed, and engagement in a self-reflection process. The analysis process confirmed that songwriting is a vehicle that allows for exploration of self-concept in individuals with neurological impairments that may not have emerged through other verbally mediated interventions.

The findings suggest that during the active phase of rehabilitation (i.e., song about the present self), there is a clear focus on the physical self and on the personal self, and there is a tendency for spiritual and moral reflections to emerge when compared with other self-concept subdomains. As participants move to an imagined future self, their song lyrics implied that they viewed their lives as more balanced, as evidenced by increases in lyrics representing all other subdomains of the self.

Our study highlights how songwriting is an accessible and psychologically important creative process that helps facilitate the renegotiation of self following severe injury. Importantly, this study provides insight into how the creative processes involved in songwriting may assist people to explore multiple facets of the self-concept in meaningful ways

and allows them a socially acceptable medium to express ambivalence and the oscillation between the positive and negative perspectives of the self. Future research should seek to understand the process and outcomes of this intervention in greater detail.

Supplementary Data

Supplementary data are available at *Journal of Music Therapy* online

Appendix 1: Surviving The Storm

Intro

Verse

Feels like I'm liv - ing in the mid - dle of a storm

Ev - ery-thing's been thrown a - round sta - bil - i - ty is gone

No wife **family** bad health **physical** ques - tion - ing ev - ery - thing **moral**

Pre-Chorus

Life is hard right now so chal - len - ging **personal**

What to do where to go **moral**

Im - por - tant an - swers to know

So hard to think clear - ly now **physical** get my life back I don't know how **personal**

It's the least that my chil - dren de - serve **family** Got - ta get

Chorus

better all round **physical**

Make my fam - i - ly real proud **family**

O - ver - come my chall - en - ges **personal**

Chase a - way these storm clouds

Verse 2:

This accident has brought me to my knees
 Forced me to confront, my mortality
 Made me question my beliefs, maybe I had it wrong
 Opened my mind to the possibilities

moral
moral
moral
moral

Verse 3:

Feeling down and emotional, life's turned upside down
 Inside I am the same, but I can't find him now
 Even though there's many things I should be thankful for
 It's hard to pick myself up off the ground

physical
personal / moral
moral
personal

Verse 4:

This accident has made my body weak
 Hard to balance and hard at first to speak
 All these challenges for body, mind, and soul
 I'm working hard to overcome

physical
physical
physical / personal / moral
personal

Note: highlighted text indicates the subdomains of the self-concept that were coded by the authors

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Summary of preliminary follow-up data

As part of a longer-term follow up exercise 12-18 months post-intervention, the core battery of measures described in the current thesis project were re-administered to songwriting participants alongside a brief semi-structured interview to build some preliminary evidence for longer-term changes in self-concept, wellbeing and distress, and to provide participants with an opportunity to reflect on the songwriting process and song products. The open-ended questions in the interview focused on the current self-concept of participants, their experiences in the community, their history of engagement with music, and their experiences of completing the songwriting program. The results of the open-ended questions are currently subject to analysis as part of a draft publication, and are therefore not in scope for the current thesis. The results presented below outline the raw scores at follow-up for the participants interviewed, and the change evident in these scores from post-intervention to follow-up. Some preliminary points of interpretation are suggested, with a view to how these results might impact longer-term understandings of self-concept, wellbeing and distress. Concurrent follow-up of control participants is currently underway, to enable further future comparisons of the follow-up data.

Five participants of the original 13 experimental participants in the current project declined to participate in the follow-up interview. A further three participants were lost to follow-up due to expired contact details (participants could not be reached). The remaining five participants agreed to participate and were visited in their homes, where the interviews were conducted and the questionnaires administered.

Table 1
Self-concept Scores at Follow-up

Measure/ Subscale	Raw score at follow-up				
	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
HISD	122	123	133	120	123
TSCS-2 TOTAL	65	53	48	47	64
TSCS-2 CONFLICT	49	55	48	40	60
TSCS-2 BEHAVIOUR	67	54	48	48	67
TSCS-2 SATISFACTION	40	46	37	34	47
TSCS-2 IDENTITY	37	30	31	30	35
TSCS-2 PHYSICAL	61	56	49	45	52
TSCS-2 MORAL	71	52	37	51	54
TSCS-2 PERSONAL	68	59	59	51	63
TSCS-2 FAMILY	66	35	55	45	59
TSCS-2 SOCIAL	60	54	47	45	67
TSCS-2 ACADEMIC	50	56	41	48	69

Note: Higher HISD scores indicate higher global self-concept. Higher domain TSCS-2 scores (i.e. for Physical, Moral, Personal, Family, Social and Academic subscales) indicate a more positive view of self-concept within the respective domain.

Table 2
Wellbeing and Distress Scores at Follow-up

Measure/ Subscale	Raw score at follow-up				
	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
FS	48	11	54	56	54
SWLS	14	30	35	31	25
PANAS PA	39	32	44	45	40
PHQ-9	8	5	0	2	0
GAD-7	1	0	2	2	0
PANAS NA	14	12	10	16	10
ERQ REAPPRAISAL	25	28	37	36	31
ERQ SUPPRESSION	23	15	10	9	11

Note: Higher scores on FS, SWLS and PA scores indicate higher levels of flourishing, satisfaction with life, and positive affect respectively. Lower scores on PHQ, GAD, and NA scores indicate improvements (reductions) in depressive symptoms, anxious symptoms, and negative affect respectively. Higher ERQ reappraisal and suppression scores indicate greater levels of reappraisal and suppression respectively.

Table 3
Changes in Self-concept Scores from Post-intervention to Follow-up

Measure/ Subscale	Change between post-intervention and follow-up				
	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
HISD	-7	+2	+12	+3	-3
TSCS-2 TOTAL	+12	+26	-4	+27	+1
TSCS-2 CONFLICT	+1	0	-13	-19	+5
TSCS-2 BEHAVIOUR	+10	+18	-13	+15	+2
TSCS-2 SATISFACTION	0	+26	+1	+14	+3
TSCS-2 IDENTITY	+5	+5	+3	+5	0
TSCS-2 PHYSICAL	+9	-3	+6	+9	-6
TSCS-2 MORAL	+32	+19	-12	+17	0
TSCS-2 PERSONAL	+9	+39	+12	+24	+4
TSCS-2 FAMILY	+7	-1	-6	+11	+2
TSCS-2 SOCIAL	+6	+34	-22	+25	+5
TSCS-2 ACADEMIC	-3	+19	-1	+13	+5

Note: Higher HISD scores indicate higher global self-concept. Higher domain TSCS-2 scores (i.e. for Physical, Moral, Personal, Family, Social and Academic subscales) indicate a more positive view of self-concept within the respective domain.

Table 4
Changes in Wellbeing and Distress Scores from Post-Intervention to Follow-up

Measure/ Subscale	Change between post-intervention and follow-up				
	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
FS	-3	-38	+5	+8	+3
SWLS	-16	+6	+15	+9	+1
PANAS PA	-6	-5	-1	+14	+3
PHQ-9	+5	+1	-4	-1	-7
GAD-7	0	-6	2	-1	-3
PANAS NA	+3	-8	-12	-1	-2
ERQ REAPPRAISAL	-1	-8	+1	0	-7
ERQ SUPPRESSION	+5	+5	-6	-7	+1

Note: Higher scores on FS, SWLS and PA scores indicate higher levels of flourishing, satisfaction with life, and positive affect respectively. Lower scores on PHQ, GAD, and NA scores indicate improvements (reductions) in depressive symptoms, anxious symptoms, and negative affect respectively. Higher ERQ reappraisal and suppression scores indicate greater levels of reappraisal and suppression respectively.

An in-depth consideration of individual trends, and the correspondence between the questionnaire responses and the interview responses is outside of the scope of the current thesis. However, the comparatively large positive shifts in the TSCS-2 for three out of the 5 participants, and the tendency for discrepant ratings between the HISD and the TSCS-2, highlights the potential for longer-term trends that require investigation in the period after home discharge. At an individual level, there also does not appear to be a strong correspondence between self-concept measures and mood measures. For example, Participant 2 reported a marked increase in overall self-concept on the TSCS-2, but a very large decline in flourishing. Additional exploration of the factors that may have influenced these contrasting results would be of interest. Relative to other participants, Participant 4 appeared to have experienced the most positive shifts in all indices, with increases in all self-concept domains (albeit small in the HISD), increases in all wellbeing measures, and decreases in subjective distress measures. This manner of profile could warrant further examination to

determine the role of individual factors (e.g. post-traumatic growth, life circumstances, and injury recovery trajectory) in shaping this result, and to ascertain whether any of these factors can be instigated for future participants post-discharge.

It is hoped that, with further exploration of the songwriting data in combination with individual questionnaire data, a fuller picture of the impact of the songwriting intervention can be obtained. This, in turn, will continue to build evidence for the use of therapeutic songwriting for self-concept in neurological populations.